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**Business Model Innovation for Delivering
Mobile Services in Emerging Markets: The
Mobile Telecommunications Industries in
Ghana and Nigeria**

JO Omoju

PhD

2021

**Business Model Innovation for Delivering
Mobile Services in Emerging Markets: The
Mobile Telecommunications Industries in
Ghana and Nigeria**

Joshua Oluwadunsin Omoju

A thesis submitted in partial fulfilment of the
requirements of the University of Northumbria
at Newcastle for the degree of Doctor of
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Newcastle Business School

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Abstract

This PhD examines the forms and drivers of business model innovation (BMI) in the mobile telecoms industry in Sub-Saharan Africa (SSA). Additionally, it explores the nature of inter-organizational relationships (IOR) in this industry. Within the context of emerging markets, the research investigates the innovative business models for delivering mobile services in Ghana and Nigeria, two of SSA's fastest growing economies.

The study draws on the value chain perspective within the field of innovation and strategic management to understand the business model, its relevant activities, and the inter-organizational interactions that shape BMI in an industry. The research evaluates the telecom value chain in Ghana and Nigeria based on a multiple case study methodology comprising three groups of firms: Tower Companies, Mobile Network Operators, and Content Providers. Thematic template analysis and descriptive statistics are used to analyse 64 interviews and 103 questionnaires from industry and policy respondents.

The findings indicate that actors in the Ghanaian and Nigerian telecom industries mostly engage in incremental BM changes, through stretching existing capabilities to deliver new product features for current or adjacent markets. The most significant changes occur as firms build on existing competencies and partnerships to alter their offerings, diversify revenue sources and restructure cost structures. The findings further show that compared to TowerCos and MNOs, Content Providers have higher degrees of radical innovations which reflect their need to explore new markets for survival. The analysis suggests that market need and consumer preferences, rather than technological opportunity, are major drivers of innovation by MNOs and Content Providers. In addition, industry-related drivers are prominent in this value chain, as Content Providers rely on MNOs to pursue new technological opportunities while the intensity of innovation by TowerCos is influenced by MNO preferences. These dynamics reveal themselves in inter-organizational relationships within the value chain, where the MNO-Content Provider relationship exhibits one-sided dependencies due to resource inequalities and TowerCo-MNO linkages have higher degree of interdependencies due to resource specificity and switching barriers.

The thesis contributes to our understanding of BMI forms in terms of scope and novelty and analyses the usefulness and practicality of accepted approaches in different contexts. The research also highlights how consumers' socio-economic realities shape BMI, prompting consumer-oriented innovations that are related to the use of an offering or how it is accessed by users. In addition, the study contextualizes known drivers of BMI to inter-organizational relationships, showing how differential access to resources and context-related factors shape the nature of interactions among actors within this complex industry. By giving insights into the barriers and challenges that less influential actors encounter in the value chain as well as how inter-organizational actors negotiate for favourable outcomes, the study contributes to the IOR literature. The study further presents implications for management practice and policy.

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Acronyms and Abbreviations

BM:	Business Model
BMI:	Business Model Innovation
GSMA:	Global Systems for Mobile Communications Association
ICT:	Information and Communications Technology
IMF:	International Monetary Fund
Infraco:	Infrastructure Company
IOR:	Inter-organizational Relationships
ITU:	International Telecommunications Union
MNO:	Mobile Network Operator
MNE:	Multinational Enterprise
NCA:	National Communications Authority, Ghana
NCC:	Nigerian Communications Commission, Nigeria
R&D:	Research and Development
SBM:	Sustainable Business Models
SSA:	Sub-Saharan Africa
TowerCo:	Tower Infrastructure Company

Telecom Industry Acronyms

1G:	First-generation cellular network
2G:	Second-generation cellular network
2.5G:	Intermediate Second-generation cellular network
3G:	Third-generation cellular network
4G:	Fourth-generation cellular network
5G:	Fifth-generation cellular network
DAS:	Distributed Antennae System
EDGE:	Enhanced Data Rates for GSM Evolution
GPRS:	General Packet Radio Service
GSM:	Global Systems for Mobile Communications
IVR:	Interactive Voice Response
LTE:	Long-Term Evolution
MMS:	Multimedia Messaging Service
OTT:	Over-The-Top Service
SMS:	Short Message Service
USSD:	Unstructured Supplementary Service Data

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Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas, and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the Faculty of Business & Law Research Ethics Review Panel in December 2017.

I declare that the Word Count of this Thesis is 87,897 words (This excludes title page, list of contents, abstract, list of figures, references, and appendices)

Name: Joshua Oluwadunsin Omoju

Date: 30.11.2021

CHAPTER ONE

INTRODUCTION

Gurbaksh Chahal: "*Many [business] people focus on what is static, black and white. Yet great algorithms can be rewritten. A business process can be defined better*"

1.1 Background to the Study

Mobile technologies have become a prevalent part of our daily lives. According to ITU, there are now more than 7.3 billion mobile subscribers worldwide, all of whom use mobile phones as the primary way to communicate with one another. Mobile technologies bring about step change in the cost or access to products or services such as education, health, and banking etc. With rapid technological leaps in mobile networks, the quality of services that can be enjoyed have improved – texting friends, browsing for news, using a variety of apps and so on. This improvement in services has coincided with prevalence of smartphone technology, which allows users to access internet services through their mobile devices.

As mobile services have become increasingly diffused and adopted worldwide, innovative business models have emerged that make it possible to provide mobile services, especially in emerging markets where there are more mobile than fixed telecommunications subscribers. Although no formal definition exists, emerging markets are generally classified based on factors such as sustained growth, low-middle income, and unstable political environments etc. Emerging markets of Sub-Saharan Africa (SSA), in particular, have been at the forefront of innovative mobile services such as financial and health services. Persistent challenges in extending mobile services and infrastructure economically in these markets increase the need to adapt to local markets' institutional and economic features.

The mobile telecoms industry is characterized by complex drivers of change and innovative business models (Fransman, 2001; Al-Debei et al, 2015). The industry has undergone a radical transformation in recent years, particularly the growing trend in which many communication services are now provided by non-MNO entrants (Maher et al, 2016). This creates new opportunities and challenges for MNOs and others alike. For instance, mobile network operators are faced with a decision about whether they should focus solely on infrastructure or seek to move into provision of services themselves. These transformations are questioning the business models of participants in the industry. Haggege et al. (2017) state that companies that

want to be successful in dynamic business environments must fundamentally examine their business model on a regular basis and alter its components when necessary.

Despite recent advances in business model innovation research, there remains several relatively unexplored or less understood areas, including knowledge about forms of business model innovation and their drivers, and how inter-organizational relationships shape business model innovation. To explore these issues, a review of the extant literature in business model innovation and inter-organizational relationships is conducted. In addition, the literature on inclusive business model innovation is examined as it bears relevance for understanding the forms and drivers of BMI in Sub-Saharan Africa context. Essential research gaps are identified, which frame the contributions of the study. The study adopts three case studies to illustrate the business model innovation forms and drivers, as well as inter-organizational relationships characterizing the mobile telecoms industry in Sub-Saharan Africa.

1.2 Rationale for the Research

This doctoral research responds to recent calls for further academic studies to examine how firms adapt their business models in response to environmental changes, opportunities and threats (Ramdani et al., 2019). The innovation of business models is less well understood than other traditional types of innovation (Clauss, 2017). Several authors have stated that studies about business model innovation usually focus on some elements or aspects of the business model without building upon other streams of research on the subject (Goethals, 2009; Foss & Saebi, 2017). Thus, the BMI literature has progressed along several different dimensions, emerging in a disparate, fragmented fashion (DaSilva and Trkman, 2014; Clauss, 2017).

When one considers the subject of what forms business model innovation might occur in an incumbent organization, there is not a consensus in the literature. For instance, while several studies point to changes in the structure of a firm's current business model (e.g., Amit & Zott, 2012; Santos et al., 2009), there is little agreement regarding what degree of innovation constitutes a BMI. Therefore, it is pertinent to ask if a business model innovation is inherently radical, removing itself from the status quo (Comes & Berniker, 2008; Schneider & Spieth, 2013) or if can also be incremental (Demil & Lecocq, 2010). Other conceptualizations describe BMI as the complete replacement of an existing business model with a new one (e.g., Mitchell & Coles, 2003). Yet, it is also controversial how many components of the BM need to change

– previous prescriptions in the literature range from one (Taran et al., 2015) to multiple (Gassmann et al., 2014), or the entire architecture linking different components (Teece, 2010).

Based on the foregoing, some scholars propose classifications of BMI which distinguish between the degrees of business model changes in organizations (Cavalcante et al., 2011; Mitchell & Coles, 2003; Foss & Saebi, 2017; Schaltegger et al., 2012). Most of these classifications of different types of business model change are based on the process view, which allows conceptualizing business model in terms of an ‘organizational form’ or mental model of change. For example, in Mitchell & Coles (2003), “business model catch-up” is seen as merely matching the competitors’ offerings while Cavalcante et al.’s (2001) conceptualisation of “business model extension” and “business model revision” refers to adding new processes and changing existing processes respectively. Thus, as these classifications do not provide for architectural dimensions of the BM, they are mostly applicable to describe changes occurring within BM components, but less useful as a framework to classify overall BM changes in organizations.

Foss & Saebi (2017) adopted a slightly different approach with their multi-level framework comprising the scope and novelty dimensions of business model innovation. Their approach to novelty is based on the “new to the firm or industry” classification, which is different from the radical vs incremental differentiation that is commonly distinguished in the established innovation literature and that enables examination of both unique changes and more general business model innovations occurring within individual elements and across the business model. This highlights the need to analyse business model innovation in terms of radicality of the innovation.

From the perspective of business model innovation, the resources and competencies needed to achieve complex changes extend beyond a focal firm’s boundary (Amit & Zott, 2001). Firms leverage external relationships and acquire relevant knowledge crucial to business model innovation. This places particular attention to the role of inter-organizational relationships in business model innovation, an area that has received limited attention in the literature. Approaching the subject of inter-organizational relationships from the value chain perspective will contribute fresh insights to the nature of interrelationships and their role in business model innovation.

The context of emerging markets, and by extension Sub-Saharan Africa, provides relevant perspectives for understanding business model innovation. While extant BMI research has mostly focused on advanced countries context (Mihalache & Volberda, 2021), emerging markets offer potential avenues for studying business model innovation forms and drivers, as their unique customer and institutional environment affects the type of opportunities and resources available for business model innovation. Specifically, emerging economies, particularly in Sub-Saharan Africa, are characterized by low incomes, resource constraints, poor infrastructure, and underdeveloped regulatory quality (Rivera-Santos et al., 2015). In comparison, consumers in advanced economies have more dispensable incomes, firms have resource advantages, and the regulatory environments are more developed (Mihalache & Volberda, 2021). These differences are particularly significant in the telecommunications industry in Sub-Saharan Africa, where underdeveloped regulation and the lack of adequate investments in infrastructure impede growth (Skouby & Williams, 2014). This has implications for business model innovation.

Studies examining innovation in less advanced countries typically stress that such contexts require business model that differs from those in developed economies. For example, scholars emphasize the imperative of innovation for entering emerging markets and focus on how companies can create value in such contexts (Sanchez & Ricart, 2010). Other studies have tended to focus on “firms and catching up” in which the body of work explores innovation strategies of domestic firms or the diffusion of innovation, Hence, firms must adapt their business models and practices (Winterhalter et al., 2017) and develop new strategies and capabilities (London & Hart, 2004) as a way to succeed in the challenging contexts of emerging markets.

Another interesting stream of research on innovation in emerging markets examines innovation under constraints (which may be financial, technological, knowledge or material in nature) (Radjou & Prabhu, 2015; Winterhalter et al., 2017). These studies are associated with themes such as how to do away with constraints or how to minimize their negative effects on innovation (Lampel et al., 2014). Although these themes are generally helpful, they may overshadow a perspective in which constraints could enable rather than impede innovation. Moreover, as Gibbert et al. (2014) have pointed out, constraints do not in and of themselves constitute sufficient enablers for innovation; otherwise, those with the least resources would consistently be the most innovative. The subsisting question, therefore, is to understand what conditions or factors that combine to enable or shape innovation in resource-constrained and

low-income markets, since constraints alone are insufficient to bring about more lasting innovation benefits. Furthermore, studies that have seen constraints as enablers have usually been studied from the perspective of the consumer, i.e., in the context of poverty and how to innovate to serve such low-income consumers. Thus, there has been little recourse to macro-institutional factors or the set of firm interactions that influence business model innovation (Lema et al., 2021). As a result, not much is known regarding the nature of business models in this context and the underlying factors and interactions that explain the degree of business model innovation in emerging markets.

For these reasons, approaching the subject of business model innovation from the perspective of Sub-Saharan African emerging markets will contribute fresh insights into specifics of less examined drivers, especially those residing at the national level or relating to the characteristics of the market. Moreover, the study will benefit from applying accepted BMI frameworks in SSA complex environment, providing insights into the forms of innovation in this context as they raise questions around innovative business models for inclusion.

1.3 Research Aims and Objectives

This study is framed to be exploratory, rather than confirmatory. The study aims to examine how firms in the SSA mobile telecom industry adapt their business models for delivering mobile services. Thus, the study applies BMI novelty and scope framework to derive insights into the forms of business model innovation in this context. Next to the critical issues of how firms innovate their business models in response to environmental changes, the study also aims to identify and analyse the inter-organizational relationships that characterize the mobile telecom value chain in Ghana and Nigeria, and how they shape business model innovation. More specifically, the study seeks to answer the following research questions:

- What are the forms of business model innovation among actors in the Sub-Saharan African mobile telecommunications value chain?
- What are the key drivers of business model innovation among actors in the Sub-Saharan African mobile telecommunications value chain?
- How do inter-organizational relationships shape business model innovation in the Sub-Saharan Africa telecom value chain?

1.4 Contributions of Study

Although scholars recognize the importance of approaching BMI in terms of scope and/or novelty of changes, existing studies have for the most part tended to characterize one of the two aspects and not the other (Cavalcante et al., 2011, Markides, 2006) (however, see Foss & Saebi, 2017 for exception). Such conceptualizations do not adequately capture the complexities that BMI entail and, as a result, fully understanding and characterizing BMI forms in organizations is problematic. This PhD study contributes to the BMI literature by applying the scope and novelty framework to gain insights into forms of BMI in the Ghanaian and Nigerian mobile telecom industries. It further operationalizes the concept of business model innovation as complex systems that differ in terms of scope and novelty. By applying this framework, the study differentiates between radical and incremental innovation, thereby accounting for specific changes occurring within individual components of the BM and, more generally, across the business model (see sections 6.2.2, 6.3.2, and 6.4.2).

This study also contributes to current understanding of BMI and their drivers in emerging markets. So far, the investigated drivers and barriers to business model innovation are still rather heterogeneous. This study adopts a multi-level perspective for assessing BMI drivers (consisting of macro-, industry-, and firm-levels), which allows to shed more conceptual clarity into the business model innovation drivers in emerging markets, including socio-economic conditions of consumers. At the meso-level, the study contextualizes known drivers of business model innovation to inter-organizational relationships, showing how differential access to resources and context-related factors in emerging markets shape BMI. This is important particularly in low-income economies where little attention has been paid to understanding innovation-related interactions and how they influence knowledge and value creation (Kraemer-Mbula & Wamae, 2010).

1.5 A Guide to the Thesis

This doctoral thesis is built around ten chapters:

Chapter 1 presents the general background and rationale for the study. It also highlights the research aims and objectives. These are then spelt out specifically in terms of the three research questions examined in the study.

Chapter 2, literature review, provides insights into the extant research and theoretical elements underpinning the study. Three fields of literature are explored: (i) the business model and business model innovation literature; this includes exploration of the drivers of BMI as well as theoretical themes that are crucial to the theoretical understanding of the phenomenon, (ii) inter-organizational relationships literature, (iii) business model innovation for inclusion, which bears relevance when looking at the context of emerging markets. This chapter also presents the identified gaps that warrant investigation in this study.

Chapter 3 examines the evolution of the mobile telecom industry, with a focus on Sub-Saharan Africa. It also presents a justification for the selection of Nigeria and Ghana as study contexts.

Chapter 4, research methodology, discusses the research paradigm within which this study is positioned. Within a multiple case study research framework, the chapter presents the mixed methods approach for primary data collection and analysis. The mixed methods design consists of semi-structured interviews and questionnaires based on a purposive sample of industry and policy respondents in the Ghanaian and Nigerian mobile telecom industries. The chapter also discusses important issues around validity of the research design and highlights critical challenges encountered in the data collection process.

Chapter 5 presents the results of the study by combining thematic template analysis of interviews with descriptive statistics of the questionnaire data. The two sets of results are analyzed separately and then integrated in a parallel mixed analysis to enable interpretation at the three discussion chapters that follow.

Chapter 6, the first discussion chapter, focuses on the forms of BMI among actors in the Ghanaian and Nigerian mobile telecom value chain (research question one). It applies the BMI scope and novelty framework to gain insights into the forms of BMI that are prevalent in the context.

Chapter 7 answers the second research question, analysing the drivers of BMI in the mobile telecom industry in Ghana and Nigeria. The analysis is done based on a three-level framework consisting macro-level, industry-level, and firm-level factors. The chapter concludes by identifying the most common factors influencing BM changes for each of the three groups of value chain actors in this study.

Chapter 8 deals with the third research question. It analyses the interrelationships among business actors in the telecom value chain. The chapter further analyses the nature of these interrelationships, the factors that shape them, and how these factors influence business model innovation.

Chapter 9 is about theoretical contributions of the study. In this chapter, analysis is made and conclusions are drawn about how the study adds to existing body of academic knowledge.

Chapter 10 concludes the study with an overall reflection on the research process and findings. It also identifies the study's implications for management practice and policy. Furthermore, limitations of the study are identified, and future research directions are suggested to guide further development of the relevant research areas.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction to the literature review

The previous chapter introduced the research objectives. This leads to identification of key areas for further exploration, in order to realize the research objectives. This chapter starts with an overview of the literature surrounding business model and its components. Thereafter, the main subject of BMI is explored. This literature is used to understand theoretical viewpoints on BMI, including dimensionalisation of the construct. Also explored are the external and firm-level factors which influence BM changes in organizations. Thereafter, the chapter explores the literature surrounding BMI in inter-organizational contexts, with focus on how the value chain framework explains the nature of interrelationships. In the section following that, existing literature on inclusive business models are reviewed to understand the various approaches to the concept and the factors shaping BMI for inclusion. Finally, an attempt is made at synthesizing the theory base of the research and research gaps are identified.

2.2 Defining the Business Model

The notion of value is central to the business model. Scholars in the field agree that the business model describes the essence of how a company does business, namely creating and capturing value. This is important, given that organizations' viability is tied both to their value creation and their ability to capture value and derive profit (Shafer et al., 2005).

Chesbrough & Rosenbloom (2002) looks at the BM from the perspective of technology innovation. According to them, the business model mediates technology development and creation of financial value and acts as an enabling tool for commercializing an innovation. Thus, they define the BM as “a coherent framework that takes technological characteristics and potentials as inputs and converts them through customers and markets into economic outputs” (p. 532).

Zott & Amit (2010) “define a business model as a system of interconnected and interdependent activities that enables the firm, in concert with its partners, to create value and also to appropriate a share of that value”. In other words, the authors depicted a business model as a bundle of specific activities (which they call an activity system).

Taking a less normative perspective, Casadesus-Masanell & Ricart (2010, p. 195) define business model “as the logic of the firm, the way it operates and how it creates value for its stakeholders”. They suggested that every business model is composed of (a) the concrete choices made by management, and (b) the consequences of these choices. Implicitly, the authors imply that every organization has a BM, since they all make some choices. Similarly, Magretta (2002) define BM simply as ‘stories that explain how enterprises work’. She draws on Drucker and considers that every BM must address the following questions: Who is the customer and what does the customer value? What is the underlying logic that explains how the business can deliver value to customers at an appropriate cost? And how do we make money in this business? This implies that the whole idea of a business is to identify a set of customers, create value for these customers, and capture some of the value created in return.

Osterwalder & Pigneur (2010) and Teece (2010) include the ‘value delivery’ aspect in their definition. According to Osterwalder & Pigneur (2010, p. 14), the BM describes “the rationale of how an organization creates, delivers, and captures value”. Similarly, Teece (2010, p. 172) define business model as the description of the “design or architecture of the value creation, delivery, and capture mechanisms [a firm] employs”. The notion of architecture is important because it entails that business model is not just a specification of core elements, but also interrelation among the various BM components.

From the different perspectives above, some scholars conceptualize the business model (as a unit of analysis) as firm-centric (e.g., Teece, 2010; Casadesus Masanell & Ricart, 2010; Magretta, 2002) and others frame it closer to a network (e.g., Amit & Zott, 2001; Zott & Amit, 2010; Chesbrough & Rosenbloom, 2002). For instance, coming from the lens of e-businesses, Amit & Zott (2001) view the business model as an extension of a strategic network, which implies that the business model (as a unit of analysis) goes beyond the boundaries of an individual firm.

2.2.1 Business Model Components

Baden-Fuller & Morgan (2010) describes business models in terms of *recipes*, which consist of ingredients or, in business model parlance, a variety of strategic elements – resources, capabilities, products, technologies, markets etc. The role of the BM therefore, when conceived as a recipe, is to draw the ingredients together and ‘cook’ them – that is, integrate the strategic elements and combine them in ways through which firms may be successful.

The review of the literature shows that there is consensus regarding the essence of the business model, namely integrating and combining the ingredients, i.e., the strategic elements of the business model in such a way as to create and capture value for the firm. There is however a variety of interpretations regarding what ingredients (i.e., the elements or components) that make up a business model.

Magretta (2002) considers that every business model must address the following questions: Who is the customer and what does the customer value? What is the underlying logic that explains how the business can deliver value to customers at an appropriate cost? And how do we make money in this business? Therefore, while not explicitly stated, Magretta's BM components sums up to five: customer, value proposition, value delivery mechanism, cost structure, and revenue stream.

Chesbrough & Rosenbloom (2002) highlight six components, namely market segment, value proposition, structure of resources and the value chain, cost structure and profit potential of the offering, firm position within the value network, and competitive strategy by which the innovating firm will hold advantage over competition.

For Osterwalder & Pigneur (2010), there are nine building blocks that describe the functions of a business model: customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. These building blocks - or 'the Business Model Canvas' have emerged as a popular resource for practitioners to design viable BMs that fit in with their strategic objectives.

Other authors have provided broader conceptualizations of the components of a business model. These include Timmers (1998), who claim BM comprise a value chain, value proposition, and revenue model. Similarly, Amit & Zott (2001; 2012) highlighted three components or design elements: content, structure, and governance of activities. Business model *content* refers to the products or services delivered and the resources that enable the service delivery; *structure* encompasses the linkages between organizations involved in value creation and delivery. Finally, *governance* refers to relationships among actors involved in value creation and how these relationships are controlled.

Another group of authors include the strategic element into their conceptualization of the BM (e.g., Shafer et al., 2005, Morris et al, 2005, Casadesus-Masanell & Ricart, 2010; Alt & Zimmerman, 2001). For instance, Shafer et al. (2005) propose that BM elements can be

classified into four categories: strategic choices, value network, creating value, and capturing value. Casadesus-Masanell & Ricart (2010) argue that business model contains a set of *choices* that organizations make and *consequences* that follow those choices. Alt & Zimmerman (2001) distinguish between six generic elements: (1) *Mission*, which includes the strategic objectives and the value proposition; (2) *Structure*, which relates to the role actors play within the value network, as well as the market, customers, and products; (3) *Process*, which shows the elements of the value creation process; (4) *Revenues*; (5) Legal issues; and (6) technology.

Table 1: Overview of selected business model definitions and components

Authors	Definition of Business Model	Business Model Elements	No of elements	Area
Amit & Zott (2001: p 511)	“A business model depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities”	Transaction content, transaction structure, transaction governance	3	E-Business
Amit & Zott (2012: p. 42)	“...a bundle of specific activities — an activity system — conducted to satisfy the perceived needs of the market, along with the specification of which parties (a company or its partners) conduct which activities, and how these activities are linked to each other”	Content of activity-system, structure of activity-system, and governance of activity-system	3	Strategy
Baden-Fuller & Morgan, 2010, p. 166)	“...business models function as the recipe that draw the element together and ‘cook’ them – arrange and combine them in ways (old and new) through which firms may be successful or not”	Resources, capabilities, products, customers, technologies, markets	6	Strategy
Casadesus-Masanell & Ricart (2010)	“Business Model refers to the logic of the firm, the way it operates and how it creates value for its stakeholders”	Choices and consequences	2	Strategy
Chesbrough & Rosenbloom (2002: p 532)	“The business model provides a coherent framework that takes technological characteristics and potentials as inputs and converts them through customers and markets into economic outputs”.	Market, value proposition, value chain, cost and profit, value network, competitive strategy	6	Technology and Innovation
Chesbrough (2007: p. 12)	“At its heart, a business model performs two important functions: value creation and value capture”.	Value Proposition, market, value chain, revenue mechanisms, value network or ecosystems, competitive strategy	6	Technology & Innovation
Magretta (2002: 4)	“Business models are stories that explain how enterprises work”	Customer, value proposition (story), delivery mechanism, cost, revenue stream	5	Strategy
Osterwalder & Pigneur (2010: p. 14)	“A business model describes the rationale of how an organization creates, delivers, and captures value”	Value proposition, customer, channels, relationships, revenue streams, resources, activities, partnerships, costs	9	Strategy & Innovation
Teece (2010: p. 172)	“Business model ... describes the design or architecture of the value creation, delivery, and capture mechanisms [a firm] employs”	Market segment, revenue stream, value capture mechanism, embedded technology, customer value proposition	5	Strategy and Innovation
Shafer et al (2005: p. 202)	“We define a business model as a representation of a firm’s underlying core logic and strategic choices for creating and capturing value within a value network”	Strategic choices, value network, resources/processes, profit-cost equation	4	Strategy
Timmers (1998: p. 4)	Business models are “architecture for the product, service and information flows, including a description of the various business actors and their roles; a description of the potential benefits for the various business actors; and a description of the sources of revenues”	Value chain, value proposition, revenue model	3	E-Business

2.2.2. Business Model Taxonomies

Business model taxonomies is concerned with classifying business models to aid understanding. There have been various classifications, which have emerged along different trajectories, including types (Chesbrough, 2007), patterns or archetypes (Gassmann et al., 2014; Osterwalder & Pigneur, 2010), and other classifications (Sanchez & Ricart, 2010, Palo & Tähtinen, 2013).

Chesbrough (2007) identified six types of BM, which they label as Type 1, Type 2, ...Type 6. *Type 1* or undifferentiated BM are operated by firms (e.g., restaurants) that do not articulate a distinct business model and who compete only on price and sell commodities in ways that are no different from many others. A *Type 2* BM has some differentiation. *Type 3* or segmented BM are operated by firms that can serve more markets and extract profits from them but remains vulnerable to major technical shifts beyond the scope of current activities. *Type 4* (or externally aware BM) are those in which firms start to open themselves to external ideas and technologies. *Type 5* or integrative BM are those in which suppliers and customers enjoy formalized institutional access to the firm's innovation process, and this access is reciprocated by the suppliers and customers. Lastly, *Type 6* (or Adaptive BM) are more open and adaptive than types 4 or 5 and allow key suppliers and customers to become business partners, entering relationships where risks may be shared.

Gassmann et al. (2014) and Osterwalder & Pigneur (2010) identify a set of business model *patterns* which creates a pattern of reoccurring successful solutions as blueprint for BMI. Weking et al (2020) developed a hierarchical level classification of the different BM patterns identified in the literature. These classifications include (i) BM patterns that specify revenue streams (e.g., advertising, franchising), (ii) those that specify the value network (e.g., orchestrator, integrator), (iii) those specifying value proposition (e.g., mass customization), (iv) those that specify value proposition development e.g., crowdsourcing, open business models), (v) BM patterns specifying payment and pricing models (e.g., subscription, freemium, robin hood), (vi) those that specify customer groups (e.g., target the poor, long tail), (vii) some specify patterns of multi-sided platforms (e.g., affiliation, agent), (viii) others specify business models of merchant models (e.g., e-commerce, direct selling). Table 2 below shows some common BMI patters highlighted by Gassmann et al (2014).

Table 2: Selected BM Patterns

BMI Patterns	Description
Integrator	Commanding the value chain such that there is reduced dependency on suppliers
Lock-in	Forcing loyalty with high switching costs
Crowdsourcing	Outsourcing to the crowd
Subscription	Allows customers to receive services regularly
Target the poor	Specifically addresses the needs of low-income people
No frills	Offering value propositions of which all non-essential features are removed to offer low prices
Mass customization	Customizing products through mass production
Open Business	Leveraging collaboration in value creation
Revenue sharing	Companies jointly create a value proposition and share revenue
Reverse engineering	Taking lessons from competitors

BM patterns are especially useful for describing business models in terms of their characteristics and are valuable for guiding managerial invention and design of new business models (Ostwerwalder et al., 2010). Moreover, they can create insights or reoccurring successful solutions that serve as blueprint for BMI. However, as Weking et al. (2020) noted, their potential for understanding BMI is limited because existing business model patterns face constraints relating to the high diversity among patterns and the literature does not consider relations among the various BM patterns.

A stream of BM research suggests a taxonomy of business model based on the manner of firm's interaction with ecosystem. For example, one of the common ways in which scholars have identified forms of BM is by distinguishing between firm-centric and network-centric BMs (Sanchez & Ricart, 2010; Bankvall et al, 2016). In firm-level business models, actors interact through their business models, while in network-level actors plan and conduct business with a collaborative business model (Palo & Tähtinen, 2013). Proponents of the network view argue that sources of value creation lie in network of firms (Amit & Zott, 2001; Chesbrough & Schwartz, 2007; Dahan et al., 2010; Bouwman et al., 2008). Dahan et al (2010), for instance, applied the business model to examine cross-sector alliances between corporate firms and NGOs. They argued that cross-sectoral and multi-organizational partnerships, which co-imagines and co-creates business models are some of the most innovative developments.

Although both firm-centric and network-centric BMs involve some form of interrelations with other organizations; in firm-centric models a focal firm's emphasis will be on coordinating the value activities. On the other hand, network-centric models increase the complementarities between a firm's core competencies with those from the ecosystem and is relevant when

individual firms are unable to govern all relevant resources and activities (Sanchez & Ricart, 2010; Palo & Tähtinen, 2013).

Table 3: Firm-centric and network-centric business models

	Firm-Level / Relationship Analysis	Network-level Analysis
Firm-centric BMI	Value proposition and exploitation considers an individual focal firm	Firm's relationship with suppliers, customers, and other external actors
Network-centric BMI	The role and position of a specific firm within a network	Value network configuration to create and deliver a common value proposition

Based on Bankvall et al (2016)

Sanchez & Ricart (2010) contribute prominently to understanding firm-centric and network-centric forms of BMI. Focusing on low-income markets, they identified two types of BMs based on their interaction with the ecosystem: (i) isolated business models, which leverages the firm's own resources and capabilities for seeking efficiency, and (ii) interactive business models, which are characterized by an exploration strategy and leverages on right combination of firm resources and capabilities with external resources.

2.2.3. Distinguishing between Strategy and the Business Model

The notion of business model as the “logic of the firm, the way it operates and how it creates value for its stakeholders” is similar to strategy. However, there are distinctions between both (Morris et al., 2005). Magretta (2002) and Teece (2010) factored one important element as the locus of differentiation: competition. Magretta considers that while business models describe how the elements of a business fit together, they don't factor in competition; a reality that is dealt with by strategy. For Teece (2010), developing a good business model is insufficient in and of itself to assure competitive advantage. Thus, coupling strategy analysis with BM analysis is necessary to protect whatever competitive advantage that results from the implementation of business models. Also, DaSilva & Trkman (2014) argue that without a clear strategy ready to modify an existing BM, any competitive advantage gained may soon be eroded.

Several scholars consider that business model and strategy complement each other. Al-Debei & Avison (2010) for instance, argue that the BM is an intermediate term between strategy and the entire firm's business processes. It sustains corporate strategy and consists of information helpful in translating strategic objectives into implementation tasks (Al-Debei & Avison, 2010). Similarly, Casadesus-Masanell & Ricart (2010) refer to strategy as a higher-order

decision about what business model through which a firm can compete in the marketplace. They defined strategy as “the contingent plan as to what business model to use” (p. 203). DaSilva & Trkman (2014) build on Casadesus-Masanell & Ricart (2010), arguing that strategy shapes the development of capabilities that helps to alter current business models in the future. Thus, DaSilva & Trkman (2014: p. 5) argue that strategy is a long-term perspective, “which sets up dynamic capabilities (a medium-term perspective), which then constrains possible business models (present or short-term perspective) to face either upcoming or existing contingencies”. By implication, business models are a description of a firm’s present state, while strategy reflects the company’s planned future state.

The question arises that if a BM is an outcome of the firm’s strategy, why is it necessary to distinguish both terms? Casadesus-Masanell & Ricart (2010) help to provide answers - they acknowledge that there is little to be gained from distinguishing between both terms when there is a one-to-one mapping from strategy onto business models or when there are no contingencies to base the choice of business model. However, there is a need to distinguish both terms “when the firm’s plan of action calls for modifications to the business model...when particular contingencies take place” (p. 205).

2.3. Theoretical Underpinnings to Business Model Innovation

The innovation of business models is seen as a new source of innovation that complements traditional product and process innovation (Zott et al., 2011). It is however, less well understood than the other types of innovation. Due to its widespread relevance across different lenses and academic fields, the case has been made for a cross theoretical perspective on the business model concept, as no single theory can fully explain the value creation potential of any organization (Amit & Zott, 2001; DaSilva & Trkman, 2014). Amit & Zott (2001) argued that the BM construct is anchored in at least five different perspectives: theory of innovation, the value chain, the resource-based view, strategic network theory, and transaction cost perspective. This section takes stock of a range of different economic and management perspectives that the BMI construct is theoretically anchored on.

2.3.1 *The Process and Nature of Innovation*

Joseph Schumpeter, one of the pioneers of innovation studies, argued that entrepreneurs engage in technological innovation (i.e., a new product/service or a new process for making products/services) to achieve competitive advantage and high ‘monopoly profits.’ This leads

to imitation and repetition of the cycle, which Schumpeter calls a process of ‘creative destruction’, as other entrepreneurs incessantly try to imitate successive product and process innovations. The emergence of online businesses has had similar effects (Timmers, 1998) as new ventures and established companies alike are exploiting the opportunities the internet provides.

Schumpeter (1934) identifies five types of innovation: new products; new methods of production; exploitation of new markets; new ways to organize business; and new sources of inputs. Writing decades later, Tidd & Bessant (2005) highlight four types of innovation: product innovation, process innovation, position innovation (changes in the context in which products/services are introduced), and paradigm innovation. Sometimes the dividing line among the types of innovation are blurred; however, both studies recognize BMI – “new ways to organize business” in Schumpeter’s conceptualization and Tidd & Bessant’s “paradigm innovation” refer to changes in the underlying business models which frame what the organization does.

Bogers & West (2012) identifies two kinds of models for categorizing organizational processes for generating, developing, and diffusing innovations. These are integrated models of industrial innovation (vertically integrated model) and distributed model of innovation. These two models are used to describe innovations in terms of their characteristics, complexity, as well as the nature and sources of resources required to carry out the innovation. Proponents of integrated models of industrial innovation (e.g., Chandler, 1990) identified how firms develop technological innovations and then commercialize these innovations through an internal process of R&D, production, and distribution. On the other hand, distributed models of innovation point to the need for innovations that rely on multiple sources of knowledge not controlled by a single firm and promote an external search for sources of innovation (Chesbrough, 2007; Bogers & West, 2012). Thus, the importance of examining the external environment within which a firm is positioned comes to the fore.

Another central theme in innovation relates to the speed and degree of innovation. The distinction between improving an existing product or process and introducing a new concept that departs significantly from existing designs is a central notion in the innovation literature (Tushman & Anderson, 1986; Christensen, 1997). Thus, scholars differentiate between incremental and radical innovation. Incremental innovation introduces relatively minor changes to the existing product and exploits the potential of the established design (Benner &

Tushman, 2003). In contrast, radical innovation is characterized by high degree of novelty, opening potential new applications, and may be associated with whole new markets (Markides, 2006). Lettl et al (2004) define radical innovation as involving creation of new markets or shift in existing market structures, provision of a new and/or higher customer benefit, incorporation of new and complex technologies, as well as introduction of organizational changes and infrastructures on side of the firm. Thus, while the pace of innovation is one consideration, another relates to the effect of the innovation, namely, whether the change is sustaining or disruptive. Sustaining innovation does not significantly affect existing markets, but disruptive innovation tends to create a new market and displace established firms and/or products (Christensen, 1997).

The foregoing reflects an enduring theme on the role of incumbent and new entrant firms, and their approach to innovation: does radical or disruptive innovation come from new entrants, or can it originate from established firms? Henderson & Clark (1990) state that radical innovation often creates great difficulties for established firms and can be the basis for the successful entry of new firms or even the redefinition of an industry. Similarly, Bower & Christenson (1995) argue that incumbent firms often suffer from poor performance in markets characterised by rapid technological developments that don't initially meet the needs of mainstream customers. Moreover, incumbent firms shy away from disruptive innovation because they are not profitable enough at first and their development can take scarce resources away from what is needed to compete against current competition (Christensen, 1997).

Henderson & Clark (1990) demonstrate that the traditional categorization of innovation as either incremental or radical is incomplete as it does not account for the effects of seemingly minor improvements in technological products on industry incumbents. They introduce the notion of architectural innovation, i.e., innovations that change the architecture of a product without changing its components, to account for technical innovations that involve apparently modest changes to the existing technology but that have quite dramatic competitive consequences.

Innovation and the business model

To profit from innovation, companies need to excel not just at product or technological innovation, but also business model innovation (Teece, 2010). According to this view, business models are useful for commercialising innovations as they allow firms to create customer value while capturing the associated revenues. Therefore, Chesbrough & Rosenbloom (2002) make

the link between the technical potential of innovation and the economic potential of the business, with the business model mediating between both. However, although business models mediate between technological/product innovations and a company's economic potential, Harper (2015) notes that new technologies may require "innovative business models", but equally they may not. In other words, technological innovation can sometimes occur within BMs that remain the same. The question of what "business model innovation" entails is explored in section 2.4.

Traditionally, BM scholars agree that BMI has a positive impact on new product development performance (Teece, 2010; Chesbrough, 2007). Along this line, Ferreras-Mendez et al (2021) argue that BMI can further make visible the successes recorded from product innovation, for example, innovative business models can provide advantages to the customer such as novel distribution solutions. Teece (2010) supports this view by stating that businesses can achieve success by complementing product innovation with business model innovation. Also, Chesbrough (2007) argue that in many circumstances, customers may be reluctant to buy products (because of price, limited availability, or delivery or service issues), but an innovative business model can help to offset those challenges.

Several scholars agree that BMI do not necessarily require the development of new products and services (Girotra & Netessine, 2014; Geissdoefer et al., 2018). However, some scholars suggest, explicitly or implicitly, that BMI either includes the development of innovative products or services or is a necessary vehicle to accompany new product development (Magretta, 2002; Johnson et al., 2008). Therefore, BMI is when a 'paradigm shift' occurs that go beyond transformation at the level of activities or when a company introduces entirely new business models. For example, Johnson et al (2008: p. 65) stated that there's really no point in instituting a new business model unless it's not only new to the company but in some way new or game-changing to the industry or market.

Beyond helping to commercialize new product innovations, BMI is seen as necessary for developing new products in a case of corporate diversification (Geissdoefer et al., 2018). Similarly, Johnson et al (2008) highlight instances when creating new products requires not only venturing into unknown market territory but also into new business models. These instances include 1.) the opportunity to address needs of a group of potential customers that are unserved or underserved because existing solutions are too expensive or complicated for them, 2.) The opportunity to capitalize on a brand-new technology. 3.) The need to fend off disrupters,

and 4.) The need to respond to competitive shifts. In sum, firms usually begin with product or technology innovations, but as many scholars have suggested, true transformation requires complementing new technology with an appropriate business model.

The important point to note is that the business model is a locus of innovation. It can therefore be a source of value creation for the firm and its suppliers, partners, and customers, and a source of competitive advantage (Mitchell & Coles, 2003; Amit & Zott, 2001).

2.3.2 Value Creation and Value Capture

In the introductory section to business model (p. 6), the notion of ‘value’ was highlighted as central to the business model. Therefore, creating value for the customer and capturing a share of the value is a critical part of every organization (Teece, 2010). According to Priem (2007), value creation involves innovation that establishes or increases the consumer's valuation of the benefit of consumption. On the other hand, value capture focuses the firm's attention on getting the biggest possible cut of the pie.

The value capture theory is seen as a broad approach in strategic management aimed at understanding competitive advantage and heterogeneity in firm performance - a central objective in the field of strategy (Adegbesan & Higgins, 2011). It deals with issues around resource constraints, internal organizational considerations, and competitive pressures (Gans & Ryall, 2016). The traditional strategy wisdom emphasizes the role of competition in determining value capture. For example, authors (e.g., Makowski & Ostroy, 1995) show, mathematically, that competition for an agent pushes up a firm's “willingness-to-sell” to the market, while competition against it drives down the market's “willingness-to-pay” for the agent's involvement in value creation, thereby having impacts on value capture. Researchers investigate several complex notions of “competitive intensity,” which is not the aim of this study. The important thing to note is that under the traditional view, given the right circumstances, high competitive intensity guarantees appropriation of a positive share of value (Makowski & Ostroy, 1995).

When competition is not so intense, as is often the case, Ryall (2013) highlights the control of superior “persuasive resources” as the key to value capture. As Gans & Ryall (2016, p. 23) state “the value capture model shifts away from products and prices toward agents, the myriad value creation opportunities available to them, the value actually produced, and what it takes in terms of value capture to engage them in the associated productive activities.” Ryall (2013)

argue that firms can have the ability to capture value through superior bargaining skill, certain industry norms (such as the structure of a bidding process), or a decision to forward integrate to a point in the value chain where the firm has ‘persuasive advantages.’ Persuasive advantages can be influenced by several factors, including value chain frictions (Obloj & Zemsky, 2015) or resource advantages (Adegbesan, 2008). For instance, Adegbesan (2008) demonstrates that resource acquirers with greater complementarities are guaranteed greater value capture. Thus, the importance of persuasive capabilities especially has great implications in alliance or collaboration. Adegbesan & Higgins (2011, p. 188) show that the amount of value a firm can appropriate from an alliance depends on how scarce it and other firms of its type are, how much more valuable it is than other firms of its type, and how great its bargaining ability is, relative to its alliance partner.

While the value capture approach views value predominately from the internal perspective of the firm, value creation focuses on the consumer's perspective. The extant strategy and innovation literature focuses largely on value capture as the basis for explaining heterogenous firm performance (Moran & Ghoshal, 1996; Priem, 2007). According to Moran & Ghoshal (1996), value creation, rather than value capture, lies at the heart of effective firm strategies. Their argument is based on the premise that a firm is more likely to benefit from appropriable rents the higher the value it creates, as value creation inevitably leads to some of the value spilling over to other firms and to society. Moran & Ghoshal (1996, p. 45) therefore suggested that “... to be persistently successful, firms [should] focus their energies on the creation of new value, and, thereby, increase both their own and society's prosperity. Johannessen & Olsen (2010) argue for increasing the focus on innovation and value creation, especially in today's globalized knowledge economy.

Several authors in the strategy literature place emphasis on resources and its properties as the sources of value creation in firms (Barney, 1991; Wade & Hulland, 2004). While the logic of value creation includes the activities and processes that organizations undertake to produce and market the product or service (Winterhalter et al, 2017), this requires the use of resources. In other words, value creation requires the ability (or capabilities) to use resources to perform activities i.e., create, produce, and/or offer products to a market (Wade & Hulland, 2004) or deploying resources to tread previously unexplored value realization paths – ‘resource recombinations’ (Moran & Ghoshal, 1996). This places emphasis on resource-based view (*section 2.3.4*).

There are other generic firm-level drivers of value creation. Amit & Zott (2012) identified four ways in which firms can create value: novelty, lock-in, complementarities, and efficiencies. Fjeldstad & Snow (2018, p 2) argue “a firm creates value for customers and appropriates value by performing its activities efficiently and effectively. In the context of outcome business models (OBM), a form of BM that creates value in terms of specific outcomes, accountability is seen as a novel driver of value creation (Vsnjic et al., 2017). The search for new sources of value in the globalized knowledge economy has led to the popularity of new organizational logics such as inter-organizational relationships (Austin & Seitanidi, 2012), networks (Gulati et al., 2000), open innovation and co-creation (Chesbrough, 2007; Johannessen & Olsen, 2010), and servitization (Sjodin et al., 2020).

2.3.3 The Value Chain

The business model builds upon Porter’s value chain concept because of its emphasis on value creation (Amit & Zott, 2001). To design, market, and deliver products and services, every organization undertakes a collection of activities which interact in a systematic manner (Porter, 1985). The value chain was introduced as a tool for analysing how a collection of value activities contribute to creation of firm-specific competitive advantages. Porter also suggests that a firm’s value chain “is embedded in a larger stream of activities”, which he calls the value system.

Porter (1985) suggests the value chain can be a useful tool for performing analysis not only on firm-specific linkages, but also on inter-organizational relationships. To explain this point, Kaplinsky & Morris (2001) divides the value chain into two types: simple and extended. The ‘simple’ value chain represents the general view of value chains and focus on intra-link activities. In this view, Porter’s concept of the value chain is used to model the full range of activities which are required to bring a product or service from conception, through the different phases of production and delivery to final consumers. The simple value chain distinguishes between primary activities (inbound logistics, operations, outbound logistics, marketing and sales, and after-sales service) and support activities. The secondary activities help to improve the effectiveness of the primary activities and can be classified into four main types: procurement, technology development, human resource management and infrastructure (Porter, 1985). These discrete activities create value and determine a firm’s relative cost position, thereby contributing to competitive advantage (Stabell & Fjeldstad, 1998).

The 'extended' value chain is based on the reality that in the real world, value chains are much more complex than intra-firm descriptions, as there tends to be many more links in the chain than the simple value chain depicts (Kaplinsky & Morris, 2001). Kaplinsky & Morris (2001) emphasize the importance of inter-organizational relationships, drawing on Porter's notion of the value system. Accordingly, a firm has two options: "it may exploit the benefit of broader scope internally or it may form coalitions with other firms to do so" (Porter, 1985: 34). By its concentration on interlinkages, the value chain allows for an easy identification of the dynamic flow of economic, organisational, and coercive activities between producers within different sectors (Kaplinsky & Morris, 2001). Thus, Walters & Lancaster (2000; p. 162) define a value chain as a business system which not only creates value but realises the objectives of other member stakeholders, by identifying the mission of the organisation, its partners, and their value-adding contributions.

A number of important points emerge from the prescriptions of the value chain (Walters & Lancaster, 2000). First, the value chain emphasizes management of relationships between activities (or organizations) in the value chain. Second, based on the relationship management, firms should develop a value strategy that results in competitive advantage. Third, information plays a major role in evaluating the nature of opportunities offered and to coordinate activities towards successful implementation of the value strategy. A key strategic task is positioning a company in the right place in the value chain, identifying the right value-adding activities, selecting the right products and market segments, and reconfiguring roles and relationships (Kaplinsky & Morris, 2001).

2.3.4 The Resource-Based View (RBV)

The traditional view of strategy looks at the organization in terms of its resource position (Wernerfelt, 1984). This view suggests that firms may obtain advantages by exploiting their internal strengths (through responding to external opportunities), while avoiding internal weaknesses (Barney, 1991). Wernerfelt (1984) defines a firm's resources as the tangible and intangible assets which are tied to the firm, and include capital, machines, brand names, in-house knowledge, skilled personnel, efficient procedures etc. The idea of looking at firms in terms of resources goes back at least to the seminal work of Penrose (1959). In the Theory of the Growth of the Firm, Penrose described the firm as a bundle of human and non-human resources and suggested that the interaction of resources give rise to knowledge creation within firms.

From the strategic management field, the resource-based view (RBV) - which acknowledges the heterogeneity between firms by emphasizing their unique, rare, non-substitutable and inimitable resources (Barney, 1991; Wernerfelt, 1984) - has emerged as a popular theoretical lens for research on business models. This is because the BM is seen as a reflection of an organization's potential to mobilize and co-ordinate its resources (Morris et al., 2005). As competitive advantage emerges from superior execution of activities within a firm's internal value chain, superior coordination among those activities, or superior management of the interface between the firm and others in the value system (Porter, 1985), the RBV provides a consistent view to study the business model, as it addresses questions about value creation between a firm and its network of partner organizations (Morris et al., 2005).

The RBV recognizes that not all aspects of a firm's resources are strategically relevant (Barney, 1991). According to Wernerfelt (1984), strategically important resources are those attributes that enable a firm to implement strategies that improve its efficiency and effectiveness. Furthermore, strategic firm resources can be a source of sustained competitive advantage (Barney, 1991; Wade & Hulland, 2004). Hence, the basic premise of the RBV is that a firm will want to create a situation where its resource position directly or indirectly makes it more difficult for others to catch up, that is, gives it a sustainable competitive advantage (Wernerfelt, 1984).

The forgoing supports the central RBV assumptions that (1) firms can vary in their resources and capabilities, and (2) due to the nature of these resources and capabilities (e.g., path dependence and causal ambiguity), these differences can last over time as they create difficult to imitate conditions. These difficult to imitate conditions have been defined as VRIO framework, which states that firm resources that are valuable (V), rare (R), inimitable (I) and exploited by the organization (O) can be a source of sustained competitive advantage (Barney, 1991).

2.3.5 Other Theoretical Perspectives

DaSilva & Trkman (2014) argue that the RBV, while relevant, cannot on its own sufficiently explain the business model concept. They posit that the theoretical underpinning of the BM is rooted as well in transaction cost economics (Williamson, 1981) since it involves choices about firm boundaries. Zott & Amit (2010) state that the business model spans the boundaries of the focal firm; therefore, issues around transaction costs and boundary decisions become important

factors in value creation. Furthermore, resources per se do not generate value but through the transactions enabled with the use of resources (Barney, 1991).

Schneider & Spieth (2013) add another perspective with the dynamic capabilities view. The dynamic capabilities perspective extends the static nature of the resource-based view by emphasizing the need for firms to be capable of renewing themselves and applying new value creating strategies especially in volatile environments (Teece et al., 1997). Schneider & Spieth (2013) argued that this development of new ways in which firms combine resources and capabilities, resembles the core idea addressed in the concept of business model innovation.

Traditional strategy and innovation theories place strong emphasis on accumulating and controlling resources within a single firm (Drucker, 1990). However, the shift towards increasingly connected business environments places importance on the networked approach to business models. Strategic network theory is based on the notion that organizations have limitations in terms of resources they can possess internally and hence need to develop a range of external linkages to gain access to needed resources (Gulati et al., 2000).

2.4. Defining Business Model Innovation

Although the term *business model innovation (BMI)* was first explicitly used by Mitchell & Coles (2003), the notion of BMI has been implicitly highlighted several decades ago (Schumpeter, 1936; Drucker, 1954). Though not formally stated, implicit in Drucker's (1954) book *The Practice of Management*, is the idea of business model innovation. In analyzing how companies get into business, he cites an example of a publishing company that made a shift from sales focus to service focus: "This company underwent tremendous expansion with new sales continuing to rise year after year, until total business volume began to stagnate around 1949; and profits began actually to go down....what was needed was actually a complete shift in management's concept of the nature of the business from one of selling new customers to one of keeping old customers. This required a change in objectives and a shift in major effort from selling to the customer to servicing him" (Drucker, 1954, p.50). In essence, Drucker's example suggests that a firm can innovate its business model by targeting novel value creating opportunities and seeking radically new ways of doing business.

The BMI literature still exhibits characteristics of an emerging research stream, i.e., a lack of construct clarity (Foss & Saebi, 2017; Schneider & Spieth, 2013; Casadesus-Masanell & Zhu, 2013). The challenge is partly in the variety of definitions of business model and business

model innovation. Various authors have proffered definitions of BMI, which reflect different domains, and can be from the perspective of introducing new business models (Trimi & Berbegal-Mirabent, 2012; Wang & Chebo, 2021) or modifying existing business models (Sosna et al., 2010; Demil & Lecocq, 2010).

One perspective considers BMI as useful for commercializing new technologies. Along this line, Berglund & Sandström (2013: 276) refers to BMI as “the introduction of a new business model aimed to create commercial value.” Another type of definition relates to introduction of new business models to work alongside an existing business model. Thus, Markides (2006, p. 20) defines BMI as the discovery of a fundamentally different business model in an existing business. Still another category of definition considers BMI in terms of its effects on the industry. Aspara et al. (2010, p. 47) define BMI as “initiatives to create novel value by challenging existing industry specific business models, roles and relations in certain geographical market areas.” According to Malhotra et al (2000), such business model innovations (e.g., Uber, AirBnB) represent ‘paradigm shifts’ that go beyond transformation at the level of activities or processes but characterize radical rethinking of the business as well as the dividing lines between organizations and industries.

Several studies have been conducted that examine BMI in terms of improvement of existing business models or transformation of businesses. For instance, Foss & Saebi (2017, p. 201) define business model innovation as the “designed, novel, and non-trivial changes to the key elements of a firm's business model and/or the architecture linking these elements”. Santos et al. (2009) consider business model innovation as a reconfiguration of activities in the existing business model of a firm that is new to the product service market in which the firm competes.” These definitions have one thing in common – they look at BMI in terms of changes to some elements of the business model or its architecture (A discussion of dimensions of the BMI construct is presented in the next section 2.4.1).

Table 4: Selected BMI Definitions

Authors	Definitions
Mitchell & Coles (2003: p. 17)	"By business model innovation, we mean business model replacements that provide product or service offerings to customers and end users that were not previously available. We also refer to the process of developing these novel replacements as business model innovation."
Bucherer et al (2012: p. 184)	"We define business model innovation as a process that deliberately changes the core elements of a firm and its business logic."
Yunus et al (2010: p. 312)	"Business model innovation is about generating new sources of profit by finding novel value proposition/value constellation combinations."
Foss & Saebi (2017, p. 216)	"We define a BMI as designed, novel, and nontrivial changes to the key elements of a firm's BM and/or the architecture linking these elements"
Markides (2006: 20)	"Business model innovation is the discovery of a fundamentally different business model in an existing business."
Casadesus-Masanell & Zhu (2013: p. 464)	"Business model innovation refers to the search for new logics of the firm and new ways to create and capture value for its stakeholders; it focuses primarily on finding new ways to generate revenues and define value propositions for customers, suppliers, and partners."
Amit & Zott (2012)	Business model innovation can occur by redefining (a) content (adding novel activities), (b) structure (linking activities in novel ways), and (c) governance (changing parties that perform activities).
Geissdoerfer et al. (2016: p. 1220)	"Business model innovation describes either a process of transformation from one business model to another within incumbent companies or after mergers and acquisitions, or the creation of entirely new business models in start-ups."
Geissdoerfer et al (2018: p. 405-406)	"We define business model innovation as the conceptualisation and implementation of new business models. This can comprise the development of entirely new business models, the diversification into additional business models, the acquisition of new business models, or the transformation from one business model to another".

Santos et al (2009) presented a framework to enhance understanding of BMI within incumbent firms. They consider BMI as a reconfiguration of activities that can occur in any of four forms: (1) Relinking - an alteration in the connections between organizational units currently performing activities, which can be achieved by re-governing or resequencing. (2) Repartitioning - an alteration in the physical, cultural, and institutional boundaries of the organizational units currently performing activities, and can be achieved either through insourcing or outsourcing, (3) Relocating - an alteration in the (physical, cultural, and institutional) distance between organizational units currently performing activities, achieved through offshoring or on-shoring, and (4) Reactivating – altering the set of activities that constitute the current business model of the firm, through augmenting or removing.

2.4.1 Forms of Business Model Innovation

2.4.1.1. Scope and novelty of changes

Examining changes in the components of BM brings consideration to the question of “how much needs to change” (scope) and “to what extent should changes occur” (novelty). Some authors suggest that business model innovation can occur by changing at least one component of the BM (e.g., Taran et al, 2015; Abdelkafi et al., 2013). Others argue that there must be a change in more than one component of the BM before BMI can be said to have really occurred (e.g., Mitchell & Coles, 2003; Gassmann et al., 2014; Schaltegger et al, 2012). For example, Gassmann et al (2014) argue that innovation in business model entails a change in at least two of the components. Lindgardt et al. (2009) state that at least two BM elements should change for an innovation to qualify as business model innovation. Still others consider that BMI entails changes in the underlying architecture linking different components (Teece, 2010), or ‘linking activities in novel ways’ (Amit & Zott, 2012). Thus, at one extreme, the BMI may affect only a single component, such as the revenue model; and at the other, it may involve all components of the BM and the architecture linking those components (Foss & Saebi, 2017). Overall, there is little agreement in the literature regarding the scope of BMI.

With regards to novelty, scholars distinguish between BMI that are new to the industry (Aspara et al., 2010), and those that are new to the firm, without being necessarily new to the industry (Amit & Zott, 2012). Researchers have argued that new entrants in an industry are usually more successful in this kind of innovation (Christensen & Rosenbloom, 1995). On the other hand, ‘new to the firm’ innovations are changes to the overall business model or some of its components that are novel to the firm, but not necessarily to the industry (Mitchell & Coles, 2003; Cavalcante et al., 2011). Thus, BMI can either create a new market (i.e., new to industry) or allow a company to create and exploit new opportunities in existing markets (Amit & Zott, 2012). Innovations that are new to industry are disruptive and may be radical in orientation, as they call for ‘breaking the existing rules of the game’ (Markides, 2006). Some authors also argue that BMIs tend to be radical in general (e.g., Markides, 2006; Comes & Berniker, 2008). Such innovations typically incorporate new and highly complex technology resources, create new markets, or shift existing market structures, and often induce significant behavioural changes on side of the users (Lettl et al., 2004). Others prefer to relate BMI to incremental changes or evolution occurring in existing business models (e.g., Demil & Lecocq, 2010). Still

others distinguish between BM innovations that are radical and those that are incremental (Davila et al., 2006).

Table 5: BMI Typology

Novelty	Scope		
		<i>Modular BMI</i>	<i>Architectural BMI</i>
	<i>New to Firm</i>	Evolutionary BMI	Adaptive BMI
	<i>New to Industry</i>	Focused BMI	Complex BMI

(Source: Foss & Saebi, 2017)

Based on the ‘new-to-industry’ vs ‘new to firm’ classification (i.e., in terms of disruptiveness), Foss & Saebi (2017) proposed a framework for examining BMI scope and novelty. Foss & Saebi (2017, p. 217) thus distinguish four types of BMI (table 5): Evolutionary BMI, Focused BMI, Adaptive BMI, and Complex BMI. They define evolutionary BMI as voluntary or emergent changes that typically occur naturally over time. Adaptive BMI, on the other hand, relates to situations where a firm adapts its BM architecture, often in response to changes in external environment (Saebi et al., 2016). The ‘new-to-industry’ classification, i.e., focused BMI and complex BMI, occurs when firms make changes to disrupt market conditions. The difference is in whether the innovation is limited to an area of the BM (Focused BMI) or affects the business model in its entirety (Complex BMI).

Changes relating to implementation of dual business models

The subject of novelty in BMI brings consideration to the question of how incumbent firms introduce new business models to operate alongside an existing one (Winterhalter et al., 2016). Such BMIs are characterized by high level of novelty, as they involve the discovery of a fundamentally different business model in an existing business (Markides, 2006).

In dual business models, research has highlighted a challenge relating to the degree of separation / integration of the different business models (Khanagha et al., 2014; Winterhalter et al., 2016). Traditionally, scholars have adopted the notion of organizational separation, that is, new business models should be created in new organizational units that has a separate structure, goal, and unique value chain activities (e.g., Markides, 2006; Markides, 2013). Later studies (Khanagha et al., 2014; Winterhalter et al., 2016) draw on the popular notions in the ambidexterity literature of four main approaches to separation or integration: organizational separation, domain separation, contextual separation, and temporal separation (Lavie et al., 2010). For example, Winterhalter et al (2016) applied separation at the value chain activity

level (i.e., domain separation) to show how firms can implement dual BMs, with respect to Western multinationals employing different degrees of domain separation to reach new customer segments in emerging markets. This approach is helpful to understand how firms operate dual BMs, especially in the context of introduction of new low-cost business models to operate alongside an existing premium business model.

2.4.1.2. Changes within components of the business model

Regarding changes *within* components of the business model, it remains underexplored what may qualify as business model innovation. According to Geissdoerfer et al (2018), not much is known in terms of the circumstances under which, for example, product innovation or changes in the supply chain qualify as a business model innovation. Cavalcante et al (2011) propose that the core repeated standard processes of a company’s BM should constitute its boundaries. They argued that if all changes were business model innovation, then the business model concept would lose its model properties. Thus, not all changes lead to business model innovation, except fundamental changes that affect the core repeated processes of an organization.

Table 6: Three dimensions of BMI

Dimension	Sub-construct
Value creation innovation	New capabilities
	New technologies/equipment
	New partnerships
	New processes
Value proposition innovation	New offerings
	New customers/markets
	New channels
	New customer relationships
Value capture innovation	New revenue models
	New cost structures

Source: (Clauss, 2017)

Clauss (2017) provide a simple framework for understanding BMI changes within individual components, consisting of three main dimensions, namely value creation innovation, value proposition innovation and value capture innovation. The value creation domain defines how and by what means firms create using the resources and capabilities of intra and interorganizational processes or activities. The value proposition dimension contains a portfolio of solutions for customers and how they are offered (Morris et al., 2005; Johnson et

al., 2008). Finally, value capture defines how value propositions are converted into revenues, explaining how firms gain revenues that cover cost and achieve profits (Teece, 2010).

Table 7: Ten ways to innovate the BM

BMI Levers	Description	Examples
Revamping the value Proposition (What?)	Change what value you offer	Bundle products and services to provide a more complete solution
		Unbundle or break out elements of your value proposition and sell/deliver them independently
		Expand business boundaries by taking advantage of existing assets and competencies to diversify into adjacent economic sectors
		Enhance customer's value proposition – help them better leverage their assets
Transforming the value architecture and profit formula (How?) and (why?)	Change how you deliver or capture value	Radically change the supply chain to offer more value to customers, lower costs, and improve effectiveness
		Partner aggressively with companies that offer complementary products & services
		Build and monetize social networks to enhance brand and lower marketing and sales costs
		Change the revenue, cost, and margin model
Altering the target customer (who?)	Change to whom you deliver value	Identify unserved customers who have bought similar offerings from competitors
		Find non-customers who have never bought similar product or service from anyone

Based on Davila et al. (2013)

Davila, Epstein, & Shelton (2013) enumerate how firms make changes along components of their BM, based on what they called three levers of BMI. The first lever, revamping the value proposition, occurs when firms enhance value by offering it in a different or better way. For the second lever, a company focuses on how it creates and monetizes the value. This includes innovations in a company's revenue structures through introduction of new pricing models or redesigning of existing offerings (Gielsen et al., 2007). Thirdly, companies can explore beyond their existing customers and identify entirely new customer groups. The authors further identify ten specific ways in which firms can make changes across the three BMI levers. The above studies provide relevant perspectives for understanding business model innovation in firms, although they do not offer the criteria under which the relevant BM changes can be regarded as being novel (Foss & Saebi, 2017).

2.5 Factors influencing business model innovation

There is an understanding that business models are dynamic rather than static (Demil & Lecocq, 2010), and that often changes are required when a company's BM is not effective anymore or when there is need to match changing environmental conditions (Sosna et al., 2010). Thus, as a locus of innovation, BMI incorporates additional research questions that reach beyond the boundaries of the business model literature, e.g., what are the drivers of innovation in business model? (Foss & Saebi, 2017). For example, changes in the business environment can affect the cost, value or availability of resources and competences; it can change the characteristics of the value network or the value chain; or it can modify the value of the products and services proposed (Demil & Lecocq, 2010). When these changes occur, they often trigger BMI in organizations.

Understanding the drivers and antecedents of BMI is important to enhance congruence in business model research (Foss & Saebi, 2017). Several authors categorize the drivers broadly into factors that are external to the firm, e.g., technology changes, and those internal to the firm, particularly company's deliberate strategic decisions (e.g., Demil & Lecocq, 2010; Bucherer et al, 2012; Comes & Berniker, 2008). In this section, the various factors influencing innovation are discussed under two broad headings: (i) context-related factors, and (ii) resource-related factors.

Table 8: Selected literature on BMI drivers

Title	Specific terminology	BMI Driver Components / Examples	Type of study
Bouwman et al (2008)	External forces	- technology forces (changing technology and innovations), - regulation forces (regulation, privacy & IP rights) - market forces (suppliers, customers' & competitors influence)	Book, conceptual
Bucherer et al (2012)	Internal and external triggers	- internal threat (Insufficient capacity usage), - internal opportunity (underutilization of existing resources), - external threats (competitive price erosion), - external opportunity (changes in key technologies)	Multiple case studies
Davila et al (2013)	External Insights	- Market insights (e.g., changes in market structure, demographics) - regulatory insights (e.g., regulatory and political shifts, IP) - societal insights (e.g., changing concerns and attitudes regarding health, poverty etc.) - technology insights (emerging technologies) - product and service platforms (e.g., bundling or changing combinations or products that could change the industry landscape)	Book (conceptual)
Deloitte (2002)	BMI Context	- regulatory changes, socio-economic shifts, industry, technology (external factors) - entrepreneurial culture, new executive leadership, strong brand equity, risk of insolvency (internal capabilities)	Conceptual, case studies
Demil & Lecocq (2010)	Internal triggers and external triggers	- External factors (regulatory changes; heightened competition) - Internal factors (outcomes of managers' deliberate decision-making or consequences of dynamics within and between BM components)	Single case study
Foss & Saebi (2017)	Internal & external antecedents	- competition, technologies, network position, stakeholder demands (external) - dynamic capabilities, change in strategy (internal)	Conceptual, literature-based
Johnson et al (2008)	External Opportunities and Threats	- opportunities to serve unmet needs - opportunities to leverage new technologies - the need to respond to shifting basis of competition - the need to fend off low-end disrupters	Conceptual, case examples
Mahadevan (2004)	BMI Context	- competition, technology, changing customer needs, regulatory & economic issues (external issues) - firm-level issues	Conceptual, case studies
Osterwalder & Pigneur (2010)	Environmental factors: drivers and constraints	- Market forces (e.g., market needs, revenue attractiveness), - industry forces (e.g., competition, substitute products) - key trends (e.g., technology, regulation, socioeconomic), - macroeconomic forces (e.g., price of resources, capital)	Book (conceptual)
Pucihar et al (2019)	Internal and External	- Business environment (regulation, competition, customer pressures)	Survey
Sorescu et al (2011)	Internal and external drivers	- Customer-centric orientation and organizational emphasis on innovation (internal drivers) - Changing customer values and technological developments (external drivers)	Multiple case studies
Sosna et al. (2010)	External Threats	- Heightened competition, economic recession, regulatory threats	Single case study
Wirtz & Daiser (2017)	Environmental factors	- Globalization, changing technology, market shifts, and regulatory/economic Issues (macro-level factors) - changing customer preferences, firm dynamics, competition, and product or service innovation (micro-level factors)	Conceptual, literature-based

2.5.1 Context-Related Factors

One of the most important considerations in BMI is how contextual factors influence the nature and choices of BMI. Osterwalder & Pigneur (2010) suggest four areas to map the BMI external environment: market forces (i.e., the customer landscape), industry forces (i.e., relating to competitors and value chain actors), key trends (societal, regulatory, technology, socioeconomic), and macroeconomic forces. Davila et al (2013) highlighted six factors that drive BMI: market and customer insights, regulatory and policy insights, societal insights, technology insights, and product and service platform insights. Wirtz & Daiser (2017) emphasize the link between ‘macroenvironmental’ dimension of BMI and internal components, explaining how globalization, regulation/economy, industry/market shifts, and technology influence BMI.

Sosna et al (2010) examined BMI in an established organization whose business model is threatened by changes in the external environment, i.e., heightened competition due to regulatory changes and economic recession. They describe a ‘reactive’ approach to BMI where change processes were the results of responses to incidents or crises threatening the firms’ survival. These environmental drivers and the interplay among them act as triggers and influences to business model changes.

2.5.1.1 Strategic Posture and Organizational Factors

The organizational drivers of innovation relates to the firm-level factors, strategies, and operations that play a role in influencing BM changes (Wirtz & Daiser, 2017; Mahadevan, 2004). From the perspective of business model innovation, the strategic posture of firms is important to achieve competitive advantages through BMI (Morris et al., 2005). Casadesus-Masanell & Ricart (2010) note that business models are unlikely to be viable unless they match strategic posture choices. Santos et al. (2009) highlights the role of firm strategy on the choice and flexibility of business model innovation. For example, as BMs need to match the firm’s overall strategy, a shift in a company’s strategy (e.g., toward open innovation) requires a change in its BM as well (Foss & Saebi, 2017). Thus, scholars point at the role of deliberate management decisions (Teece, 2010) or the outcomes of top (or middle) managers’ teleological decision processes (Demil & Lecocq, 2010), as factors influencing BMI.

To demonstrate the effect of corporate level strategic decisions on innovation, Davila et al (2013) identify two firm-level strategic approaches to innovation: Play-To-Win (PTW) and

Play-Not-to-Lose (PNTL) strategies. These strategies can determine the degree to which a firm is willing to go to innovate or the kind of opportunity it chooses to or can pursue. This implies, for example, that a company whose strategy is focused more on PTW objectives may naturally pursue higher growth initiatives that require more breakthrough and radical innovations than incremental innovations. Moreover, the choice of an internal or external organizing approach have implications for how a company assembles and develops knowledge, which is linked to the firm's ability to generate breakthrough innovations (e.g., Kamuriwo et al., 2017; March, 1991).

Miles et al. (1978) writes about three generic strategies: prospector, defender, and analyzer. According to the authors, prospector companies emphasize the development of new products, resources, and markets and continuously experiment with responses to emerging market trends and changes. Defender companies, on the other hand, primarily limit their product development efforts to improving existing products and defence of a stable product-market domain through an efficient use of assets. Analyzers share characteristics with both prospectors and defenders, focusing on the quick adoption of new concepts launched by prospector companies.

The strategic posture of firms has also been examined from the perspective of cost leadership vs differentiation (Zott & Amit, 2008) and proactive vs reactive posture of firms to external environmental situations (Taran et al., 2015). A proactive or aggressive strategic posture is marked by strong emphasis on radical product innovations and/or technological leadership while the more reactive firms demonstrate a preference for low-risk and "safer" innovations (Taran et al., 2015). A firm's strategic posture can also be inferred in terms of its entrepreneurial orientation (Thoumrungroje & Tansuhaj, 2005), which is analogous to the prospector or proactive mode of strategy making. Other firm-level factors driving innovation in a company can be categorized into four dimensions: culture, processes, people, and resources (Schlegelmilch et al., 2003). Hamel (1998) highlights the need for companies to create a culture that fundamentally challenges the way business is done and encourages the search for new knowledge. Cooper (2018) argue that the right organizational climate and culture, including top management support, supports innovation activities. The process perspective sees innovation as occurring because of a firm's creative exploration, which enables new competitive spaces to be invented and growth opportunities identified (Schlegelmilch et al., 2003). Accordingly, BMI within organizations has been conceptualized as a process (Sosna et al., 2010).

2.5.1.2. Regulatory Factors

There is an evident link between regulatory changes and innovation (Fransman, 2007). This is because the aim of regulation is two-fold i.e., achieving a balance between competition and innovation while safeguarding industry and consumer needs (Singhal et al., 2015). Fransman (2007) notes that although competition and innovation are often causally related, competition does not automatically lead to innovation. Institutions and regulation play a necessary intermediating role, influencing the degree and type of innovation taking place. Competition may also be excessive to the extent that it reduces innovation that might otherwise occur, for example, intense competition may generate uncertainty that may deter new entry and investment. Thus, regulations need to account not only for competition, but also innovation.

Moreover, while such considerations as licensing, market entry, access to and use of networks, and control over pricing are often the focus of supply side regulations, regulations on the consumer side has been concerned with minimizing detriment to the consumer interest resulting from a lack of consumer information, or misleading information, harmful business practices etc (Al-Mahdi, 2016). This implies that the necessity to protect consumers is a motivation for ex-ante regulation, which often occurs by seeking to safeguard fair competition in wholesale markets.

In many industries, regulation is observed to play only a minor role in BMI (de Reuver et al., 2009). However, in industries where market forces alone cannot maintain competition (such as highly capital-intensive industries), regulation is expected to play a major role (Bouwman et al, 2008). Regulations could play contrasting roles since they can constrain or hasten the change of business models (Al-debei et al., 2015). Liberalization, for example, enables market expansion and competition by ending monopoly (de Reuver & Bouwman, 2008). However, strict entry regulatory conditions could also lead to market dominance (Al-debei et al., 2015).

An important issue regarding innovation in highly regulated environments is the entry conditions in place. Ex-post competition law translates in some ways to a regulatory environment that is broadly supportive of market entry (Berne et al., 2019). On the other hand, ex-ante regulation (i.e., intervention by the regulator before the occurrence of potential market failure) can create undue market distortions and hindrance to investment (Maher et al., 2016). The application of ex-ante regulation in markets with high and non-transitory regulatory or structural barriers to entry may constrain innovation and reduce competition (Al-Mahdi, 2016).

Thus, Maher et al. (2016) argue that regulation should be assessed on a forward-looking basis, with regulation being withdrawn where there is potential for entry to lead to effective competition. Furthermore, the authors consider that where the service is provided to customers with significant countervailing bargaining power (for example telecom cell towers), ex ante regulation may not be needed to prevent the use of market power.

2.5.1.3. Market Factors

Changing customer needs and customers' influence are considered important drivers of innovation and creation of new products or services (Jaworski et al., 1993; Porter, 1985; Chesbrough, 2003). Jaworski et al. (1993) discuss the notion of market turbulence, i.e., the rate of change in the composition of customers and their preferences. They stated that organizations in more turbulent markets must modify their products and services continually to satisfactorily cater to customers' changing preferences. Clearly, the identification of potential new products and services is essential, but firms also need to develop an effective framework for matching customer needs and profiles to the business model (Keiningham et al., 2020).

Several authors emphasize the central role of customers in driving BMI (Keiningham et al., 2020; Gronroos, 2011). Keiningham et al (2020) discuss the notion of customer experience driven BMI, arguing that demands for real-time and adaptive experiences by today's customers are driving businesses to create new value propositions and look for ways to creatively engage customers to drive differentiation in today's complex and fast-changing environment. Another example of the customers' role in business model innovation is the growing shift to service-dominant logic that espouses a co-creation process in organizations (Vargo & Lusch, 2005).

Kim et al. (2008), focusing on mobile telecoms, identify how innovation is driven by customer adoption patterns. They argue that mobile users' needs are no longer homogenous, and that mobile users are no longer consuming, but presuming. As technology advances and competition increases, customers' need increasingly move away from basic consumption services to more sophisticated data-based services (de Reuver & Bouwman, 2008). This transformation entails a significant change to the value propositions of mobile businesses.

2.5.1.4. Industry Factors

Examining the relationship between competition and innovation has long been a focus of attention among researchers. Early works (e.g., Schumpeter, 1943) typically argued for a

negative relationship between competition and innovation because it diminishes monopoly rents. The Schumpeterian view also considers that concentrated market structures promote innovation (Gilbert, 2006). Hence, Greenstein & Ramey (1998) found that since consumers prefer a new product to the old product, a monopolist has more incentive to innovate than a competitor because the monopolist can use the old and the new products to separate consumers according to their willingness to pay, thereby earning more profit. On the other hand, Gilbert (2006) state that in competitive markets, a firm will have a greater incentive to innovate if the new product makes the old product obsolete. Following this line, Drucker (2001) argue that businesses must be able to innovate or else their competitors will render them obsolete.

To examine the seeming contradictory findings about the relationship between competition and innovation, Aghion et al. (2005) find evidence that the relationship between competition and innovation takes the form of an inverted-U shape. This implies that competition may increase the incremental profits from innovating, and thereby encourage innovation aimed at “escaping competition.” This is particularly true in sectors where firms are operating at similar technological levels (Bos et al., 2013). On the other hand, the innovation intensity of a laggard firm decreases as competition increases because higher competition reduces the rents that such firm can attain by innovating (Aghion et al., 2005). These findings show that the relationship between innovation and competition is mediated by other factors such as technology changes. Based on the foregoing, Wirtz et al (2016) consider that the heightened level of competition—often driven by new, technology-driven competitors—increasingly requires firms to innovate not just their products and services but also adjust their business models to deal with highly dynamic market conditions.

A strategic framework that has been used to understand strategic implications for firms within an industry is the Porter’s five forces (Porter, 1979). It contains five factors that together establish the rules of competition in an industry: competitive rivalry, power of suppliers, power of buyers, new entrants, and substitute products. Several studies on BMI have identified the links between business model innovation and these factors, especially new entrants, buyer power, and competitive rivalry (Sosna et al., 2010; Davila et al, 2013).

2.5.1.5. Technology Factors

Technology factors, including ICTs and disruptive technologies, are one of the most considered BMI drivers (Mahadevan, 2004, Bouwman et al., 2008; Johnson et al., 2008). A fast-growing

trend in business relates to the evaluation and advancement of technological innovations. BMI has been described as an attempt to seize opportunities introduced by new digital technologies (Ranta et al., 2021). Bouwman et al (2018) examined how big data and social media force SMEs to innovate their BMs and found that while social media plays a role, BMI is mainly driven by big data. Johnson et al (2008) argue that firms can be incentivized to innovate their business model when a new technology requires wrapping a new business model around it or leverage a tested technology by bringing it to a whole new market. Ranta et al (2021) looked at the impact of digital technologies as catalysts for BMI for the circular economy, identifying four key types of such business model innovations that are catalyzed by digital technologies. Thus, as businesses adapt to the use of digitalisation, digital transformation has emerged as an important topic of research in business model innovation.

The high rate and variedness of technological changes, i.e., technological turbulence, is linked to changes in the business model. Johnson et al. (2008) found that technology turbulence has a direct effect on business, especially in terms of displacing incumbent firms motivated to protect existing assets at the expense of aggressively pursuing a new technology (Christenson, 1997). On the other hand, new entrants benefit because when a major technology innovation arrives, a wave of new firms implement the innovation and enter the market.

Several authors writing on the impact of technology on innovation have examined the subject from the perspective of the telecommunications industry (Fransman, 2007; Gruber, 2005; Bouwman et al., 2008). For instance, the emergence of 3G and 4G technologies have led to the transitioning of the mobile industry from basic voice and data telephony to an era of mobile services, supported by smartphones and improved internet capabilities (Chuah & Zhang, 2006). Furthermore, technology access has been argued to be a driver of innovation (Van der Boor et al., 2014). Thus, general purpose technology such as mobile phones and applications is an important driver of service innovation, particularly in developing countries, due to its rapid and widespread adoption (Van der Boor et al., 2014).

2.5.2 Resource-Related Factors

The search for valuable resources explains the rationale for innovation in many firms. For example, a firm may seek new partnerships to use complementary resources (Ferreira et al., 2020). Moreover, a firm may decide to innovate not just based on new resource possibilities, but also nature of resources it has available. This point was implied by Penrose (1995, p. 68) when she suggested that "...so long as any resources are not used fully in current operations,

there is an incentive for a firm to find a way of using them more fully”. Taking a Penrosian view, Demil & Lecocq (2010) also argue that the BM continually evolves as changes in resource set may alter other components.

Several innovation scholars discuss how to exploit resources by using capabilities (Wade & Hulland, 2004). Grant (1996) defines a capability as the capacity of resources to perform activity. The dynamic capabilities literature has been relevant for understanding the internal antecedents of BMI (Teece et al., 1997). Haggege et al. (2017) categorizes dynamic drivers into two, namely strategic awareness and reconfiguration capacity. Strategic awareness allows a firm to sense opportunities in the business environment and convert potential threats into business opportunities (Teece, 2007). Along the same line, Doz & Kosonen (2010) stress the importance of “strategic agility” in accelerating business model renewal. Reconfiguration capacity highlights the firm’s orientation toward experimentation and learning (Achtenhagen et al., 2013) which goes towards adaptation of the business model (Haggege et al., 2017). Thus, Foss & Saebi (2017, p. 218) argue that “the distribution of attention across, and the readiness to take action across, the corporate hierarchy, as captured by sensing, shaping, and seizing opportunities, represent possible antecedents of BMI.”

2.5.2.1 Technology Capital

Several scholars have examined the effects of technology on innovation and firm performance (Powell & Dent-Micallef, 1997). The literature distinguishes between ‘commodity technology’ (such as IT infrastructure) and scarce technology e.g., emerging technologies (Cooper, 2019; Bhatt & Grover, 2005). Earlier works (e.g., Weill & Broadbent, 1998) argued that IT infrastructure has the potential of emerging as a valuable and inimitable resource since they take years to build and are hard to imitate. Bhatt & Grover (2005) disagrees, arguing that IT infrastructure has become a commodity and thus will be a source of value-addition to the organization, but not a source of differentiation.

Yeniyurt et al (2019) argue that implementation and adoption of sophisticated technology resources is an important driver of innovation which enables the infrastructure of the firm. Firms may acquire new technologies or seek cooperative relationships to access new technological resources, especially in sectors with high technological complementarities and interdependence (Ferreira et al., 2020; Bouwman et al., 2008). Example of technological resources include physical assets, equipment, IT platforms, telecom spectrums and licenses (Bouwman et al, 2008).

2.5.2.2 Knowledge Capital

A firm's knowledge capital bears important consequences for innovation (Ferreira et al., 2020; Kamuriwo et al., 2017). Koc & Ceylan (2007) state that innovation depends on generating new ideas, which occurs through knowledge creation within firms. Thus, acquisition of knowledge by individuals within the organisation contributes to organization's core knowledge (Cohen & Levinthal, 1990). The knowledge of organizational members can be in various forms, including technological, managerial, and entrepreneurial knowledge (Powell & Dent-Micallef, 1997). For example, Zhou & Wu (2010) consider that technological know-how ensures that a firm can more effectively exploit its technology for innovation. It also generates firm innovation to the extent that firms will be able to evaluate new ideas necessary for innovation (Revilla & Rodriguez-Prado, 2018).

Knowledge resources are particularly important for a firm's innovation capacity as it links directly with other business and technology resources (Grant, 1996; Powell & Dent-Micallef, 1997). For example, Powell & Dent-Micallef (1997) highlight that neither technology nor firm processes are sufficient in themselves for competitive advantage, but that alignment with complementary human resources is necessary. This provides support for the resource-based approach, as it explains the disparity in innovation outcomes across organizations (Barney, 1991).

A firm's knowledge or human resources may be developed through formal education and training (general knowledge) or through work and industry-specific experience (Dakhli & De Clercq, 2004). In terms of general knowledge, it has been claimed that formal education enables individuals to develop abilities to learn about the external environment (i.e., technology and markets), and better recognize opportunities they present (Grant, 1996). On the other hand, managers who have firm-specific skills (e.g., skills developed to operate highly specialized equipment or managerial experience) and industry-specific experience are more likely to be better able to exploit opportunities, raise capital, and/or launch out new business ventures (Baptista et al., 2014).

The knowledge management literature distinguishes between internal versus external sources of knowledge (March, 1991; Cohen & Levinthal, 1990), with both knowledge development modes having different implications for innovation. Kamuriwo et al. (2017) find that the external knowledge development mode generates more breakthrough innovations and a rapid progression of innovations to market than the internal mode, which suffers from a quicker onset

of path dependence. They suggest that by utilizing resources from outside the firm, the external development mode allows more flexibility than the internal mode.

Similarly, firm and industry specificity of knowledge pertains to skills owned by individuals and companies that are not valuable in other contexts (Powell & Dent-Micallef, 1997). However, although firm-specific skills may be a source of competitive advantage due to their intangibility and inimitability (Grant 1996), they may limit innovation activity as the limited amount of interfirm communication attached to this type of human capital restricts the level of innovative activity (Dakhli & De Clercq, 2004). On the other hand, particularly in industries characterized by high level knowledge exchange and interconnectedness, industry specificity of knowledge may have a crucial role in innovation (Dakhli & De Clercq, 2004).

Several BM scholars agree that in the new era of dynamic and discontinuous change, survival in the business environment depends on firm's ability to generate new knowledge about the environment (Sosna et al., 2010; Malhotra, 2002). Thus, outside of the organization, companies innovate to ensure that their decision-making processes keep pace with the changing customer and competitors' landscape (Malhotra, 2002). Customer knowledge enhances a firm's innovation and competitive advantage (Day et al., 1979). Competitor knowledge entails accurate insights about key capabilities of rival firms (Tseng, 2009), and determines the ability of the firm to respond to competitive moves that affect it (Porter, 1979). Knowledge management for innovation therefore extends attention to organizational learning in firms (Sosna et al., 2010).

2.5.2.3 Financial Capital

The availability or absence of necessary financial capital has important links with organizational levels of innovation. Studies have shown that innovative companies commit the necessary resources to new products than most firms (e.g., Cooper, 2019). Cost has long been regarded as a driver of innovation (Schumpeter, 1949). Firms are not incentivized to invest in R&D driven innovations due to limited funding while many projects suffer from a lack of financial commitment (Cooper, 2019).

To cut innovation costs, firms are increasingly relying on external suppliers to take more responsibility in their innovation process. For example, innovation outsourcing has helped many companies, such as Dell and IBM, to reduce their R&D budgets (Azadegan & Dooley, 2010). Similarly, open innovation is advocated as an approach to reduce the cost of innovation

(Chesbrough, 2012). Moreover, scholars state that limited availability of funding for innovative projects require cost control processes of innovation (Chwastyk, 2013). Hence, as the cost of innovation has intensified, companies often have responded by restructuring and cost-cutting – by adopting alternative forms of innovation such as frugal innovation (Radjou & Prabhu, 2015).

2.5.2.4 Relationship Capital

Scholars argue that close working relationships with external actors, particularly customers and suppliers, provides a firm access to new ideas and innovations (Gulati et al., 2000). There is also perceived link between cooperation with rivals (i.e., coopetition) and innovation, as coopetition is argued to enhance the knowledge base of partners and improve their absorptive capacity (Wu, 2014). In a related vein, Ahuja (2000) argues that firms' commercial and technological realities potentially shape network formation, as close relationships might lead to alliances.

Moreover, firms have benefitted from maintaining strong business and government ties (Wu & Chen, 2012). In a survey in China, Wu & Chen (2012) found that managers' business ties have positive links to competitive advantage while government ties do not. On the other hand, Zhou et al. (2019) found that while government relationship is correlated with innovation, it also strengthens the effects of business and university ties on innovation. Moreover, firms with access to government actors will be more likely to influence relationships in ways that benefit them (Zhou et al., 2019). Overall, while studies have emphasized the importance of inter-organizational relationships, much less is known about the dynamics that underlie complex inter-firm relationships.

2.6 Business model innovation and inter-organizational relationships

Research on inter-organizational relationships acknowledges the notion that all organizations need relationships with other organizations (Gulati et al., 2000). Parmigiani & Rivera-Santos (2011, p. 1109) define inter-organizational relationships (IORs) as “strategically important, cooperative relationships between a focal organization and one or more organizations to share resources with the goal of improved performance”. In business model innovation, IORs are considered important as value can often not be created by individual firms in isolation (Heikkila & Heikkila, 2013).

Many scholars acknowledge that innovation can be achieved through various forms of inter-firm relations such as strategic networks (Gulati et al., 2000) and open innovation (Chesbrough, 2006). Indeed, the notion about the use of interorganizational relationships as an important lever of innovation is not new (Powell et al., 1996). Thus, a number of authors examine the influence of interorganizational relationships and their components on different types of innovation (Palumbo & Manna, 2018; Micheli et al., 2020). Still yet, some researchers consider new forms of inter-organizational relations such as outcome-based services (OBS) as examples of business model innovation in and of themselves (Vsnjic et al., 2020).

Key theories that have been applied to IORs include the resource-based view (RBV), the transaction cost economics (TCE), the resource dependence theory, and the network theory. From an RBV perspective, firms will form IORs to acquire complementary resources (Barney, 1991; Penrose, 1959). From a resource dependence theory perspective, organizations rely on resources from other firms, leading to uncertainty (Pfeffer & Salancik, 1978). From a TCE perspective, IORs are useful when an exchange presents high-powered incentives and has some level of specific investment (Williamson, 1975). Scholars that employ the strategic network approach consider that the focus of business model is shifting from a single firm to network of firms, and from simple interactions to multi-firm control and interface issues (Gulati, 1998). Therefore, issues about position and control are central in a network.

2.6.1 Types of inter-organizational relationships

Inter-organizational relationships can take several forms. Broadly, these can be classified into two modes: partnering and contracting (Fey & Birkinshaw, 2005). Partnering includes buyer–supplier agreements, strategic alliances, joint ventures, co-branding, cross-sector partnerships, franchising, and strategic networks (Gulati et al., 2000; Dahan et al., 2010). Contracting is concerned primarily with the output produced by another firm – the contractee, and includes outsourcing and licensing (Fer & Birkinshaw, 2005).

Ensign (2001) uses two classifications of IORs, namely inter-firm interrelationship and network interrelationship. Inter-firm interrelationship relates to the notion of outsourcing and arises when a firm’s activity is provided by an external source. On the other hand, network interrelationship results in alliances as all parties share a value chain.

Inter-organizational relationships can also be understood in terms of the closeness of the relationships. Thus, a distinction can be made between arm’s-length and relational

perspectives. According to Dyer & Singh (1998), arms-length relationships are different from relational ones because they are characterized by non-specific investments, low levels of functional interdependence, minimal information exchange, and limited investment in governance mechanisms. In particular, and consistent with the RBV, a firm in an IOR can derive advantages by making or investing in assets that are specialised in conjunction with alliance partner's assets (Dyer & Singh, 1998).

2.6.2 Motivations for Inter-organizational relationship

Inter-organizational relationships can also be understood by the intent for such relationships (Gray & Stites, 2013; Parmigiani & Rivera-Santos, 2011). Gray & Stites (2013) state that firm's engagement in IORs is based on one or more of four motivations: legitimacy, competency, resources, and society. Legitimacy-oriented motivation refers to an organization's social acceptance, competency motivation relates to sharing competencies through collective learning in organizations. Resource-oriented motivations allow a firm to leverage partner's complementary resources and reduce the costs of garnering resources separately. Lastly, firms may have broader society-oriented motivations for partnering.

Value creation is the central motive for inter-organizational relationships (Austin & Seitanidi, 2012; Porter, 1985). Austin & Seitanidi (2012) identifies four types of value in inter-organizational relationships. These are (i) associational value, i.e., a benefit such as stronger reputation or higher visibility that is derived from having a relationship with another organization, (ii) Interaction value, which are the intangible benefits derived in an interrelationship, e.g., trust, (iii) transferred resource value, which refers to the benefit derived from receiving a resource from another partner, and (iv) Synergistic value, which refers to the notion that partners achieve more and are more effective as a team than working separately.

A party to an IOR can aim for exploration or exploitation, or such partnerships can combine traits of co-exploration and co-exploitation (Parmigiani & Rivera-Santos, 2011; Chesbrough & Schwartz, 2007). Motivations for IOR can also be understood in terms of firm's internal realities or external opportunities (Hoffmann, 2007). Ahuja (2000) distinguishes between inducement and opportunity factors. *Inducement* occurs when a firm's current resource portfolio is inadequate to meet its strategic objectives, when it seeks to learn new skills, or when it requires to manage its dependencies on other firms (Ahuja, 2000) while *opportunities* depend on the set of opportunities provided by a firm's position in the prior relationships as well as its attractiveness to other firms based on its current stock of resources (Hoffmann,

2007). Therefore, partnering with many firms not only serves as a signal of the firm's reputation as desirable collaborators, but may also reinforce this reputation.

2.6.3 Inter-organizational Relationships as Value Chain Linkages

The value chain allows for an easy identification of the dynamic flow of economic, organisational, and activities between producers within different sectors (Kaplinsky & Morris, 2001). The idea of linkages has been used in relation to the value chain framework. According to Porter (1985), the value chain is "an interdependent system or network of activities, connected by linkages" (p. 41). Links refer to the connections that exist in the activities between customer and supplier (Kaplinsky & Morris, 2001). Porter distinguishes between horizontal linkages, which refer to interaction between firms at the same level of the value chain, and vertical linkages which refer to the collaboration of actors at different levels of the value chain. The theoretical processes underlying linkage formation for both horizontal and vertical relationships are likely to be different (Gulati et al., 2000). According to Fey & Burkinshaw (2005), it makes sense for firms to enter relationships with firms that are not potential direct rivals because of the downside of inevitable knowledge leaks, but there are situations in which partnering with direct competitors are desirable and strategically important.

Porter's value chain framework highlights the existence of backward and forward linkages in value chain analysis. According to Cai et al (2006), while backward linkage measures an industry's relative importance as demander, forward linkage measures the relative importance of the industry as supplier to other industries. Thus, in inter-organizational relationships, linkages relate to the input-output component of a firm's value system (Porter, 1985). In other words, linkages make up the overall value system, which Stabell & Fjeldstad (1998) describe as a chain of interlinked activities that work to deliver outputs and includes the value chain of distinct distribution channels before the product becomes part of the buyer's value chain.

Kaplinsky & Morris (2001) highlight two generic types of value chains: buyer or producer-driven chains. In buyer-driven chains, the governing role is played by a buyer occupying a central position the chain. Producer-driven chains are those in which highly technology resourced actors play the coordinating role in the chain, creating efficiency for both their suppliers and customers. The authors further suggest that within a value chain, power can be understood in at least two ways: i) ensuring consequences along the chain, and ii) coordinating the links within the chain.

2.6.4 Factors Shaping Inter-Organizational Relationships

Effectiveness of inter-organizational relationships depends on the strength and quality of the relationships, driven by relational competencies between and within organisations (Stabell & Fjeldstad, 1998). Understanding inter-organizational relationships calls for several structural, process and/or outcome indicators (Provan & Sydow, 2008). Structural considerations include the relational structure of IORs and the impact it has on various outcomes. According to Provan & Sydow (2008), a structural indicator reflects the existence of a link, the number and strength of ties that link actors together. The process view of IORs considers IORs in terms of those actions and activities (rather than structures) that are likely to result in effective outcomes. These include indicators such as learning, trust, fairness, legitimacy, and power. The outcome view considers IORs based on what they set out to achieve and eventually achieve. This could be financial or non-financial and might involve any of the motivations identified by Gray & Stites (2013). Therefore, achieving effective outcomes from IORs require a focus on structural and process indicators of the inter-organization relationship.

From this perspective, the structural and process characteristics of the IOR determine the benefits that partners can derive from such inter-relationships (Dyer & Singh, 1998). One of the determinants for benefits is the position of the focal firm in the value chain (Provan & Sydow, 2008). Centrality or position is shaped by the configuration of the IOR, or specifically, its structural and relational characteristics (Hoffmann, 2007). It also determines benefits accruing to the focal firm in terms of the quality and quantity of external resources it can access (March, 1991). Only IORs with strong interconnectedness, i.e., with close and trustful collaboration between firms, enable such in-depth sharing of resources to occur (Nooteboom, 2004). However, scholars have shown also that strong interconnectedness of firms can lead to interorganizational inertia by reducing flexibility (Mitchell & Singh, 1996).

The configuration view is consistent with resource dependency arguments, which suggests that an influential position in the value chain (as reflected in control of valuable resources) can be derived when other firms are dependent on the focal firm (Hoffmann, 2007). In other words, a firm's ownership of complementary resources determines its ability to influence the strategic actions of important stakeholders in the alliance and consequently its ability to shape the environment for its desired outcomes. Furthermore, Kaplinsky & Morris (2001) argue that larger firms are more likely to be influential or have the power to force other parties to take particular actions in an industry value chain. The authors identify determinants of "large" as

including control over key resources, high share of industry sales or profits, or holding industry market identity (such as brand name). Dyer & Singh (1998) suggest that ownership of relation-specific assets can create relational competitive advantages in inter-organizational relationships. They argue that such advantages will not be possible in arms-length relationships, as it is easy for firms to switch partners when there is no idiosyncrasy in the exchange relationship.

The second important characteristics of inter-organizational relationships, i.e., process, is contingent on the configuration properties (Rudberg & Olhager, 2003). Issues related to process has to do with coordination of the value chain and managing the interaction process (Ensign, 2001; Kaplinsky & Morris, 2001). Thus, the process view includes activities relating to learning, knowledge sharing, and governance mechanisms, all of which helps not just to enhance differentiation, but also to reduce transaction costs (Stabell & Fjeldstad, 1998; Dyer & Singh, 1998).

Scholars have recognized the occurrence of tensions between value creation and appropriation in IORs (Nooteboom, 2004; Yan & Wagner, 2017), especially when the inter-relationship involves direct competitors (Ritala & Hurmelinna-Laukkanen, 2009; Rindfleisch, 2000). Niesten & Stefan (2019) uncover factors, which they call virtuous cycles (e.g., carefully mixing trust and contracts) that resolve paradoxical tensions of inter-firm value creation and capture, as well as factors which tend to accentuate these tensions through vicious cycles (e.g., myopia of learning).

2.6.5 Strategies for managing inter-organizational relationships

Inter-organizational relationship is an important source of competitive advantage and value creation (Gulati et al., 2000; Austin & Seitanidi, 2012). Therefore, effectively managing the IOR is an important strategic issue. Hoffmann (2007) argue that a focal firm's strategy to manage structural and relational issues in IOR will depend on the choice between building a stable trust relationship or optimizing the relationship in an opportunistic way. He suggests that stability and commitment are more important in IORs that are aimed at core exploration and exploitation than they are in probing alliances. Furthermore, Hoffmann (2007) found that pursuing an exploration strategy requires a focal firm to have dense networks and strong ties with trustworthy partners.

One of the major concerns in inter-organizational relationships is how to improve coordination and monitoring so that the objectives of the interrelationship can be realized (Kamuriwo & Baden-Fuller, 2016; Nooteboom, 2004). Formal control mechanism through obligatory contracting rules is a widely suggested approach for managing IORs (Roehrich et al., 2020). This helps to mitigate risks and achieve credible alignment of incentives (Kamuriwo & Baden-Fuller, 2016). It is argued that inter-firm relationships governed by formal rules of exchange are more likely to exhibit ‘calculativeness’ than those based on real trust (Williamson, 1993). Informal coordinating mechanisms, on the other hand, is relational and therefore relies on trust (Nooteboom, 2004). In both instances, however, solving the coordination challenge requires understanding two interrelated organizational choices concerning role allocation and decision-making rights (Schreiner et al., 2009). Furthermore, managing inter-organizational relationships requires communication of relevant information regularly at minimal cost to enhance learning and knowledge sharing (Dyer & Singh, 1998).

The argument has been made that while effective communication and informal control mechanisms play important roles in curbing opportunistic behaviour and risk of knowledge leakage among partners, there are limits to their effectiveness (Kamuriwo & Baden-Fuller, 2016). Fey & Birkinshaw (2005) advocates firms’ active protection of their knowledge assets, which is easier to achieve in contracting or arms-length interrelationships, as the focal firm can have more leverage over the nature of sharing involved. The situation is more complex in partnering relationships, as firms must continually balance protection of certain knowledge assets with the sharing of others (Fey & Birkinshaw, 2005). Therefore, the focal firm may adopt a phased knowledge sharing approach to limit the appropriability of value by the other party, or it may strategically determine the timing of sharing as a defensive mechanism (Kamuriwo & Baden-Fuller, 2016; Kamuriwo et al., 2017). By so doing, the firm can avoid risks of opportunism and knowledge leaks.

2.7. Business model innovation for emerging markets

Studies suggest that business model innovation is essential in the context of emerging markets due to the unique nature of such contexts (Adegbile & Sarpong, 2018; Sanchez & Ricart, 2010). Anderson & Markides (2007) highlight the difficulty in designing profitable businesses that are at the same time value-creating to customers and stakeholders. The first commonly cited driver relates to the customers’ poor propensity to pay. As such, markets for low-income segments in emerging markets require innovations in service delivery because such markets

are considered commercially unviable because of factors such as poorly developed markets (Dahan et al., 2010) and deep poverty (Seelos & Mair, 2007). Therefore, lessons from innovation for underserved markets in emerging markets emphasize that services need, first and foremost, to be affordable (Jain, 2014; Anderson & Markides, 2007).

Another challenge relates to weak infrastructural development. In a study on drivers of BMI in low-income markets, Jain (2014) notes that despite the proliferation of mobile services, service providers are faced with numerous challenges due to a variety of factors such as low quality of digital infrastructure and lack of local content which limits the operations of companies. The weak institutional infrastructure of many developing countries has also been documented, which include when organizations from developed markets expand into emerging markets, attempts to replicate their existing business models often fail to address the unique needs in the new contexts. This necessitates innovative business models to overcome such barriers and meet the needs of underserved markets (Seelos & Mair, 2007). A common approach to overcoming resource challenges is establishment of cross-sector partnerships. For example, Dahan et al (2010) argued that firms can overcome business model challenges in emerging countries by collaborating with non-profit nongovernmental organizations (NGOs), where partners bring complementary resources to achieve social objectives.

2.7.1. Inclusive business models for emerging markets

The need to facilitate inclusive growth in emerging markets (Yunus et al. 2010) or provide services for low-income customers (Sanchez & Ricart, 2010; Rosenstock et al., 2020) have led to development of innovative business models and have become a subject of attention of researchers in recent years. Inclusive business model is considered one of the different manifestations of the concept of sustainable business model innovation (Sinkovics et al., 2021). Other approaches used to describe sustainable business models include the sharing economy (Curtis & Mont, 2020), BMs for low-income markets (Sanchez & Ricart, 2010), business models for the circular economy (Bocken et al., 2016), and product-service systems (Tukker, 2004). A new form of sustainable business models is outcome business models (OBM), which are themselves seen as one of the manifestations of sustainable business models (Parida et al., 2019). Depending on the goals and motivations driving the innovation process, sustainable business models are linked to one or more of three objectives, i.e., triple bottom line, which refers to a focus on economic, social, and environmental benefits (Schaltegger et al., 2012; Stubbs & Cocklin, 2008). Sinkovics et al (2021) conduct an umbrella review of systematic

literature reviews of sustainable business model innovation which captures the different manifestations of sustainable business model innovation.

Table 9: Selected types of business models related to the sustainable BMI concept

Sustainable Business Model Manifestations	Definition
Sustainable business model	“... a business model for sustainability can be defined as supporting voluntary, or mainly voluntary, activities which solve or moderate social and/or environmental problems” (Schaltegger et al., 2012, p. 112)
Base (bottom) of the pyramid business model	A business model that aims to simultaneously alleviate poverty and increase profitability (Prahalad & Hart, 2002)
Circular business model	“Circular business models can enable economically viable ways to continually reuse products and materials, using renewable resources where possible” (Bocken et al., 2016, p. 308)
Product–service system	A business model with “tangible products and intangible services designed and combined so that they jointly are capable of fulfilling specific customer needs” (Tukker, 2004, p. 246).
Sharing economy business model	A business model that “mediates an exchange between a resource owner and a resource user to facilitate temporary access to under-utilised goods (key activity), resulting in a reduction of transaction costs associated with sharing” (Curtis & Mont, 2020, p. 4)
Social business model	“... a no-loss, no-dividend, self-sustaining company that sells goods or services and repays investments to its owners, but whose primary purpose is to serve society and improve the lot of the poor” (Yunus et al., 2010, p. 311).

Source: adopted from Sinkovics et al (2021)

Although the categorisation by Sinkovics et al (2021) did not explicitly include inclusive business models, their conceptualisation of Base-of-the-pyramid and social business model relate closely to the notion of inclusive business and inclusive business models (Schnoneveld, 2020; Rosenstock et al., 2020). Accordingly, Schnoneveld (2020, p. 10) define inclusive business model as “a type of sustainable business model that seeks to productively engage income-constrained groups in the value chain by providing solutions to neglected problems”. Rosenstock et al. (2020, p. 77) provide another definition that considers inclusive business models as “a way of creating, delivering, and capturing value that provides access to resources (e.g., finance, technology, market channels) – as well as a space for decision-making over their use – to the [bottom-of-the-pyramid] BoP.” Thus, inclusive business models look beyond eliciting payments but also gives representation to the low-income consumers (Adegbile & Sarpong, 2018).

An emerging research area in inclusive BM relates to the subject of value creation (Chmielewski et al., 2020). Inclusive value creation requires firms to look beyond the direct

consumer, but also at possible beneficiaries, local producers, and distributors (Hietapuro & Halme, 2015). Firms doing business in underserved markets must be embedded in larger ecosystems rather than stand-alone initiatives (Chmielewski et al., 2020). In the same vein, Seelos & Mair (2007) argued that companies can profitably serve low-income segments if they learn to fundamentally rethink their existing strategies and business models.

An important question in sustainable business model innovation (and inclusive business models) is how such business models can coexist with traditional business models. According to Geissdoefer et al (2018), sustainable BMI can be delivered through one of four organisational configurations: startups, acquisitions, transformation, and diversification. Thus, for example, a firm may decide to start-up a new sustainable BM or diversify, which calls for effective integration with existing traditional models. Schaltegger et al (2012) recognizes three possible approaches for integrating sustainability into business. These strategies include (i) limited integration (defensive), which deals with a narrow part of sustainability and in a reactive manner e.g., to comply with legislation (ii) integration (accommodative), which entails modest consideration of environmental or social objectives, and (iii) full integration (proactive), which seeks competitive advantage by aggressively pursuing business and social goals simultaneously. Although the above studies describe inclusive BMs or emphasize the need for sustainability; some scholars (Foss & Saebi, 2017; Endregat, 2021) consider that the question of how managers can innovate towards inclusion or how both traditional and sustainable business models coexist in organizations have not been sufficiently addressed.

2.7.2 Resource-constrained innovation for emerging markets

Due to the infrastructural and resource challenges that confront firms in many emerging markets, managers and researchers have started to explore market-specific solutions that provide high value at low costs. Basu et al (2013) consider that the *driver* of resource-constrained innovation could be described in relation to the question “what does the customer need?”, rather than “what would be nice to have?”. These resource-constrained solutions have been captured under several terms such as frugal innovation, cost innovation, good-enough innovation, and reverse innovation (Sharmelly & Ray, 2021; Winterhalter et al., 2017; Zeschky et al., 2014; Radjou & Prabhu, 2015). They typically exhibit differences mostly in technology and market novelty and in key product attributes (Sharmelly & Ray, 2021). Cost innovations and good-enough innovations are similar in terms of offering low-cost alternatives for low-income consumers and are realized through process innovations and emerging markets’ cost

advantages but, unlike cost innovations, good-enough innovations are also ‘no frill’ business models tailored to the resource-constrained market, with non-value-adding functions eliminated (Zeschky et al., 2014; Gassmann et al., 2014). Hence, good-enough innovations are characterized with relatively increased novelty in product and market dimensions compared to cost innovations.

Frugal innovations and reverse innovations exhibit similarities as they both include much more novelty than cost and good-enough innovations (Zeschky et al., 2014). Whereas frugal innovations provide new functionality and entirely new value proposition at low-cost, reverse innovation is a market concept and are not simply innovations of lower quality, but innovations arising from new contexts (Zeschky et al., 2014). Thus, Sharmelly & Ray (2021) describe reverse innovations as a form of frugal innovation that creates completely new market segments and therefore, are characterized by higher market novelty and/or radicality.

To benefit from the promise of resource-constrained innovations in overcoming emerging markets’ unique challenges, researchers have advocated integrating so-called resource constrained innovations into BMI in emerging markets (Winterhalter et al., 2017; Radjou & Prabhu, 2015). Much of these studies have considered resource constraints in terms of their ability to ‘limit’ innovation, whereas in reality the relationship between constraints and innovation is both positive and negative (Lampel et al., 2014). Resource-constrained themes may focus on the demand-side, in which firms consider ways to create value for low-income consumers through innovations that enable the company to redesign products and services at radically lower price points. Supply-side themes in resource-constrained innovations explore how to do away with constraints or how to minimize their negative effects on innovation (Lampel et al., 2014). Although these themes are generally helpful, they may overshadow a perspective in which constraints could enable rather than impede innovation (Gibbert et al., 2014). Therefore, it is important to examine how established firms in emerging markets can innovate to overcome both supply and demand-side constraints, especially despite (or even due to) limited resources.

2.8. Literature Review Summary

In this chapter, the literature review presented relates to the theoretical constructs of three themes relevant to this research: business model innovation forms, business model innovation drivers, and the dynamics of inter-organizational contexts. The discussion highlights several

key constructs that shed light on each theme. Several key findings that are of particular interest to this doctoral study are presented in the next paragraphs.

The central notion in the business model is value; every business model must create value for customers and the producer. The elements of a business model provide helpful representation of how a BM creates and captures value. Several approaches have been used to describe the elements of a business model, but the most helpful for analysis is the notion of components. The commonest components can be summarized into seven: value proposition, customer/market segment, resources, activities, partnerships (value network), revenue streams, and cost structure. These components are not static and are subject to changes over time. As such, research efforts need to go beyond the static description of the architecture of components, to understanding how the business model changes through an interaction with environmental factors. In line with the innovation literature, BMI involves questions around the scope and degree of changes to the business model components.

Factors shaping business model innovation, i.e., BMI drivers, may be internal to the organization or relate to pressures and opportunities emanating from the external environment. This can otherwise be classified as resource-based and contextual factors. Examples of commonly cited resource-based drivers include firm's human capital, knowledge, and commercial relationships. On the other hand, contextual factors relate to the strategic context for innovation, including firms' innovativeness culture or management decision-making, as well as changes in the competitive environment, regulatory pressures, technological changes, and customer-related influences.

Several studies suggest that the firm's activity system may transcend the focal firm and span its boundaries. Furthermore, the subject of inter-organizational relationships (IORs) is important as value is often created through multiple firms that engage in some form of partnership or collaboration. Based on the foregoing, value creation is the central motive for all inter-organizational relationships. The value could be realized in different forms, depending on the intent, nature, and strength/quality of such interrelationships. Broadly, factors influencing strength of an interrelationship, and hence value creation, include the configuration (e.g., structural and relational considerations, and the impact they have on various outcomes) and coordination of actors in the relationship. Specifically, the configuration and coordination of actors may contribute to enhancing value creation or inhibiting value creation.

Resource-constrained innovation and business models for inclusion, a subset of sustainable business models, have become increasingly popular as a market-based approach to innovation, especially in developing countries, through the alignment of business values with social impact. They are driven by factors such as customers' poor propensity to pay, poorly developed markets, resource challenges, and institutional voids.

2.9. Research Gaps Identified

The following four research gaps have been identified following a review of the literature. These relate mostly to gap in knowledge, where there is need to shed more light on unexplored dimensions of BMI. There are also gaps relating to a lack of rigorous empirical work focusing on important issues in the business model innovation literature. Together, these research gaps inform the thesis' three research questions.

1. There appears to be an *empirical gap* in the literature regarding the scope and novelty of changes in business model, arising from a lack of rigorous research that examines the various instances of BMI in an organization. While some existing studies ascribe BMI to only radical changes that bring about disruptions to the functioning of industries or introduction of entirely new business models, others include instances of innovation that involve minor changes. An attempt has been made towards 'dimensionalisation' in BMI (e.g., Mitchell & Coles, 2004; Foss & Saebi, 2017), but studies on this phenomenon remain few and far between. Moreover, existing frameworks examines novelty from the perspective of disruptiveness, which does not allow to fully explore the nature or degrees that BMI might take in a single component or across several components of BM. This is because a radical innovation in one component may not necessarily imply equally radical changes in other components. This current study seeks to address these gaps.
2. The literature review has helped to uncover a gap relating to the drivers of BMI. Although several studies have looked at BMI drivers within incumbent firms, these have tended to be retrospective, from the perspective of specific initiatives or phenomenon that the author is interested in studying. Hence, existing studies focus on rather narrow perspectives of the business model drivers, while a whole range of other factors influencing BMI remain relatively less explored. For example, insights from the literature review suggests that not much is known about the links between BMI and drivers at the country level, including how the socio-economic context of a country shapes BMI. This study aims to extend

existing works in this area by adopting a holistic and multi-level perspective to the study of BMI drivers.

3. Still on BMI drivers, the literature review highlights a need to understand the variety of drivers and how they interact within resource-constrained environments. This is because existing studies on resource-constrained innovation have largely considered resource constraints in terms of their ability to 'limit' innovation, whereas in reality the relationship between constraints and innovation is both positive and negative. Therefore, it is important to examine how established firms in emerging markets can innovate to overcome both supply and demand-side constraints, especially despite (or even due to) limited resources.
4. Research about BMI is not yet comprehensive; for example, it has been mostly from the perspective of a single organization. Hence, not much is known in the literature about the role of inter-organizational relationships in business model innovation. Moreover, existing research on inter-organizational relationships usually focus on symmetric relationships involving mutual dependencies (Arino et al., 2008). There is a gap in understanding, from a relational point of view, business model innovation and value creation in asymmetric interrelationships. As such, there is need to understand, for example, how a smaller party in a relationship can mutually capture value in the interrelationship. Approaching the subject of inter-organizational relationships from the value chain perspective will contribute fresh insights to this debate.

2.10. Conceptual Map of Research

This section is an attempt to graphically set the conceptual map of the research. The focus is on the telecom industry in emerging markets, where innovations take place in response to a variety of emerging market-related, industry-related, and firm-level factors. The interactions among actors in the value chain are also influenced by these environmental factors.

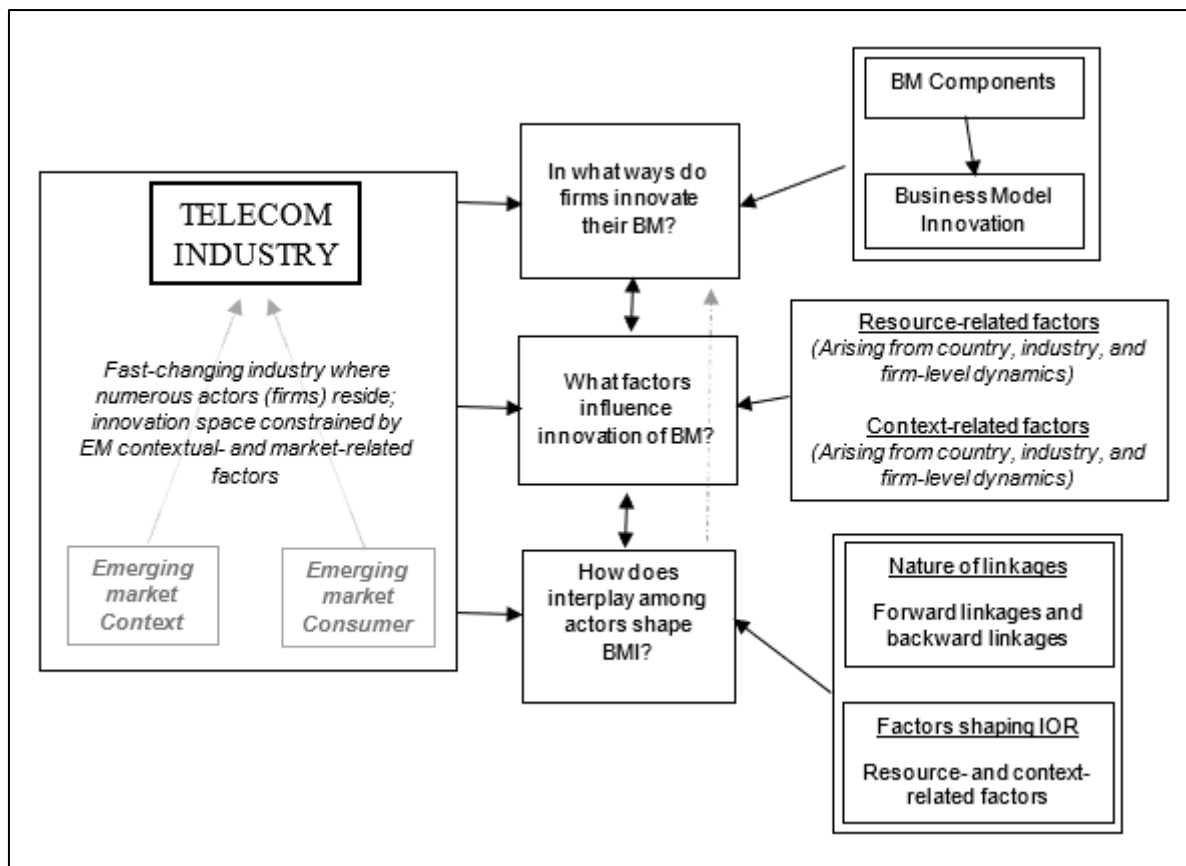


Figure 1: Conceptual map of research

In this chapter, the BMI literature and its adjacent streams have been examined. The review commenced with an overview of the BM and BMI constructs. Extant works on BMI drivers were explored, while the literature on inter-organizational relationships was examined to understand the various viewpoints regarding the nature of IOR, the factors shaping IOR, and how the value chain framework provides insight into IOR. The literature review briefly explored extant research on BM for inclusion to shed light on BMs in emerging markets context. The chapter concludes with an identification of research gaps and a conceptual map of the study. In the next chapter, the mobile telecommunications industry is examined from the perspective of Sub-Saharan African emerging markets.

CHAPTER THREE

THE SUB-SAHARAN AFRICA MOBILE TELECOMMUNICATIONS INDUSTRY

3.1. Introduction to chapter three

This research focuses on emerging markets context. Although less than fifteen Sub-Saharan Africa countries (e.g., South Africa, Kenya, Ghana, Nigeria), are designated as emerging markets by the IMF (africa-business.com), this chapter provides a broad overview of Sub-Saharan Africa, since the distinctions between emerging markets and other developing countries are not always clear. The chapter begins by providing an overview of the mobile telecoms industry before looking at SSA context.

3.2. Overview of the Mobile telecoms industry

The mobile telecommunications industry is fast-growing. It became a mass market in the mid-1990s (Gruber, 2005). Originally, the conventional wisdom was that telecoms were an example of natural monopoly (Fransman, 2001), but the industry experienced a wave of rapid deregulation and innovation (Li & Whalley, 2002). For many years, MNOs held and managed many functions, including a strict control over all aspects of network infrastructure and content. However, the industry structure and strategic behaviour of participants have become increasingly complex, occasioned by liberalization and thus a wider range of roles in the mobile industry (Kuo & Yu, 2006). For example, Curwen & Whalley (2010) stated how the industry has moved from monopoly to competition, with mobile operators now having to compete not just with other operators, but also with players such as application platform vendors and mobile services providers. As such, many communication services are now provided by non-operator providers. MNOs are therefore faced with a decision about whether they should focus solely on infrastructure or seek to move into provision of services themselves (Curwen & Whalley, 2010).

The liberalization of global telecommunications, investments in future technologies and networks, and increasing competition has led to a reduction in conventional voice fee, a decrease in the average revenue per user (ARPU) and shrinkage of operators' profits (Kuo & Yu, 2006). Mobile operators are therefore seeking opportunities to create additional revenue sources (Fransman, 2007).

Several scholars have provided a conceptualization of the value chain of the mobile telecoms industry, which depict the various roles of actors in the industry (e.g., Kuo & Yu, 2006; Rülke et al, 2003). Rülke et al. (2003) group the participants in the mobile value chain into five major elements: content and application providers, portal and access providers, wireless network operators, support services, delivery platforms and applications. In a later work, Fransman (2007) subdivided these into four modularised, hierarchically structured layers characterized by several symbiotic relationships that define the nature of innovation within the ICT ecosystem: 1) relationship between operators and network providers, 2) relationship between operators and content and application providers, 3) relationship between content and application providers and final consumers, 4) relationship between operators and final consumers. Figure 1 shows the mobile industry value chain (Singhal et al., 2015)

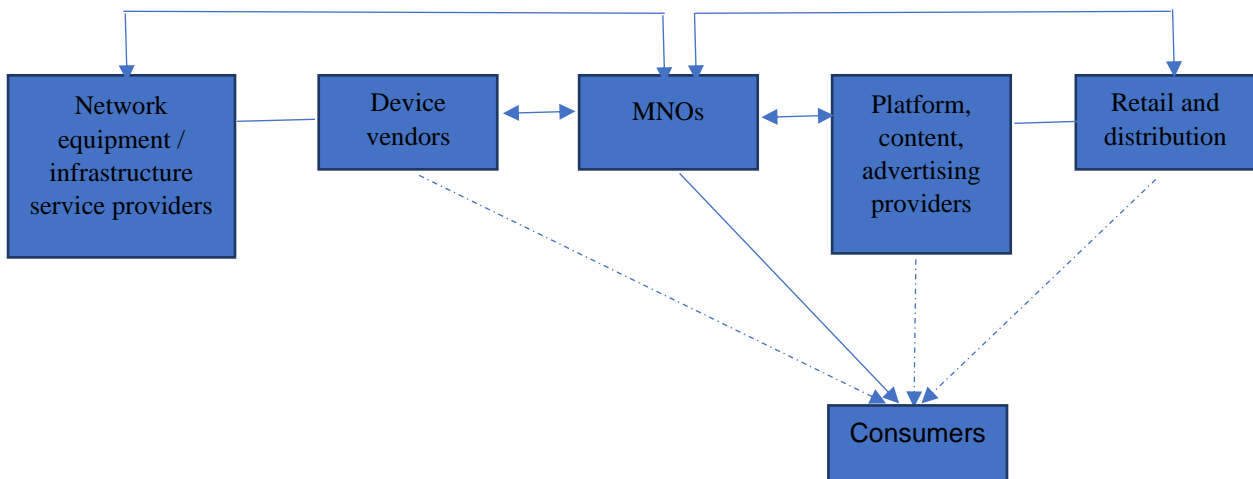


Figure 2: The mobile industry value chain

Fransman (2001) categorize the actors and their roles into six layers: customer layer, application layer, middleware layer, connectivity layer, network layer, equipment/software layer. The layers can be represented in a value chain as shown in figure 2. Actors in layer 1 include device manufacturers and mobile equipment vendors. This layer supplies the technology that facilitates the creation and delivery of service (Kuo & Yu, 2006). Players in this layer also deal with the base stations and maintenance of the core network. The MNOs operate principally in the Network layer and connectivity layer (Layer 2 and Layer 3), and provide the wireless connectivity for voice, data, and machine-to machine communications. The internet interface in layer 2 has driven the dematerialization of the industry by enhancing digitization and has drawn an increasing number of players into the industry, including the mobile virtual network operators (Fransman, 2001). Layers 3, 4 and 5 are the service layers

(Fransman, 2001), where platforms, contents, and applications are provided. Services Providers (e.g., content providers) are in the applications layer (Layer 5) and provide the final link to the consumers of a service. Among the value chain members, MNOs can occupy several layers in the value chain, thereby playing the most critical role on the entire value chain (Rülke et al., 2003; Kuo & Yu, 2006).

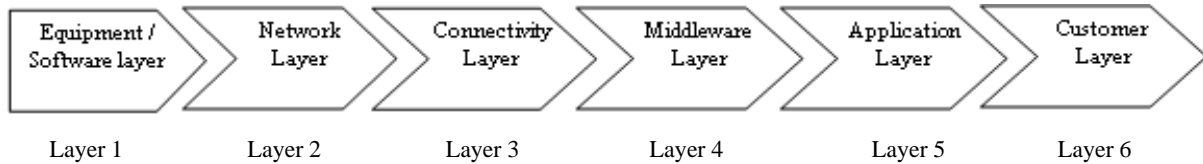


Figure 3: Layers of the mobile telecoms industry

In the last few decades, mobile communication networks have experienced a tremendous change, continually evolving with advances in technology and the range of services available for subscribers (Korhonen, 2005). The first generation (1G) of mobile cellular systems used analogue transmission techniques that could only accommodate few subscribers because of limitations in the use of radio frequencies. The 2G networks saw the emergence of digital technologies and breakthrough in capacity and quality of networks. Following the advent of 2G systems in the 1990s, the number of cellular telephone subscribers started to grow rapidly and would exceed the number of fixed-line subscribers for the first time in 2002 (Gruber, 2005). A major reason for the rapid growth in the number of mobile subscribers is the opportunities for additional and better services (primarily text messaging and basic data applications such as email). Intermediate 2.5G technologies (GPRS and EDGE) brought about service enhancements on the 2G, but the technology quickly moved towards full 3G.

The 3G mobile telecommunications systems, like 2G, is based on digital technology, but one that is designed to provide much more than basic data services (Chuah & Zhang, 2006). The emergence of 3G has been revolutionary technology, as it offered higher speeds and improved internet capabilities, thereby opening the possibilities for the introduction of a whole new set of mobile services through the entry of smartphones (Korhonen, 2005). Thus, the migration from 2G to 3G marked a turning point for the mobile telecommunications sector, as it cemented the significance of applications and user experiences to mobile communications.

The 4G technology is about improved capacity for multimedia content by providing network adaptations that support both new services and increased demand for broadband. With 5G technologies, connectivity has evolved from providing high-speed internet access to enabling

complex infrastructures. According to GSMA (2020), 5G offers better performance and more security and brings about a seamless connectivity era using the Internet of Things (IoT) technology. The evolution of the industry is discussed below in the context of Sub-Saharan Africa.

3.3. Evolution and structure of the Sub-Saharan Africa mobile telecoms industry

Liberalization of the mobile telecoms industry has had a tremendous impact on the growth of mobile telecommunications worldwide and in Sub-Saharan Africa. Today, the telecoms industry in most Sub-Saharan African countries is competitive, but the level of competition varies from country to country. Historically, the region had performed poorly in the provision of telecommunications infrastructure, especially fixed infrastructure (IFC, 2016). One of the evident signs of liberalization was the increase in technological innovation, as evidenced by growth in investments in infrastructure. According to IFC (2016), the period 1995-2000 saw the highest investments relative to mobile revenues, as mobile operators entered many SSA industries and built network. Thus, the percentage of the population covered by mobile networks climbed from almost zero in 1995 to more than 80 percent in 2015.

Table 10: Network coverage in selected SSA countries

	Percentage of population covered by 2G networks (2017, in %)	Percentage of population covered by 4G networks (2019, in %)
Cameroon	84.8	75.0
Ethiopia	85.0	69.9
Ghana	96.8	76.8
Kenya	95.3	64.3
Nigeria	92.7	51.0
Rwanda	99.9	99.0
South Africa	100.0	94.4
Burundi	50.0	25.0
Mozambique	41.0	12.4
Congo (Rep.)	75.0	40.9
SSA average	86.9	54.1

Source: ITU (2017) and GSMA (2020).

Recent evidence from the ITU shows that most SSA countries have at least 75% coverage of network (2G and above). According to estimates from ITU (2017), only six countries namely South Sudan (30%), Mozambique (41%), Burundi (50%), Eswatini (54%), Central African Republic (60%), and Somalia (65.5%) had less than 75% of their population with access to a mobile network as of 2017. Moreover, while emerging markets such as South Africa, Kenya

and Ghana have made great strides in developing new-generation mobile networks, many smaller African countries still lag behind. In South Africa, the percentage of the population covered by 4G network is 94.4%, Ghana 76.8%, Ethiopia 69.9%, and Kenya 64.3% (GSMA, 2020). Nigeria, the largest economy in the region, had only 51% of its population covered with 4G network in 2019, below the regional average of 54.1%. By comparison, the East Asia and Pacific region had 93.5% mobile network coverage and 81.7% (for 4G networks).

Table 11: Overview of selected MNOs in Africa

MNO	Country of Operation in SSA	SSA Subscribers (millions)
MTN	14	165
Airtel*	15	78
Vodafone	8	60+
9Mobile	1	15+
Tigo*	5	21
Glo	4	34
Orange	14	70+

Source: Authors' compilation from multiple sources (including MNO and regulator websites - May 2020)

*Airtel and Tigo operate in Ghana as a merged entity 'AirtelTigo'

Following the opening of SSA telecom industries to new entrants, many countries transitioned from monopolies comprising government-owned incumbents to a competitive environment with the entry of private businesses (Williams & Kwofie, 2014). Today, the telecoms industry in most Sub-Saharan African countries are competitive, but the level of competition varies from country to country. There are now several MNOs operating in SSA, including large global players India's Bharti Airtel, United Kingdom's Vodafone, France's Orange, and UAE's Etisalat. Table 11 presents the profile of selected MNOs in Sub-Saharan Africa. The third column show MTN with the largest subscriber base in SSA. However, Airtel operates in more SSA countries (15) than MTN (14).

3.4. Overview of the mobile telecoms market in Sub-Saharan Africa

Mobile technology provides the predominant access to internet connection in SSA owing to its affordability (Stork et al, 2013). As such, the growth of mobile penetration in the continent has been impressive at a time the consumer market for the mobile industry continues to expand. This growth was occasioned by the market reforms which opened the industry and enhanced quality of services available to users (GSMA, 2017a). Furthermore, competition in many SSA telecom industry has led to more affordable services and rapid infrastructure development that is reducing barriers to accessibility of services (GSMA, 2020).

Sub-Saharan Africa has one of the fastest subscriber growth rates in the world, and according to GSMA (2020), is the second-largest region behind Asia-Pacific in terms of unique subscribers. However, less than half of the population are subscribed to mobile services. GSMA (2020) estimates that unique mobile subscribers at the end of 2019 stood at 477 million, accounting for penetration rate of under 45% of the population. The actual subscription rate is higher as many individuals own more than one SIM card (IFC, 2016).

Mobile penetration in Sub-Saharan Africa varies by market structure and region. Figure 3 shows that much of the sector’s growth has occurred in Tanzania, Botswana, Kenya, Ghana, and South Africa (GSMA, 2020). In Botswana, for example, mobile penetration reached 69% in 2019 while South Africa had 68% penetration rate and Ghana had 67%. The region’s largest economy, Nigeria, had the largest unique subscription at 86 million but only a penetration rate of 45%, indicating huge potential for growth.

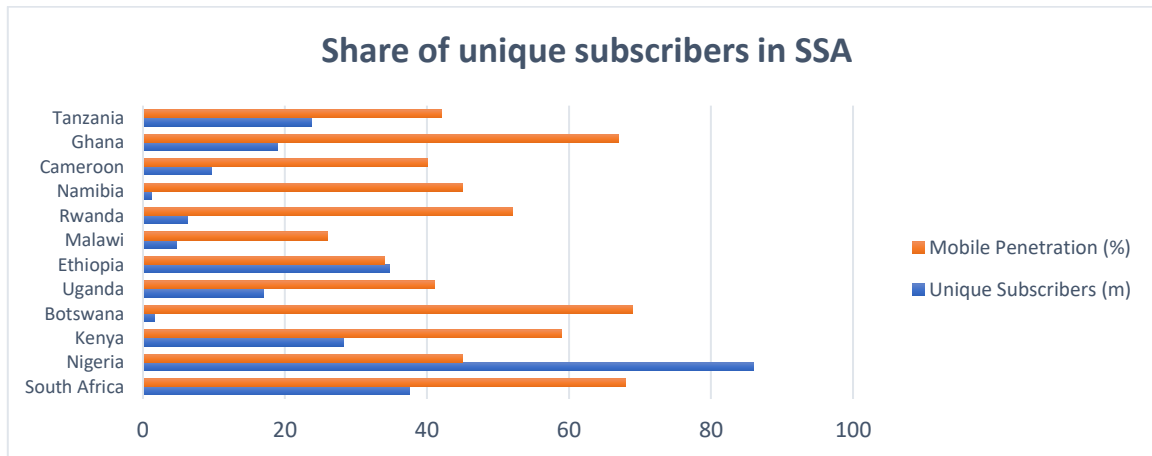


Figure 4: Share of individuals subscribed to mobile services

With increasing mobile penetration and rising data traffic across many countries in Sub-Saharan Africa, current network capacities can no longer accommodate rising data traffic (Skouby & Williams, 2014). Thus, overall ICT infrastructure is not fully developed as many countries continue to struggle to release 4G due to lack of access to optimal spectrum. According to the International Trade Centre (2020), larger economies - including Nigeria, South Africa, Ghana, and Kenya – have developed next-generation mobile networks but smaller Sub-Saharan African economies still rely on legacy network technologies such as 2.5G.

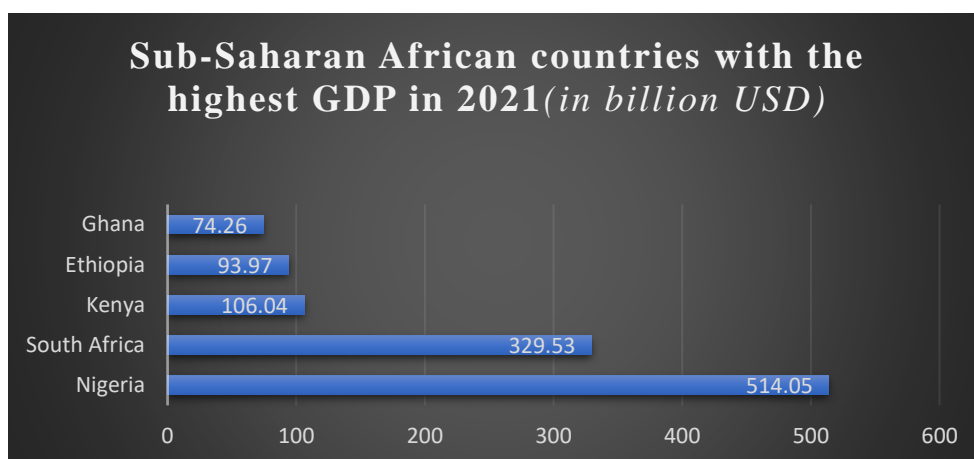


Figure 5: Top five SSA countries in terms of GDP

(Source: Statista, 2021)

Nevertheless, the mobile ecosystems in many African countries have witnessed rapid transformations with the realization of opportunities for economic growth. The SSA's top five, in terms of economy, include Nigeria, South Africa, Kenya, Ethiopia, Ghana. Estimates show that the contribution of the mobile industry to GDP in Sub-Saharan Africa have increased progressively since 2015 (GSMA, 2020). For instance, in 2015, mobile technologies and services generated 6.7% of GDP in Africa and this figure reached 8.6% in 2018. As of 2019, the mobile services generated 9% of GDP in Sub-Saharan Africa – more than \$155 billion of economic value added (GSMA, 2020).

3.5. Ghana and Nigeria as Research Contexts

Data from telecommunications market research companies, TeleGeography and GSMA, indicate that all Sub-Saharan African emerging markets have at least two MNOs. The Sub-Saharan African countries in IMF's emerging markets list include South Africa, Botswana, Ethiopia, Kenya, Ghana, Mozambique, Nigeria, Tanzania, Uganda and Zambia. Among these countries, Ghana and Nigeria are two of the most competitive mobile telecom industries. Nigeria has four big operators: MTN, Globacom, Airtel, and 9Mobile – all offering 2G, 3G and 4G services to varying scale. Ghana also remains one of the most competitive markets, with four MNOs.

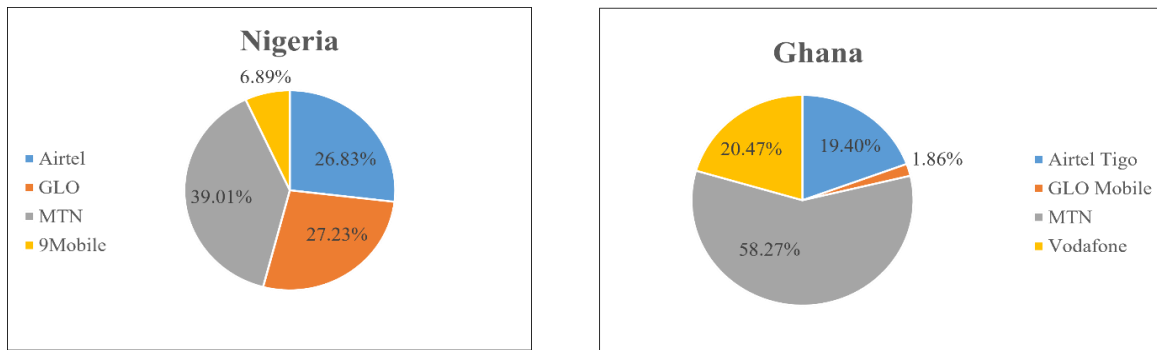


Figure 6: MNO market share in Ghana and Nigeria

This study is conducted in the context of Ghana and Nigeria, both emerging markets and big economies in Sub-Saharan Africa. The two countries are different in terms of market size and population but are related in terms of their close cultural and institutional environment, which makes it possible to examine the contexts of BMI along both their similarities and differences. Moreover, Ghana and Nigeria are in West Africa, one of the world’s fastest growing mobile sub-regions (GSMA, 2017b), and the two countries’ mobile penetration exceed the regional average of 43% in Sub-Saharan Africa (GSMA, 2017a).

Two other factors informed the choice of Nigeria and Ghana. First, both countries represent fertile geographical settings for research because of the proliferation of new mobile services for different segments of the population. New business models are emerging, in which multiple organizations partner to deliver services. Second, Nigeria and Ghana represent good examples of the rise of the independent tower business model in Sub-Saharan Africa; independent tower business model is an example of infrastructure innovation that has shaped the evolution of the mobile telecom industry (TowerXchange, 2015). Furthermore, Nigeria and Ghana can be considered standard reference points on innovation in challenging environments. This is because the mobile industry in these countries faces many challenges – both infrastructural and operational, to operate the mobile networks in a cost-effective manner. For example, the abysmal grid electricity infrastructure is one of the major challenges in running the networks and adds a significant cost to operations (GSMA, 2014).

This chapter has examined the mobile telecoms industry in Sub-Saharan Africa. The chapter began by providing an overview of the mobile telecoms industry before looking at the structure of the telecom industry and the growth of the mobile telecom market in SSA. The chapter concludes by introducing Ghana and Nigeria as the specific SSA emerging markets within which this study is conducted.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction to chapter four

This chapter presents the research methodology adopted to realize the study's research objectives. The chapter aims to justify and explain the study's philosophical lens, the data collection, and analysis techniques. The rationale for case study methodology and mixed methods are presented, followed by discussion of the procedure for implementing and validating these designs. The chapter also discusses important considerations about research ethics and ends with an enumeration of some of the challenges encountered in the data collection process.

4.2 The Research Process

The research process consists of stages from conceiving a research idea or developing a proposal to reaching the conclusions of a study. Crotty (1998) proposes that researchers ask four questions that constitute the process for conducting research: 1) what methods do we propose to use? 2) what methodology governs our choice and use of methods? 3) what theoretical perspective lies behind this methodology? 4) what epistemology informs the chosen theoretical perspective? Nevertheless, it is widely agreed that research methods can be traced back, through methodology and epistemology, to an ontological position (Scotland, 2012; Crotty 1998). The research process is depicted below, based on Crotty (1998):

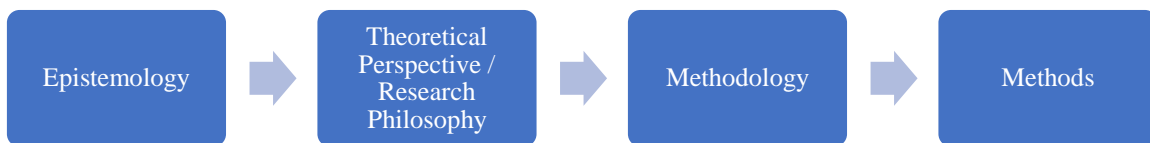


Figure 7: The research process

Figure 8 below provides a visual presentation of the research framework of the study to be discussed in detail in the forthcoming sections of this chapter.

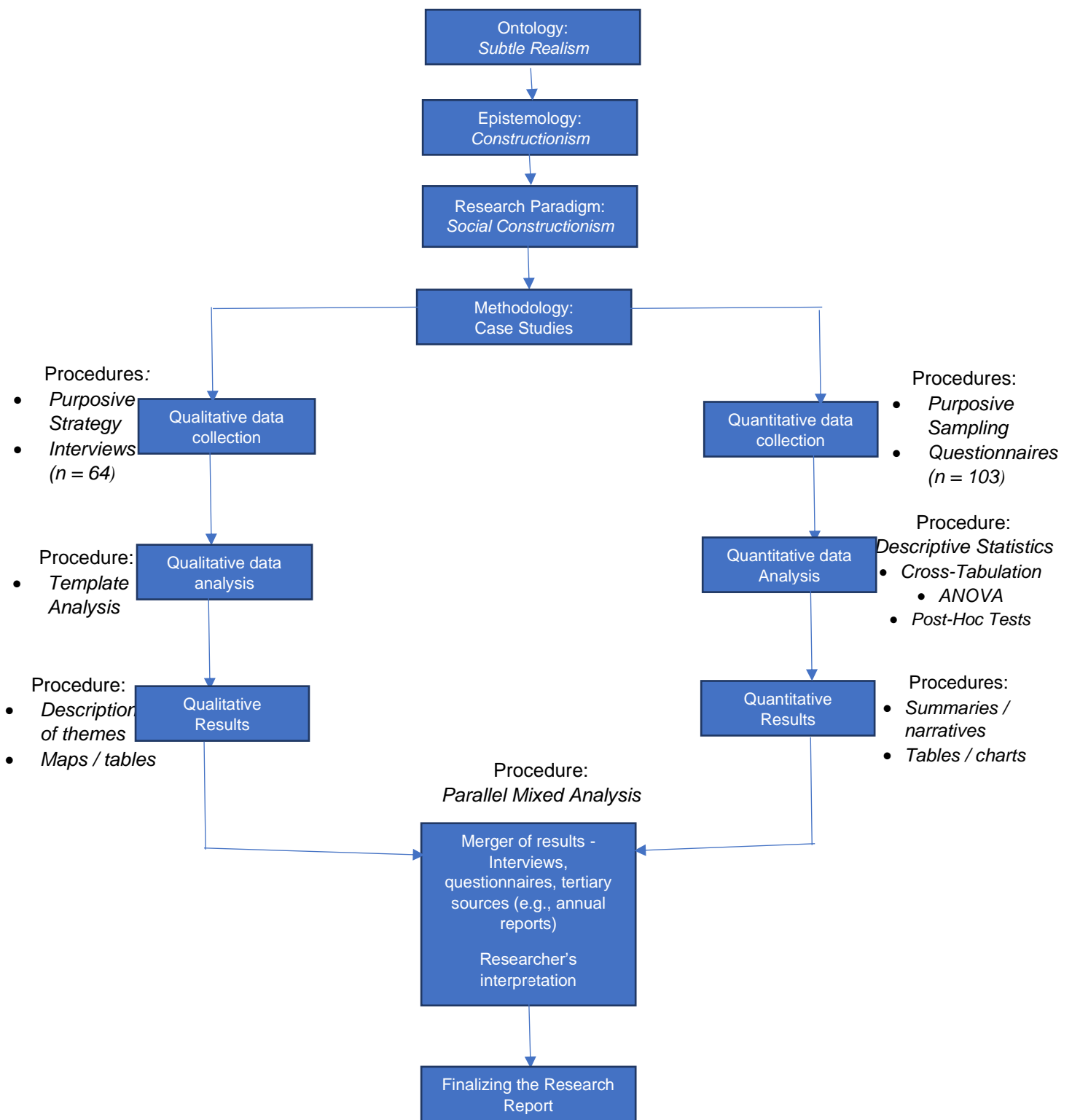


Figure 8: Research framework of study

4.3 Research Philosophy

In planning a study, researchers need to think through the philosophical assumptions about what constitutes knowledge claims and the system of enquiry that is related to these assumptions (Creswell, 2009). This system of enquiry, or research paradigm, derives from the epistemological position a researcher holds (Crotty, 1998). Before presenting the philosophical and epistemological positions guiding this study, a comparison of the traditional philosophies (namely positivism and interpretivism) is highlighted, as well as the more modern paradigm i.e., pragmatism.

It was immediately clear that neither the positivist nor the post-positivism paradigm would fit his viewpoint due to their focus on testing theories and generating laws as well as their conception of reality as objective and fixed. Moreover, positivism is associated with the epistemology of objectivism; in other words, research must be conducted in a way that separates the researcher from the object and is free of bias (Bryman, 2012). This does not fit in with the study's objective to understand how contextual conditions influence business model innovation.

Although the researcher agrees with the pragmatists viewpoint that different situations can be researched in different ways, he considers the pragmatist philosophical position less appropriate for this study as he does not share the notion that one can switch epistemological beliefs between subjectivism and objectivism, as any attempt to be at once objectivist and constructionist (or subjectivist) is problematic (Crotty, 1998). In addition, pragmatism links the choice of philosophy and methodology to the idea of 'what works best' rather than the researcher's view of reality and knowledge. Furthermore, although pragmatism offers a useful middle position methodologically and provides a practical and outcome-oriented method of inquiry, it does not follow a clearly prescribed format for conducting research; hence, determining what counts as useful or workable can be vague (Johnson & Onwuegbuzie, 2004). For these reasons, pragmatism is discarded.

Interpretivism and constructionism are two opposing viewpoints to positivism and post-positivism (Schwandt, 2003). Interpretivists feel that the ideas of positivism are flawed, and must be replaced with a more relativist perspective, in which reality exists only in the context of a mental framework for thinking about it (Guba & Lincoln, 1994). Interpretivism thus holds the epistemological position of subjectivism, i.e., reality is subjective and differs from person to person. On the other hand, social constructionism holds a related but different

epistemological position that meaning is socially constructed, not ‘imposed’ on the object (Crotty, 1998). Thus, while interpretivism is based on a strategy that requires the social researcher to grasp subject’s own meaning, constructionism takes the position that meaning is brought to the surface through interaction between researcher and participants. In interpretivism, there is tension between objective interpretation of subjective experiences, since interpretivists seek to develop an objective way to study human subjective experience (Andrews, 2012). If reality is subjective, researchers and their research subjects cannot reasonably be expected to arrive at the same interpretations (Alverson & Skoldberg, 2012). This brings into question validity in interpretive research. So, while in general, interpretivism and constructionism are united in their stance against positivism and are closely related; social constructionism is deemed to be more appropriate for this study because it gives primacy to the role of theory as well as contextual interaction between the researcher and the environment.

4.3.1 Social Constructionism

Social constructionism is discussed in terms of being either strict (radical) or moderate (Schwandt, 2003). The former is more closely related to the interpretivists’ anti-realist, relativist position, while the latter recognizes objective reality and its influence (Elder-Vass, 2012). However, while social constructionism (i.e., moderate version) does not deny the existence of an objective reality, its emphasis is on how knowledge of this reality is constructed and understood and is therefore more concerned with epistemological claims rather than ontological assumptions (Andrews, 2012).

In this study, the business model is viewed as a social phenomenon that exists in reality, but its meaning does not exist independently of human consciousness (Guba & Lincoln, 1997; Crotty, 1998). In other words, while organizations have a business model that define their logic of value creation and capture, the understanding of business models are socially constructed and contextual. Thus, knowledge and truth are socially constructed, not simply discovered by the mind (Schwandt 2003). This is consistent with Hammersley’s (1992) notion of subtle realism in that reality is socially defined but this reality refers to the subjective experience of how the world is understood rather than to the objective reality of the natural world (Andrews, 2012).

In acknowledging the existence of independent reality that is socially defined, this research emphasizes representation (from the perspective of the researcher) rather than reproduction of social phenomena from participant’s accounts (Andrews, 2012). This acknowledges the

importance of reflexivity in the research process. More detail on reflexivity and mitigating strategies to reduce bias are explained in section 4.6.

4.4 The Multiple Case Study Methodology

Before deciding on the choice of case study as the study’s preferred approach, common methodologies that are compatible with the social constructionism paradigm (ethnography, grounded theory, and case study) were considered. Ethnography was not considered appropriate, as this study is not about a particular culture, but about a social phenomenon with no specific cultural bounds. Furthermore, achieving the research objectives did not require the kind of deep immersive work that is central in ethnography. For grounded theory, it can sometimes achieve the same objectives as case study (Eisenhardt, 1989; Yin, 2014). However, grounded theory is principally concerned with deriving general explanation (theory) from data. Moreover, using grounded theory might require a larger number of cases than a case study research - usually more than four, to facilitate the development of a theory that explains processes that the cases have in common (Creswell et al, 2007).

Table 12: The case study methodology

	Case Study	Grounded Theory	Ethnography
Type of problem best suited	When researcher has a case bounded by time or place that can inform a problem	When existing theories are inadequate, or no theory exists	When a researcher wants to examine a group’s behavior and way of life
Focus	Developing an in-depth analysis of a case or multiple cases	Developing a theory grounded in data	Describing and interpreting a cultural and social group
Unit of analysis	An event, program, activity, or a set of individuals	A process, action or interaction involving many individuals.	Social interactions and perceptions that occur within groups, organizations, or society
Data collection	Multiple – documents interviews, observation etc.	Primarily interviews	Primarily observations
Method of Analysis	Description of the case, themes, assertions	Open, axial, and selective coding, conditional matrix	Description, analysis, interpretation

Based on Creswell et al (2007).

The case study methodology is adopted for this study for several reasons. Yin (2014) argues that “you would use the case study method because you deliberately wanted to cover contextual conditions—believing that they might be highly pertinent to your phenomenon of study”. Hence, Yin (2014, p. 16) gave a two-fold definition of case study: “an empirical enquiry that (i) investigates a contemporary phenomenon (the case) in depth and within a real-world context, especially when (ii) the boundaries between the phenomenon and context may not be clearly evident”. For this study, the boundaries between the business model phenomenon and

the context are closely interwoven since contextual factors such as institutional and regulatory environment of the mobile industry as well as interplay between organizations influence the design and innovation of business model. Thus, case studies are particularly useful for understanding how different elements (implementation, drivers, context etc.) have produced observed findings (Stake, 1995).

Yin (2014) distinguishes between three types of case studies: exploratory, descriptive, and explanatory. The exploratory case study explores situations or interventions which have no clear, or single sets of outcomes (Yin, 2014). Thus, it is often used in a research context that is not clearly specified (i.e., which lacks detailed preliminary research, or specifically formulated research questions or hypotheses (Stake, 1995). Descriptive case study aims to illustrate a phenomenon as well as the real-life situation in which it occurred (Yin, 2014). Explanatory case studies, on the other hand, seek to identify causal relationships and build theory.

Other researchers mention different categories of case study. Stake (1995) identifies case studies as intrinsic, collective, or instrumental. Collective case studies relate to Yin's idea of multiple case studies. Unlike intrinsic case studies, which enables a researcher to focus on a case because of its uniqueness, instrumental case studies focus on a specific issue (such as business model), and the cases are selected instrumentally to illustrate this issue, or to refine theory (Stake, 1995). Thus, this study is an example of an instrumental case study, where multiple instrumental cases are selected (Yin, 2014; Stake, 1995).

4.4.1 Designing the Case Study

Yin (2014) highlights a general approach to designing case studies, which include five components. These components are:

- 1) Specifying the research questions
- 2) Specifying relevant theoretical propositions
- 3) Specifying unit of analysis (i.e., the case or cases)
- 4) Explicating the logic linking the data to the propositions; and
- 5) Specifying the criteria for interpreting the findings

The first component in case study design (i.e., the research questions) is specified at the beginning of this study.

The second component in Yin's (2014) design is the propositions of the study. The propositions direct attention to areas that should be examined within the scope of the research questions; hence, it prepares the researcher for the specific data to be collected (Yin, 2018). In this study, the literature review helped in the identification of a-priori themes which guided the direction of the research. These themes are presented in the next Chapter.

The Unit of Analysis (Selection of Cases)

The third component is specification of the unit of analysis. The case study approach is appropriate if the study seeks to provide a comparison of several cases or an in-depth understanding of the cases (Creswell & Creswell, 2018). Hence, the general rule of thumb is to select cases which are relevant to specific research objectives to enable in-depth analysis, as opposed to generalization (Stake, 1995).

Three case studies were selected for this study: *mobile network operators*, *mobile infrastructure companies*, and *mobile content-based providers*. Selection of cases was purposeful based on several criteria. When used in relation to the word 'sampling', this study's approach to case selection can be described as critical case sampling, a subset of purposive sampling techniques. In critical case sampling, the researcher selects a small number of important cases that are likely to 'yield the most information and have the greatest impact on the development of knowledge' (Patton, 2002, p.236). This relates to Stake's (1995) idea regarding the selection of cases. According to Stake (1995, p.4), "the first criterion in selecting a case should be to maximize what we can learn", especially since the goal is not to generalize to a larger population, but to 'generalize to theory' (Yin, 2014). Given these considerations, the three case studies were selected instrumentally to help us understand innovative business models in the mobile telecom industry.

More specifically, the types of organizations selected occupy different stages and play different roles in the mobile industry value chain; for example, mobile operators have direct links to the customers, and link directly with both content providers and infrastructure providers. Conversely, mobile content providers create new types of revenue streams for the mobile operators. The third case, network infrastructure companies, is chosen because they help to shed light on the interplay between mobile services and infrastructure, given that provision of services would not be possible without the necessary infrastructure that enables those services. From these three cases, the aim is to do both a within-case analysis as well as cross-case analysis to infer contrasting results, based on theory (theoretical replication) (Yin, 2014).

Linking data to the propositions

This component of the case study design relates to the way in which theory is used in the data analysis. At one extreme is the pure inductive research process, which involves working data from the ‘ground up’ without any or with very little reference to prior theory, as in grounded theory (Strauss & Corbin, 1997). At the other extreme, a researcher follows a very tight structure using theories and previous research to develop hypotheses. Case study researchers (e.g., Yin; 2014; Eisenhardt, 1989) prefer to move a bit towards the middle in the inductive-deductive continuum, rather than occupying any of the extremes. However, Eisenhardt’s (1989) much flexible approach is closer to the inductive model in which the literature is used as little as possible prior to data collection to limit potential bias. “Thus, investigators should formulate a research problem and possibly specify some potentially important variables, with some reference to extant literature. However, they should avoid thinking about specific relationships between variables and theories as much as possible, especially at the outset of the process” (Eisenhardt, 1989, p. 536). On the other hand, Yin (2018) is closer to the deductive end of the inductive-deductive continuum, as he places more emphasis on ideas from prior theory rather than concepts derived from the data. This current study occupies a middle position in the inductive-deductive continuum, although slightly closer to the deductive end with the use of prior theory (See figure 8, based on Ridder, 2017). In this study, data is linked to theoretical propositions by matching the framework with patterns from the data and doing cross-case interpretation of the multiple cases (Yin, 2018). This is discussed in detail in the next section.

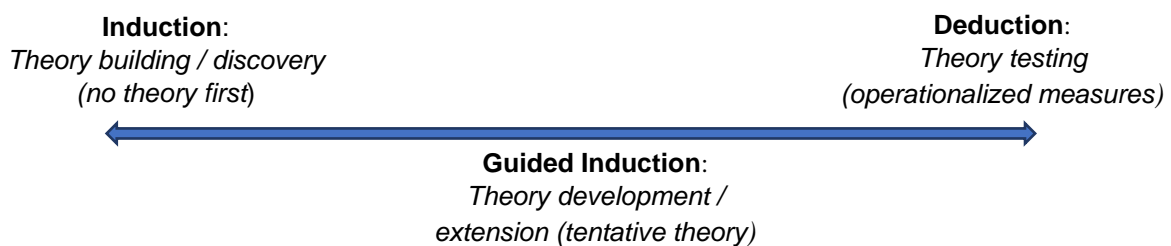


Figure 9: Theory continuum

Interpreting Case Studies’ findings

One of the main challenges of doing case study research is the limited guidance on how to rigorously analyze and interpret evidence from case study. Yin (2018) suggests five analytic techniques for doing case study research: pattern matching, explanation building, time-series

analysis, logic models, and cross-case synthesis. In a multiple case study, cross-case analysis is especially useful for achieving theoretical replication (Yin, 2018). However, in multiple case study research, cross-case analysis is normally preceded by ‘within-case’ analysis (Miles & Huberman 1994, Eisenhardt 1989). Thus, in this study, within-case analysis of the three cases first provides a detailed description of each case and themes within it; but cross-case analysis is then carried out to identify similarities and differences across the cases (Yin, 2018).

In this study, to assist in the analysis of the case studies, the coding technique was adopted as it allows linking the data back to the research questions and theory (Miles & Huberman, 1994). Template Analysis (King, 2004) guided the process for linking the data to the respective theoretical components through the process of hierarchical coding. Using template analysis made the task of interpreting the output from the case studies easier and more intuitive. A discussion of the process of template analysis is provided in 4.5.3.

In reporting the findings from case studies, one important pitfall to avoid is the tendency to think of the cases as ‘sampling units’ (Stake, 1995). Rather, the case study should be seen as opportunity to shed empirical light on some theoretical concepts (Yin, 2018). Thus, Yin (2018) distinguish between analytic generalization and statistical generalization, which is the more common approach for generalization. In statistical generalization, the aim is to achieve a representative sample that allows for generalization to an entire population; hence, random sampling techniques are employed. In contrast, since the case study deals with a small number of cases that are purposively chosen, the aim is not to generalize to a population but rather to theory (Yin, 2018).

4.5 Mixed-Methods Design

Traditionally, qualitative and quantitative research approaches are associated with specific paradigms or methodologies. For example, objectivism-oriented approaches are associated with methodologies such as experimental and survey research, and consequently quantitative research (Bryman, 2012). On the other hand, interpretivism/constructionism have traditionally been seen as an approach to qualitative research and is often linked to methodologies such as ethnography, grounded theory, case study, and hermeneutics etc. (Scotland, 2012; Creswell, 2009). Nevertheless, Crotty (1998) argues that ‘typical’ ways of doing research do not mean ‘mandatory’. As such, any of the theoretical perspectives (positivism, interpretivism etc.) could make use of any of the methodologies, and any of the methodologies could make use of any of

the methods (p. 12). What Crotty (1998) seems to be saying is that distinctions among research approaches occur at the level of epistemology or theoretical paradigms, not at the level of methodology or methods. Creswell (2009) and Biesta (2010) also make the point that qualitative and quantitative approaches should not be viewed as opposites, but rather as representing different ends on a continuum.

A mixed-method approach to research aims to capitalize on the strengths of the quantitative and qualitative methods while offsetting their weaknesses. Several scholars advocate for mixed-method as a specific research design for conducting social research (Tashakkori & Teddlie, 2003; Johnson & Onwuegbuzie, 2004). Creswell et al (2003, p. 165) define mixed-method research as *involving “the collection or analysis of both quantitative and/or qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research.*

Given the features of mixed-method research as highlighted in the above definition, Bryman (2006) specify some questions that the researcher needs to answer to clarify their intentions and help in the research process:

- 1) Are the quantitative and qualitative data collected simultaneously or sequentially?
- 2) Which has priority – the quantitative or the qualitative data?
- 3) What is the function of the integration,
- 4) At what stage(s) in the research process does multi-strategy research occur?

With regards to timing of data collection, Morse (1991) provided a typology that has been a reference point for researchers adopting mixed-methods research strategy. Her typology specifies four categories of mixed-methods research, based on whether the approaches are used concurrently or sequentially. This study uses both approaches concurrently, i.e., the collection of the quantitative data (questionnaire) and qualitative data (interview) took place in parallel.

In terms of priority, Morse (1991) considers that either the qualitative approach or quantitative method may be given more emphasis. Creswell (2009), on the other hand, extends the consideration to include situations of equal weighting between the two approaches (quantitative and qualitative). However, even with the assumption of equal weighing between the two sets of data, Creswell & Plano Clark (2011) found that qualitative data may often take over during the interpretation of the combined data analyses. Others like Bryman (2007) considers quantitative methods as typically dominant in mixed methods research. Consistent with the

epistemology of constructionism, this paper gives qualitative approach more priority and uses quantitative data for corroboration.

The third question relates to the rationale for integrating qualitative and quantitative data. Greene et al (1989) provided a highly influential scheme for specifying the purposes of mixed-method design. Their scheme isolated five main justifications for combining quantitative and qualitative research: 1) Triangulation, 2) Complementarity, 3) Initiation, 4) Development, 5). Expansion. In this current mixed methods study, the *triangulation* approach has been adopted. This is in keeping with the view that quantitative and qualitative research might be combined to corroborate findings, using both approaches to seek different responses for the same phenomenon. Furthermore, the qualitative and quantitative design are used to complement the other by exploring different aspects of the same business model innovation phenomenon. The quantitative elements help in interpreting interview findings and to more clearly show patterns that exist across organization types. Specifically, while questionnaires provided an account of structure related elements e.g., pricing mechanisms, ranking of important elements, and identification of what elements of the business model has changed; the interviews were aimed at understanding the underlying nature of business model changes and how contextual conditions influence management choices. This combination of both data strands provided an elaborated, enriched and more comprehensive understanding of the business model innovation phenomenon.

For the fourth consideration, at what stage mixing occurs, Creswell (2009) suggested that mixing might occur at several stages: the data collection, the data analysis, interpretation, or at all three phases. Bryman (2007) reports on the failure of several studies to fully merge the findings from the two approaches. However, some studies may require specific research questions to be answered solely in isolation by either qualitative or quantitative approach (Sainidis, 2013). Whether such a mono-strand study can genuinely be regarded as a form of mixing methods is debatable (Bryman, 2006). This study mixes both approaches mainly at the data collection (concurrent) and interpretation/discussion stages.

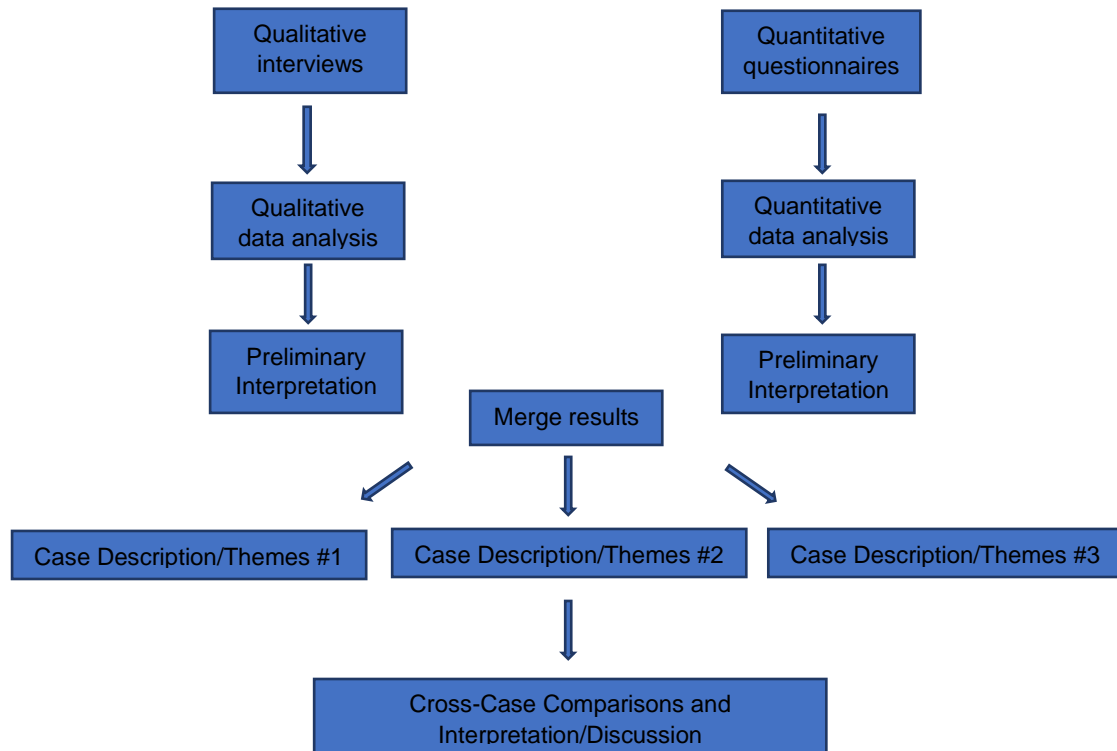


Figure 10: Case study mixed methods design
(Adapted from Creswell & Creswell, 2018)

- The research follows the principles of case study research (Yin, 2014), using multiple methods of data collection mainly semi-structured interviews, questionnaire, and tertiary sources of data (e.g., company reports). Interview and questionnaire participants were managers directly involved in either the development, management, or marketing of the innovations at the organizations. However, the interviews and questionnaires targeted respondents at different management levels to further enhance triangulation. Good case studies use different data collection techniques to enhance validity. While this study uses interviews, questionnaires, and document review to increase trustworthiness of findings, these tools were not all adopted equally across all the organizations. As noted later in sections 4.7 and 10.4, one important challenge encountered during this study was related to accessibility, which made it more challenging to triangulate across every organization visited. Furthermore, the findings about changes and drivers identified among firms in this study is based on account from participants, some of whom were not part of the organization as at the time the changes they referenced took place. However, selecting participants (company representatives) across multiple levels of the organization helped to enhance credibility and reduce the effects of participant subjectivity.

The interviews aimed at comparative responses from participants across multiple levels, i.e., business model decision-makers formulating strategy at the top management level (e.g., top

executives, head of functional disciplines, where accessible), those at the mid-management levels (e.g., head of a department within organizational unit), and those at the first-level management performing operational functions. On the other hand, the questionnaires were targeted mostly at mid-level decision-makers and first-level managers. Lastly, interviews and publicly available documents were targeted at regulators and policy makers, as questionnaire was considered less suitable for the kind of industry-level and institutional insights they provided. In total, 64 interviews were conducted, and 103 questionnaire responses obtained. The recorded interviews were transcribed and uploaded into the qualitative analysis software tool, Nvivo 12, complemented by manual coding techniques. Similarly, questionnaire responses were uploaded and analyzed using SPSS software. In terms of data analysis, an approach consistent with triangulation and complementarity objectives was adopted. Both the quantitative and qualitative data were combined at the interpretation stage; following separate analysis stages for each data set. The whole process of data collection and case study is depicted in figure 9 above, although specific discussion of procedures for analyzing each data set that inform the case study reports is presented later.

4.5.1 Interview Design and Recruitment Process

Adopting a semi-structured approach allow for the use of pre-defined questions whilst leaving room for deviation from the protocol to more thoroughly follow-up on interviewee's responses. The interview protocol contained several main questions that were adapted according to organization type. The main approach to recruiting participants was via emails to organizations and, where possible, direct communication with employees via email and LinkedIn. Telephone calls were also put through to the publicly available contact number of organizations. Four of the participants (all policy/regulatory officials) were recruited during the Commonwealth Telecommunications Organization (CTO) ICT Ministers Forum that was held in June 2018 in London. Two of these recruits were interviewed on the spot at the conference venue. Interviewees held a range of management positions in their organizations, ranging from top level roles e.g., Executive Directors and Head of Sales and Marketing to middle management positions including, Head of Digital Media and Sales Manager (*see appendix for detailed overview*).

Face-to-face interviews were held with participants across four cities in Nigeria and Ghana: Abuja, Accra, Akure, and Lagos. The face-to-face interviews took place during work hours between Monday and Friday at interviewee's workplace, except for one, which took place in

an Accra Mall. The interviews started by handing informants the project information sheet. Subject to interviewee's consent, a recorder is then turned on to capture the discussion. The face-to-face interviews were 55 in total. Upon the researcher's return to Newcastle in October, he had an additional 9 interviews between November 2018 and March 2019 (5 via skype, 2 via telephone, and 2 via email exchanges). The email interviewing served as a viable alternative technique to face-to-face, skype, and telephone interviews. All 64 interviews, except 15, were recorded (13 interviewees opted for discussion notes only). The remaining 2 interviews, as mentioned earlier, were email exchanges, in which the interviewee was sent the list of questions and the answers returned at the informant's convenience. The interviews lasted between 15 and 70 minutes depending on informant's availability. However, most of the interviews were in the 30 minutes and 40 minutes range. On average, duration of the recorded interviews was roughly 39 minutes.

Table 13: Qualitative data: interviews

Communication mode	Total number	Audio recorded	Average duration
Face-to-face	55	49	38
Skype	5	5	55
Telephone	2	2	20
Email	2	0	0
	64	56	39

4.5.2 Questionnaire Design and Administration Process

The questionnaires included 29 questions, including mostly closed-ended and a few open-ended items. Respondents held a range of positions, mostly mid-level management and operational roles, including titles such as: Sales Manager, VAS Analyst, Project Manager, and Operations Manager.

The questionnaires were designed and disseminated via two approaches: online version and paper based. The online version was designed using online surveys (formerly BOS), and had the following weblink: <https://northumbria.onlinesurveys.ac.uk/business-model-innovation-in-emerging-markets-2>. The link was forwarded to respondents via LinkedIn or email. The questionnaire included an introductory page which contained the research information sheet and participant consent declaration. One advantage of the online version was that it was less expensive and easier to manage than personally administered questionnaires. However, it required a more extensive follow-up consisting of up to 3 reminders over a 9-month period between July 2018 and March 2019 (questionnaire was open from June 2018 until May 2019).

Despite considerable efforts, only 19 completed responses were received online. 117 respondents started the questionnaire but stopped midway at different stages, with 82 failing to go beyond the introductory first page.

Physically administered questionnaires recorded a much greater success rate, representing 81% of the total questionnaire responses of 103. The paper-based questionnaires were handed to an interviewee before or after an interview, or as in many cases, to the HR department of the organization for circulation to relevant respondents. On some occasions, interviewees handed the questionnaire to another colleague to fill.

Table 14: Questionnaire timeline and responses

Administration mode	Timing (difference between 1st and last responses)	Responses
Online	16 th July 2018 to 15 th March 2019	19
Paper-based	July to October 2018	84
		103

4.5.3 Analysing Qualitative Data: Thematic Analysis

In analyzing interviews, emphasis is placed on the search for themes emerging from data. Thematic Analysis is a method for identifying, analyzing, and reporting patterns (themes) within data (Braun & Clarke, 2006). It moves beyond counting explicit words or phrases to a focus on identifying both implicit and explicit ideas within data (Guest et al., 2012). One of the advantages of thematic analysis is that it allows coding on data without the requirement to subscribe to the implicit theoretical commitments of grounded theory, which aims to produce a fully worked-up grounded-theory analysis (Braun & Clarke, 2006, p. 81). Thus, thematic analysis is theoretically flexible, and fits with the philosophical stance of social constructionism.

Braun & Clarke (2006) distinguish between inductive thematic analysis and theoretical thematic analysis, where ‘inductive analysis’ was defined as a process of coding data without trying to fit it into a preexisting coding frame, or the researcher’s analytic preconceptions. In contrast, a ‘theoretical’ thematic analysis would tend to be driven by the researcher’s theoretical or analytic interest in the area. Thus, a researcher can either “code for a quite specific research question (which maps onto the more theoretical approach) or the specific research question can evolve through the coding process (which maps onto the inductive approach) (Braun & Clarke, 2006; Crabtree & Miller, 1999).

While this study is geared towards the theoretical or deductive thematic analysis approach, there is merit in following a hybrid approach to data analysis. In a hybrid approach, deductive logic is used to develop a codebook based on the framework and then additional data-generated codes will be added to the analysis (Crabtree & Miller 1999). A similar approach is to have as a starting point a priori themes specified from the literature, add data-generated codes, and develop a template for analysis (King, 2004). The importance of choosing a hybrid approach is that it considers the research questions by allowing the concepts and assumptions about BMI to be integral to the process of deductive thematic analysis while also allowing for themes to emerge direct from the data using inductive coding.

Braun & Clarke (2006) suggest six phases in thematic analysis: familiarization with data, generating initial codes, searching for themes, reviewing themes, defining themes, and producing the report. In the final interpretive phase of the study, the analysis will end with applied generalizations, and the lessons learned from the case will be reported (Lincoln & Guba, 1985). These stages are not intended as rules; rather they are basic guides which should be applied flexibly to fit the research question and data (Patton, 2015), and might require a recursive process, ‘where movement is back and forth as needed, throughout the phases’ (Braun & Clarke, 2006; p. 86).

Template Analysis

In this doctoral study, the template analysis technique was adopted as the strategy for doing thematic analysis of the qualitative data. Brooks et al (2015, p. 203) define template analysis as “a form of thematic analysis which emphasizes the use of hierarchical coding but balances a relatively high degree of structure in the process of analyzing textual data with the flexibility to adapt it to the needs of a particular study”. Thus, template analysis permits the use of a priori themes (themes determined in advance of coding) to inform analysis (King, 2004), though using such is not obligatory (Brooks et al., 2015). According to King (2004), *a priori* codes can emerge from initial coding of a sub-set of the data, or it could emerge from the literature review, or it could be based on recommendations in earlier research. The a priori themes are then used to define the production of a final list of codes, i.e., the template.

The flexibility of template analysis makes it appropriate for this study. It is consistent with the hybrid approach to coding where deductive logic is used to develop a codebook based on the framework, and then additional data-generated codes will be added to the analysis (Crabtree &

Miller, 1999). Miles & Huberman (1994) emphasize the importance of a flexible approach, recognizing that changes in the initial codes can occur for a variety of reasons including the fact that additional codes are required, some might be obsolete, and others might emerge during the data-collection process. Another reason why template analysis was chosen is that its structure allows for easier reduction of data and organizing of themes drawn from many interviews, i.e., 64 interviews (Brooks et al., 2015).

Template analysis as a form of thematic analysis shares with Braun & Clark's (2006) approach, in that they both emphasize flexibility and are not incorporated within a specific methodology and philosophical assumptions, unlike other thematic approaches such as Grounded Theory (King, 2012). However, they differ in a number of ways. Brooks et al (2015) outline three major ways in which template analysis differs from the thematic analysis technique of Braun & Clark (2006). Firstly, in terms of development of themes and creation of coding structure, template analysis produces an initial version of template based on a subset of data, whereas development of a coding structure takes place only after coding of all the data in Braun & Clark's methods. Secondly, template analysis allows researchers to produce theme definitions at the initial template stage to guide further coding and template development as opposed to defining themes in the late phases of the process. Thirdly, template analysis is unique in that four or more levels of coding are often used to capture the richest and most detailed aspects of data (Brooks et al., 2015, p. 206).

The main procedural steps in carrying out template analysis are outlined below (King, 2012).

- ▶ Familiarization with Data
- ▶ Preliminary Coding (might use a priori themes)
- ▶ Clustering (emerging and a-priori themes are clustered into groups)
- ▶ Producing an Initial template (Hierarchical and Parallel Coding). This is usually done on a subset of the data rather than doing preliminary coding and clustering on all accounts before defining the final thematic structure (Brooks et al., 2015)
- ▶ Developing the template (Iterative process of refinement) (insertion, deletion etc.)
- ▶ Final template: A template can be considered 'final' if there are no more clearly relevant sections of text that remain un-coded (King., 2004)
- ▶ Interpretation and presentation

In this study, the a priori themes were derived based on the overall objectives and research questions of the study. The a priori themes appear mainly, but not only, as level 1 themes in the initial and final templates. Following (King, 2004), there was no ‘one single initial template’, as the first template itself went through several changes and refinements before arriving at the final template i.e., the point in which further engagement with data ceases as all parts of the data clearly relevant to the research questions have been coded (King, 2012; Brooks et al., 2015). The final list of codes generated makes the template, and is hierarchically coded according to higher-order, lower order, next level order codes etc. The lowest level of the codes has been generated directly from interview quotes.

The a priori themes and final template are presented in the next chapter. In between, the processes for arriving at the final template is described, including the coding processes and refinements that occur during the initial templates phase. The final template is used as the basis for the next stage of the analysis, i.e., the interpretation of the coded data.

4.5.4 Analysing Quantitative Data: Statistical Analysis

Generalization in case study design changes the role of quantitative approaches from making inference about populations to the goal of analytic generalization that is based on “either (1) corroborating, modifying, rejecting, or otherwise advancing theoretical concepts or (2) new concepts emerging from the case study’s findings (Yin, 2014, p. 41). Thus, working with case study leads to a deviation from the conventional understanding of inference. The role of quantitative methods in this case study research, then, is largely descriptive, since the goal is to help shed light on a small number of cases (Tashakkori & Teddlie, 1998). Sayer (1992) notes that statistical descriptions are helpful simplifications, which serve as “a quantitative measure of the numbers of objects belonging to some class or a statement about certain common properties of objects” (Sayer 1992, p. 100). For example, one might say that 75 percent of organizations with a freemium pricing mechanism are social enterprises or that network infrastructure companies tend to invest more in physical resources. From this overview, one can see that even though it suggests a necessary relationship or correlation, it does not infer causal relationships and, thus, should be seen as descriptive rather than predictive tools (Sayer, 1992).

The use of descriptive statistics is consistent with the philosophical stance of this study, which aims to explain a social phenomenon in context. It is also in line with the deductive-inductive approach of refining theory, as opposed to theory testing. In addition, descriptive statistics

allow for the use of relatively smaller quantitative samples (Witte & Witte, 1997; Sainidis, 2013). In this current study, descriptive statistics such as cross-tabulation help in interpreting interview findings and to more clearly show patterns that exist across organization types. For ordinal, ranking data, ANOVA tests is conducted to analyze variance in ratings across organization while post hoc tests check how much the raters agree. The questionnaire responses have been analyzed using the SPSS Software.

4.5.5 Merging Quantitative and Qualitative Data: Parallel Mixed Analysis

In mixed-method design, a preferred approach to mixing both quantitative and qualitative data sets is known as parallel mixed analysis (Tashakkori & Teddlie, 1998). This procedure is analogous to Creswell & Plano Clark's (2011) notion of 'merging' in concurrent mixed methods, in contrast to 'connecting' for sequential designs. Creswell & Plano Clark (2011) state that this approach may be used in a mixed methods design embedded within case study approach. In this doctoral study, the procedure for mixing the two strands of data is stated below, based on Tashakkori & Teddlie (1998) and Creswell & Plano Clark (2011). Also, the whole process of Case study mixed methods research is depicted in section 4.5. above (*Mixed Methods Design*).

- Collect the qualitative and quantitative data concurrently
- Analyze quantitative data using descriptive statistics (discussed above)
- Analyze qualitative data using template analysis (discussed above)
- Complete refined analysis to produce needed interpretation

4.5.6 Validity in Mixed-Methods Research Design

Yin (2014) specifies four tests that can be used to judge the quality of case study design: construct validity, internal validity, external validity, and reliability. However, the concepts of validity and reliability are essentially seen as tools in positivist's quantitative approach (Winter, 2000). Qualitative researchers, on the other hand, prefer to discuss validity in terms of languages such as credibility, transferability, and trustworthiness (Lincoln & Guba, 1985), and consider reliability to be of little relevance. Hence, Lincoln & Guba argue that: "since there can be no validity without reliability, a demonstration of validity is sufficient to establish reliability" (p. 316). Thus, Creswell & Plano Clark (2011) only discuss the strategies for

ensuring validity in mixed-methods design. In this current study, the validity of the findings was based on the three validity tests suggested by (Yin, 2014).

Construct validity: In case study design, one way of enhancing construct validity is by using multiple sources of evidence (Yin, 2014). This study uses multiple sources of evidence (interviews, questionnaires, documentation) in a manner encouraging corroboration, as the questionnaires and interview were designed using converging lines of enquiry. Also, to ensure that possible validity threats during data collection were minimized, Creswell & Plano Clark's (2011) recommendation that mixed-method designs draw quantitative and qualitative samples from the same 'population' was followed.

- **Internal validity:** Internal validity has to do with credibility or trustworthiness of the research findings. As discussed above, cross-checking responses with different respondents via triangulation also helped to advance trustworthiness of the findings. Another strategy used was to match some quotes from interviews that support quantitative findings (Creswell & Plano Clark, 2011). Moreover, the researcher was aware of the potential biases that had the potential to influence the research process. This is discussed in the section 'reflexivity'.
- **External validity:** this deals with the challenge of knowing whether a study's findings are generalizable beyond the immediate study. This relates directly to the issue of analytic generalizations as opposed to statistical generalizations (Yin, 2018). Within-case analysis of each case study was conducted followed by a cross-case analysis of the multiple case studies (Eisenhardt, 1989). Also, to enhance external validity, a thorough description of the research context is provided so that the reader can be able to apply the findings appropriately.

4.5.7 Ethical considerations

In this study, the researcher was involved in a sustained interaction with multiple research participants. This introduced a range of strategic and ethical issues into the research process (Creswell, 2009). Accordingly, Northumbria University has a robust set of guidelines and principles governing academic research practice. Following peer review of the study's proposal by an independent research committee of the Faculty of Business and Law, this current study was granted ethical and risk assessment clearance on 4th December 2017. A strict compliance with the principles of ethical research, as contained in the Northumbria University ethics and risk assessment policy, guided this research. Specifically, data collection was conducted with the informed consent of organizations and the individual research participants. This was

achieved by handing to the organizations and participants an informed consent form accompanied by a research information sheet, which detailed the purpose of the research, the way the data will be used and the right to voluntary withdrawal of participation. The subject of confidentiality and privacy was an important consideration; hence, no participants were identified without their permission.

4.6 Reflections on fieldwork in Ghana and Nigeria

Given the philosophical approach which emphasized representation (i.e., from the researchers' perspective), it was important to be reflexive about the potential bias that may interfere in the process. Reflexivity is an ongoing critique and critical reflection of a researcher's biases and assumptions and how these may influence the research process. According to Creswell & Creswell (2018), reflexivity requires consideration of two important issues: researcher's past experiences and how these experiences might shape interpretations. It needs to be acknowledged that, even if unlikely, some of the findings may have been observed differently if another researcher were undertaking the study. As part of reflexivity, being a Nigerian national with adequate knowledge about the Nigerian and indeed, the West African culture, the researcher was conscious of the potential bias or influence that may creep into interpretation in certain aspects of the research. The researcher also took conscious steps to limit these potential biases.

The researcher's approach to balancing own assumptions with participant accounts was by consciously examining the data critically to ensure understanding of the meanings and to aid accurate and concise identification of categories during coding. A detailed transcription of all the interviews provided an intimate knowledge of the data. In addition, the researcher had debriefing sessions with the study supervisors to review the data and the data collection process. Moreover, the researcher shared and discussed findings with supervisors and other researchers both individually and in communal settings, e.g., academic conferences, to gain different perspectives for interpreting the data.

It is important to emphasize that being a Nigerian national also brought about benefits that enriched the research process. Although the researcher had preconceived notions about how the context functions, being a Nigerian national helped in the effective interpretation and understanding of findings. Moreover, the researcher benefitted from understanding of

indigenous languages, as some respondents were more comfortable relating in local languages, particularly the colloquial ‘Pidgin’ English which is widely spoken in Nigeria and Ghana.

4.7 Challenges Encountered During Data Collection Process

The researcher encountered significant challenges during the fieldwork process, which uncovered hidden nuances that surround accessing organizations and doing research in Africa (Ado & Wanjiru, 2018). In general, the bigger organizations, especially the multinationals, were more difficult to access than the smaller ones. In most cases, the researcher sought access by contacting the organization through their publicly available email address or telephone number. This brought about little success. The researcher also made physical visits to the organizations but had to deal with certain difficulties such as ‘gatekeepers’ and organizational bureaucracy. For instance, there was a particular multinational whose participation would have been of great value, given their position as the leading player in their market. After several visits to this organization and despite submitting a non-disclosure agreement (NDA) that had been requested as a condition for participation, the researcher continued to be denied access. It eventually became clear that, perhaps, the company wasn’t interested in participating in the study. To have continued pushing at that point would constitute a nuisance, especially since the company was under no obligation to participate.

Based on reflection, it became clear that some of the challenges experienced had to do with the very nature of the subject of interest. Given that the study is about ‘business model’, many companies at once felt sensitive information was being requested about their business. As such, it was common that companies would ask for a copy of the study’s questionnaire to assess its contents or, as observed in the case of multinationals that had foreign head offices, to forward to their foreign head offices to seek permission. Furthermore, where the researcher managed to gain access, many organizations were only willing to provide one respondent only, as they wondered why the research would benefit from multiple respondents that would largely provide the same answers. This contributed, in part, to the inability to meet targeted questionnaire response rate.

One interesting observation was the role ‘gatekeepers’ played in the process. There were two types of gatekeepers in most of the organizations visited: the first-contact gatekeepers and the actual gatekeepers. The actual gatekeepers were the people who decided if the organization would participate or who the researcher is allowed access to. On the other hand, the first-contact

gatekeepers were the first point of contact at every organization visited physically. Both presented unique challenges in gaining access to interviewees. On some occasions during initial contact with a first-contact gatekeeper, the researcher was directed to an 'actual gatekeeper'. However, it was often difficult to get past the first-contact gatekeepers, who often declined the request even before it had the chance to be considered. Interestingly, it was observed that most of the first-contact gatekeepers were not exactly 'insiders' in the organizations; in most cases, they were contractors taking on security roles at office buildings. It was not uncommon to have the security officers asking questions like:

"Do you have an appointment to meet with anyone today?"

Whenever the researcher tried to explain the academic purpose for visiting, the usual response would be similar to the below:

"It is impossible for you to go into the building...we don't operate like that here. We usually get such requests from students like you, but they've always been turned back by the company. If you could tell me the person you have come to see and whether he is expecting you, I may be able to let you in".

Sometimes, that would be the end of it and the researcher would therefore have to adopt alternative means of getting across to someone in the organization. At other times, the researcher managed to get in, although usually after much persuasion.

The researcher adopted several strategies to respond to the challenges. Sending emails and making phone calls to the publicly available number brought little success. Hence, the researcher searched for potential participants mostly via LinkedIn or through the 'Our People' section of the company's website. This resulted in a greater degree of success. A *snowballing* sampling approach was also devised, in which existing study subjects are asked to suggest potential subjects from among their acquaintances within or outside their organization. In such instances, the potential subjects were limited only to those who fall under the broad categorization of targeted respondents. The fieldwork challenges also necessitated changes in the research instruments. For example, facing the prospects of completing the fieldwork with a very low questionnaire response rate, the researcher scanned through the questionnaire to see if there were aspects that could be changed or tweaked, especially those that could easily be interpreted as confidential information. This change contributed, in part, to the improved response rate.

4.8 Using the data and key issues investigated

This section summarises each main issue investigated in this study, the source of data for getting the evidence and how the data is used (with references to analysis chapters). Although different data collection techniques are used to enhance validity of the study's findings, these tools were not all adopted equally across all the organizations. Nevertheless, selecting participants (company representatives) across multiple levels of the organization helped to enhance credibility and trustworthiness of findings.

Table 15: How data is used in this study

	Broader theme	Specific issue	Major data sources	How data and data sources are used
Description of BM components and business model innovation	Customers and market related issues	Key customer groups served	Questionnaires and interviews	Questionnaires provide insights about who the customers while interviews shed further light on their key characteristics. This information is also used to interpret findings in chapter 7 about how BMI is influenced by customer needs
		Innovation in customer segments and relationships	Interviews	Through interviews, participants explained the BM changes that have occurred in their firm. The degree of changes was important in characterizing BMI forms, based on the general understanding of radicality (sections 6.2.2, 6.3.2, and 6.4.2)
	Company's value proposition	Type of value proposition offered	Questionnaires	Questionnaires provide information about the type of firm offerings. These insights aided interpretation of various aspects of the findings
		Innovation in offerings and price changes	Interviews and questionnaires	Interviews are used to derive insights to the types of changes introduced by the companies and the reasons for innovations. Furthermore, this element of the data was important in characterizing the BMI forms in the cases (sections 6.2.2, 6.3.2, and 6.4.2)
	Resources	Identifying critical resources	Interviews, questionnaires, and secondary sources	Data from questionnaire are used to highlight the relative importance of resources among the organizations. Secondary sources e.g., industry reports provide information about firms' resource portfolio
		Resource challenges		Interviews shed light on resource challenges and approaches to overcome them
	Activities	Key activities undertaken	Interviews and questionnaires	Questionnaire findings are used to identify the everyday core activities undertaken by the organizations. Interviews are used to aid analysis of the firms' activities in pages 147 – 149, 163-165, and 179-181
		Impact of the activities on the business		
		Innovation in activities	Interviews	Interviews provided insights into the two main ways in which firms innovate their core activities (section 5.3.5). Interview data were also used to determine scope of BMI changes in the firms, and thereby to interpret the BMI forms.

	Partnerships	Nature and types of partnerships	Interviews and questionnaires	Questionnaires provided insights into the types of partnership
		Factors shaping partnerships	Interviews	Interviews were used to derive further insights into the partnerships, the nature of linkages among firms, and the factors influencing these relationships (section 8.2 and 8.3)
		How partnership influences BMI	Interviews	Interview data are used to analyse bargaining power of suppliers in sections 7.4.1, 7.4.2, 7.4.3 as well as the nature of partnerships in section 8.3.1 and 8.3.2
	Revenues	Pricing strategy, revenue sources, mode of payment.	Questionnaires and interviews	Questionnaires provided revenue insights about pricing strategy and customers' model of payment (section 5.2.5.5)
		Revenue model innovation	Interviews	Interviews provided specific insights into firm revenues (e.g., details of revenue share arrangements and determinants)
	Costs	Ranking order of core activities/resources in terms of costs	Questionnaires	Interviews provided data to identify instances and types of revenue model innovation. These are found in pages 135, 151, 167, 183
Approaches to manage costs and innovation		Interviews	Questionnaires provide information about costliest activities firms engaged in. This aided interpretation of BMI drivers.	
Operational challenges and competitive priorities	Data obtained were on challenges such as customer retention/acquisition, partnership misalignment, cost of resources, and profitability. Competitive priorities focused on relationship with partners and customers, approach to prices, efficiency, or effectiveness etc.	Interviews	Examples of innovation in cost structures are derived from interviews; this aided interpretation of BMI forms in sections 6.2.2, 6.3.2, and 6.4.2.	
Contextual influences		Socio-economic, technology, competitors, institutions	Questionnaires and interviews	Section F in the questionnaire provided data about drivers of BMI and the dynamics of inter-organizational relationships. For example, data about partnership challenges shed light on the relative influence of actors in the value chain. Data about competitive priorities also provided insights about inter-organizational relationships and BMI drivers
			Interviews and secondary sources	Interviews provided more detailed insights into firm challenges, and how these influence BMI
				Interviews were used to derive data relating to most contextual factors. These are then used to interpret findings in chapters 7 and 8, particularly section 7.2, 7.4, and 8.3. Questionnaire data played only little role here. Secondary data sources shed light into technology drivers.

4.9 Chapter Summary

In this chapter, the overall objectives of the study and the research methodology for achieving these objectives are reviewed. The chapter outlines the research process and identifies the adopted philosophical position. The choice of multiple case study methodology and mixed-methods design were justified and the procedures for their implementation and validation explained. Associated challenges in the data collection process, as well as ethical considerations in the research design are further discussed. In the next chapter, findings from the quantitative and qualitative strands of data are presented, before proceeding to the interpretation of these findings.

CHAPTER FIVE

KEY FINDINGS AND PRELIMINARY INSIGHTS

5.1 Introduction to Chapter Five

To examine the study's research questions, and according to the research design described in the previous chapter, a case study of three set of players in the mobile telecom industry in Sub-Saharan Africa is conducted: (i) Mobile Network Operators, (ii) Tower infrastructure companies, and (iii) Partners (including Content Providers and Retailers). This chapter is divided into three sections, the first section provides a summary of participating organizations across the two countries and identifies the total number of primary data collection. The second section presents the findings from questionnaire and is followed by interview findings in the third section. The presentation of findings in this chapter allows for a synthesis of quantitative and qualitative data as part of interpretation and discussion in the next chapter.

5.1.2 Summary of Participating Organizations and Primary Data Instruments

A total of 44 organizations participated in this study. Twenty-six (26) were based in Nigeria while 18 were in Ghana. There were more *Partners* than any other type of organization while mobile network operators (MNOs) had the smallest sample. The group classified as *Partners* consist of content providers (16) as well as retailers selling MNO products and services (6). Most of the 44 organizations in this study participated in both interviews and questionnaires; except for 14 organizations where there was no overlap. This includes 11 organizations where respondents participated in interviews but not questionnaires, and 3 organizations where respondents participated in questionnaires but not interviews. The 11 organizations that did not participate in questionnaires include 3 regulatory agencies.

Table 16: Distribution of participating organizations by country

Organization	Number of Organizations	Ghana	Nigeria
MNOs	7	2	5
TowerCos	12	6	6
Partners	22	8	14
Regulator / Policy Makers	3	2	1
	44	18	26

Overall, there were 64 interviews and 103 received questionnaires. The highest number of questionnaires came from MNOs while the highest number for interviews came from Partners.

This is shown in table 17. Detailed breakdown of interview and questionnaire participants are presented in the appendix.

Table 17: Distribution of responses by research instrument

Organization	Questionnaires	Interviews	Total
Towercos	27	17	44
MNOs	42	19	61
Partners	34	23	57
Regulators / Policy Makers	0	5	5
TOTAL	103	64	167

In table 18 below, the 44 participating organizations are listed, along with the breakdown of interviews and questionnaires collected in each organization.

Table 18: List of participating organizations (Questionnaire and Interviews)

	Company	Location	No of Interviews	No of Questionnaires	Company Profile
1.	Airtel Nigeria HQ	Lagos	1	0	MNO
	Airtel Office	Lagos	0	2	
	Airtel Office	Akure	0	5	
2.	MainOne	Lagos	1	2	TowerCo
3.	AirtelTigo	Accra	2	1	MNO
4.	MTN Nigeria	Lagos	3	4	MNO
5.	9Mobile HQ	Lagos	6	5	MNO
	9Mobile Experience Centre	Akure	1	5	
	9Mobile Experience Centre	Lagos	0	1	
6.	Glo HQ	Lagos	3	2	MNO
	Glo World	Lagos	1	4	
	Glo World	Akure	0	6	
	Glo World	Enugu	0	1	
7.	Brinks Infrastructure	Abuja	1	2	TowerCo
8.	Esoko	Accra	1	2	Partner
9.	ATC Nigeria	Lagos	2	2	TowerCo
10.	ATC Ghana	Accra	1	4	TowerCo
11.	Helios Towers	Accra	1	2	TowerCo
12.	Vokacom	Accra	2	3	Partner
13.	BCTEK	Lagos	1	4	TowerCo
14.	Eaton Towers	Accra	2	4	TowerCo
15.	Africa's Talking	Lagos	1	0	Partner
16.	DigiMobility	Lagos	1	1	Partner
17.	Ntel HQ	Lagos	1	0	MNO
	Ntel Service Centre	Lagos	0	5	
18.	Vodafone	Accra	1	1	MNO
19.	Huawei NG	Lagos	2	1	TowerCo
20.	Huawei GH	Accra	1	1	TowerCo
21.	Pathfinder Inc.	Abuja	1	0	Partner
22.	NHIS	Abuja	1	2	Partner
23.	MicroEnsure Nigeria	Lagos	1	0	Partner
24.	MicroEnsure Ghana	Accra	1	0	Partner
25.	African Towers	Accra	2	3	TowerCo
26.	Imaginarium Ltd	Lagos	1	0	Partner
27.	NCA	Accra	2	0	Regulator
28.	Castlat	Akure	1	5	Partner
29.	Grand Peculiar	Akure	1	2	Partner
30.	NCC	Abuja	1	0	Regulator
31.	Timwe Group	Lagos	1	0	Partner
32.	KNET	Accra	2	2	TowerCo
33.	VAS2Nets	Lagos	2	0	Partner
34.	Ministry of Communications	Accra	2	0	Government
35.	Herimac Ltd	Akure	1	1	Partner
36.	Nicholas Mobile Payments	Akure	1	1	Partner
37.	Computer Warehouse Group	Lagos	3	7	Partner
38.	Mobile Money Shop	Accra	1	1	Partner
39.	OSTEC	Accra	0	6	Partner
40.	Larry Communications	Akure	0	1	Partner
41.	IHS Towers	Lagos	1	0	TowerCo
42.	Flutterwave	Accra	1	0	Partner
43.	Mobile Content Ltd.	Accra	1	1	Partner
44.	Undocumented	Accra	0	1	Partner
	Total		64	103	

5.2 Questionnaire Findings and Preliminary Insights

This section presents key findings from questionnaire. The collected quantitative data is subject to descriptive statistics (percentage frequencies of representation) and charts. Other statistical analysis conducted include analysis of variance (one-way ANOVA).

5.2.1. Customer Segments and Value Proposition

5.2.1.1 Main Customers

There were 291 selections by the 103 respondents. The chart below shows the predominant customer segments per organization type, presented in percentages computed based on selections made per category. MNOs and Partners had all categories of customers, while TowerCos only had non-individuals (i.e., corporations, SMEs, and public enterprises) as their customers. Percentage of TowerCo selections that are large corporations was 55% and government 26.5%. For MNOs, out of 140 selections, 39 (28%) were low-middle income individuals, 32 (23%) were high income individuals. Furthermore, large corporations, SMEs, and public enterprises represented 46.4% of the total selections by MNOs. For the partners, 'low-middle income individuals' was selected mostly (22.5%), government/public enterprises (20.5%), large corporations (20%), SMEs (18%), and high-income individuals (17%).

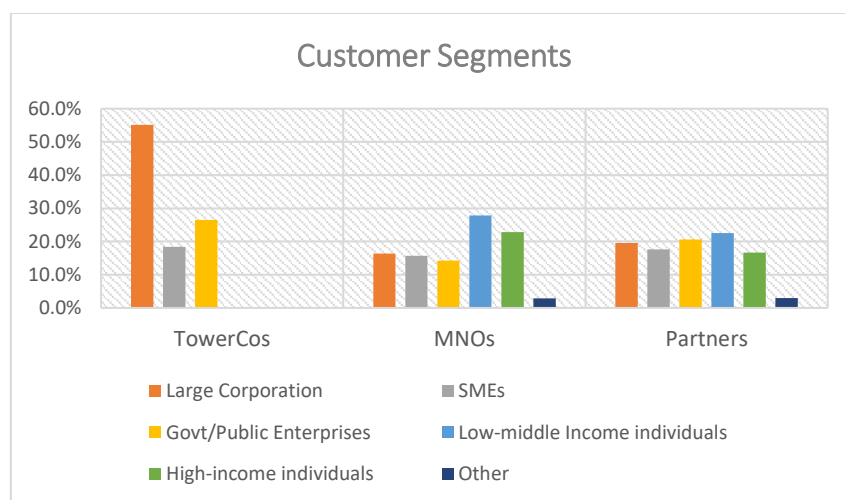


Figure 11: Customer Segments

Changes in Customer Segments

50% of the respondents indicated that their organization had made changes to customer segments within the past three years while the remaining 50% did not make any change. The two types of change were (i.) addition of customers that were underserved by competitors and (ii) addition of customers who have neither transacted with the firm nor its competitors.

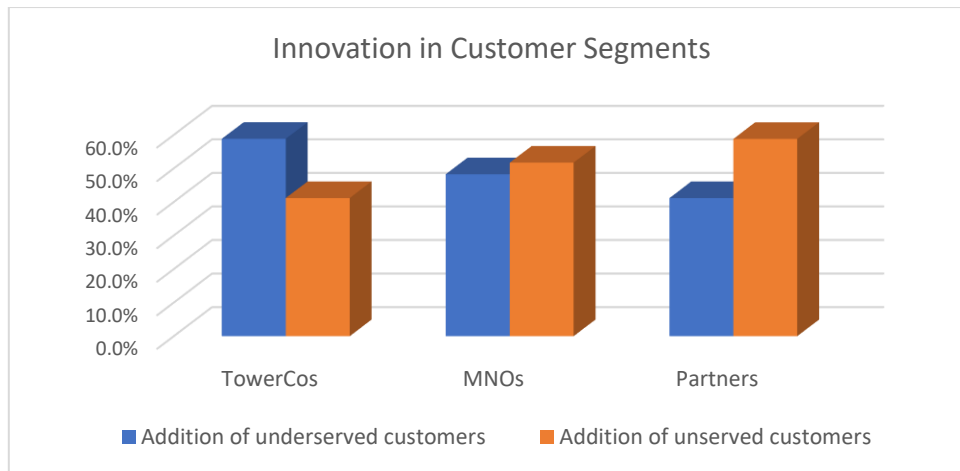


Figure 12: Innovation in customer segments

The chart indicates that the common type of change by MNOs and Partners was *addition of unserved customers*. 51.7% of MNO respondents stated that their firm had added customers who were new to the market (unserved) while 48.3% highlighted that they had added underserved customers. For Partners, the percentage of those selecting addition of unserved segments was 58.8% compared to 41.2% that selected addition of underserved segments. However, most selections by TowerCo respondents was *addition of underserved customer segments*, with 58.8%. The remaining 41.2% selected addition of unserved customers.

When asked about planned changes to customers, the results show that the responses varied according to type of organization but remains consistent with above findings. This section includes an additional element of changes in customer segments, i.e., customer relationships.

Item	N	TowerCos		MNOs		Partners		Total
		% within all selections	% within TowerCo selections	% within all selections	% within MNO selections	% within all selections	% within Partner selections	
Seek new ways to relate with customers	28	39.3%	45.8%	32.1%	32.1%	28.6%	33.3%	100%
Target new customers previously unserved by us or the competitors	37	21.6%	33.3%	40.5%	53.6%	37.8%	58.3%	100%
Target new customers previously underserved by the competitors	11	45.5%	20.8%	36.4%	14.3%	18.2%	8.3%	100%
% of Total	76	31.6%	100%	36.8%	100%	31.6%	100%	100%

Figure 13: Planned changes in customers

The results shows that 45.8% of all selections by TowerCo participants were ‘*seek new ways to relate with customers*’, 33.3% said they would target unserved customers, and 20.8% said they will target underserved customers. For MNOs, the most selected option was *target unserved customers* (53.6%). On the other hand, only 14.3% of MNO respondents stated that

their company would target underserved customers. The results showed that 58.3% of all partner respondents selected *target unserved customers*. This was followed by *seek new ways to relate with customers* (33.3%) and *target underserved customers* (8.3%).

5.2.1.2 Offerings and Value Proposition

There were 100 valid responses to this question. 26 were TowerCo-based respondents, 40 from MNOs, and 34 from Partners. 30 respondents (30%) felt high reliability was the most important benefit they offered customers, while the next most important value proposition in the SSA telecom value chain is ‘lower prices’ (20%). 7% of the respondents selected ‘other’ choices as their company’s most important value proposition. This includes customization (mainly partners), flexibility (TowerCos), and wide network coverage (MNOs).

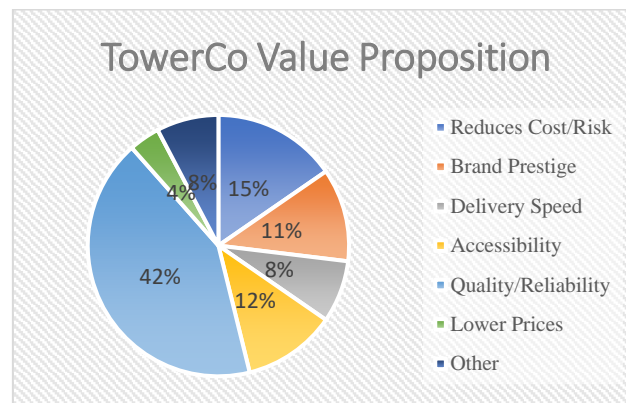


Figure 14: Value proposition of TowerCos

Although MNO respondents represented 43% of respondents that selected ‘high quality/reliability’ as their most important value proposition; the percentage of respondents selecting ‘quality/reliability’ was highest in tower companies, with 42% of all TowerCo respondents picking ‘quality/reliability’. The remaining 58% of TowerCo respondents’ responses were *reduces cost/risk* (15%), *accessibility* (12%), *brand prestige* (12%), *delivery speed* (8%), *lower prices* (4%), and *others* (8%), which includes *commercial flexibility* and *customization*. This distribution is shown in pie chart above

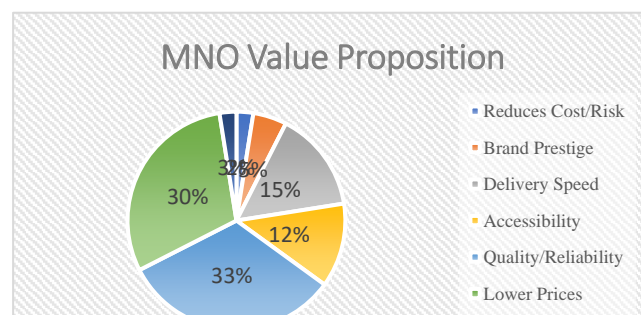


Figure 15: Value proposition of MNOs

As shown in the results, the MNOs' most important value proposition also emerged to be the *quality/reliability* of their offerings. However, only 32.5% of MNO respondents selected quality/reliability while 30% selected 'low prices' as their most important value proposition. Other selections were delivery speed (15%), accessibility (12%), and brand prestige (5%). One respondent selected Other, i.e., *wide network coverage*.

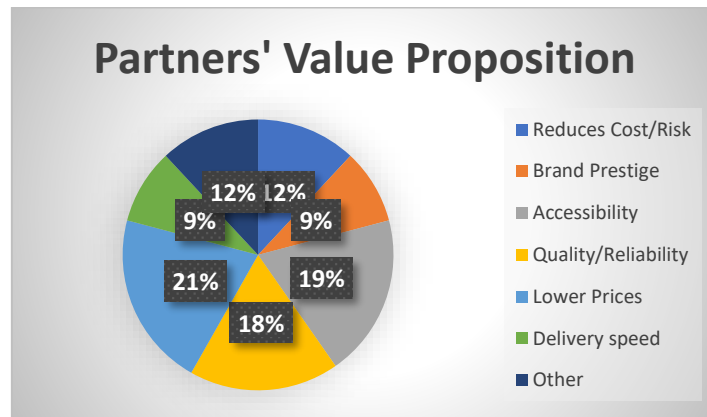


Figure 16: Value proposition of Partners

The value propositions of Partners were more evenly distributed among respondents. Most of the respondents selected lower prices (21%) while 19.5% selected *accessibility* as their most important value proposition. Conversely, 18% selected *quality/reliability*, 12% selected *reduces cost/risk* while 9% chose *brand prestige* and *delivery speed* respectively. Another 12% highlighted *other* unique benefits offered to customers. This relates mainly to *customization* and uniqueness of the offerings.

Innovation in offerings

94 valid responses were received, representing 91.2% of the total sample of 103. Out of the 94 respondents, 89 (95%) highlighted that their organization had made changes to offerings (products/services) within the past three years, while the remaining 5% selected 'no'.



Figure 16: Innovation in offerings

Twenty-four (32%) of 75 MNO selections were *redesigning offerings*. This was followed by *adding new services*, which was selected 22 times (29%) by the MNO respondents. Similarly, 21 (38.2%) out of the total 55 selections by TowerCo respondents selected *adding new services* as their companies’ value proposition. *Bundling services* and *redesigning existing offerings* were the next most selected options by TowerCo respondents, with 15 (27%) and 14 selections (25.5%) respectively. For the 62 selections by respondents from Partner firms, 22 (31%) selected *adding new services* while *redesigning offerings* closely followed with 17 selections (28.1%). 12 of the selections (16.9%) indicate that Partners have broken out elements of their offerings to sell them separately.

Respondents were asked about their companies’ planned changes within the next three years with respect to their offerings. Their responses are shown below:

Item	N	TowerCos		MNOs		Partners		Total
		% within all selections	% within TowerCo selections	% within all selections	% within MNO selections	% within all selections	% within Partner selections	
Within the next 3 years, we plan to...								
Add new products / services to our existing portfolio	58	32.8%	82.6%	36.2%	75.0%	31.0%	78.3%	100%
Retain the same products / services	7	42.9%	13.0%	14.3%	3.6%	42.9%	13.0%	100%
Drop some of our existing products services for new ones	8	12.5%	4.3%	62.5%	17.9%	25.0%	8.7%	100%
Replace all our existing products / services with new ones	1	0.0%	0.0%	100%	3.6%	0.0%	0.0%	100%
% of Total	74	31.1%	100%	37.8%	100%	31.1%	100%	100%

Figure 17: Planned innovation in offerings

The respondents overwhelmingly (78.3%) indicated that they would add new products/services to their portfolio. The results show that among TowerCo participants, 82.6% stated that their company would add new services while 13.0% said they would retain the same offerings. Also, MNOs and Partners plan to add to their services, with 75.0% and 78.3% selections respectively.

Changes in Price

Respondents were asked whether their companies have changed prices in the past three years.

Table 19: Changes in price

Item	N	TowerCos	MNOs	Partners	Total
Within the last three years, we have...					
Increased our prices	44	45.5%	31.8%	22.7%	100%
Kept the same prices	20	5.0%	25.0%	70.0%	100%
Reduced our prices	17	11.8%	64.7%	23.5%	100%
% of Total	81	28.4%	37.0%	34.6%	100%

44 of the 81 valid responses (54.3%) stated that their companies had increased prices within the last three years, 20 (24.7%) said they had kept the same prices while 17 (20.9%) indicated that their organization had reduced prices. The highest percentage of price increase came from TowerCos with 45.5%, followed by MNOs with 31.8% and Partners with 22.7%. Conversely, MNOs accounted for 64.7% of selections of *reduced our prices* while Partner respondents make up 70% of all selections of *kept the same prices*.

Respondents were also asked their future plans in terms of prices. The results remain largely consistent with above findings regarding past innovation. This is shown in the below table.

Table 20: Planned changes to price

Item	N	TowerCos		MNOs		Partners		Total
		% within all selections	% within TowerCo selections	% within all selections	% within MNO selections	% within all selections	% within Partner selections	
Increase our prices	28	35.7%	52.6%	32.1%	40.9%	32.1%	50.0%	100%
Lower our prices	12	8.3%	5.3%	50.0%	27.3%	41.7%	27.8%	100%
Keep same prices	19	42.1%	42.1%	36.8%	31.8%	21.1%	22.2%	100%
% of Total	59	32.2%	100%	37.3%	100%	30.5%	100%	100%

The percentage distribution of responses show that TowerCo respondents chose above the average percentage selections of ‘keep the same prices’, with 42.1% stating their company will retain current prices. However, 35.7% said their company will raise prices within the next three years. 40.9% of MNO respondents indicated that their company will increase prices within the next three years while 31.8% felt they will keep the same prices. Partner respondents accounted for majority (41.7%) of all selections of *lower our prices*; however, this represented only 27.8% of all selections by Partner respondents. 50% of Partner respondents said their company will raise their prices within the next three years.

5.2.1.3. Why do firms change their products, markets, and prices?

Respondents were asked the most important reason their companies made the aforementioned changes to their business model. The figure below shows results of three questions relating to changes in offerings, customers, and prices.

Why did you make the abovementioned changes to your products / services														
	N	Consequences of change in firm strategies	Customers' demographic trends	Regulatory pressures	Changing customer needs	Revenue attractiveness	Discovery of new ways to utilize existing resources	Emerging technological trends	Socio-economic condition of customers	High cost of resources	Competitive pressure	Supplier / partner bargaining power	New services requiring new ways of doing business	Other
TowerCos	20	15.0%	0.0%	5.0%	25.0%	0.0	25.0%	10.0%	0.0%	0.0%	15.0%	0.0%	5.0%	0.0%
MNOs	27	7.4%	7.4%	7.4%	29.6%	14.8%	0.0%	14.8%	3.7%	3.7%	3.7%	0.0%	7.4%	0.0%
Partners	25	12%	0.0%	4.0%	12.0%	20.0%	12.0%	20.0%	4.0%	0.0%	4.0%	4.0%	4.0%	4.0%
% of Total	72	11.2%	2.78%	5.56%	22.2%	12.5%	11.1%	15.3%	2.78%	1.39%	6.95%	1.39%	5.56%	1.39%
Why did you make the abovementioned changes to your customer segments?														
TowerCos	12	8.3%	16.7%	8.3%	16.7%	33.3%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%
MNOs	18	0.0%	16.7%	0.0%	5.6%	38.9%	5.6%	0.0%	5.6%	0.0%	5.6%	0.0%	16.7%	0.0%
Partners	12	0.0%	0.0%	0.0%	8.3%	33.3%	0.0%	16.7%	8.3%	0.0%	25%	0.0%	0.0%	8.3%
% of Total	42	2.4%	11.9%	2.4%	9.5%	35.7%	2.4%	7.1%	4.8%	0.0%	9.5%	0.0%	7.1%	4.8%
Why did you make the abovementioned change to your prices?														
TowerCos	19	5.3%	0.0%	0.0%	5.3%	0.0%	5.3%	0.0%	10.5%	57.9%	10.5%	5.3%	0.0%	0.0%
MNOs	24	16.7%	0.0%	0.0%	8.3%	8.3%	0.0%	8.3%	16.7%	12.5%	12.5%	0.0%	12.5%	4.2%
Partners	17	0.0%	0.0%	5.9%	5.9%	11.8%	29.4%	0.0%	11.8%	17.6%	17.6%	0.0%	0.0%	0.0%

Figure 18: Firms’ stated reasons for making changes to products, markets, and prices

From the descriptive summaries, 25% of TowerCo respondents selected “changing customer needs and demands” and “discovery of new ways to productively utilize resources” respectively as the major reasons for innovation in offerings. 15% felt their companies had made changes to offerings mainly because of pressures from competitors while 10% selected emerging technological trends as the main reason for innovation in offerings. On the other hand, MNO respondents indicated that the main reasons for innovation in offerings were changing customer demands (29.6%), revenue attractiveness (14.8%), emerging technological trends (14.8%) and regulatory pressures (7.4%). For Partners, 20% of respondents selected *technological trends* and *revenue attractiveness* as the main reasons for innovation in offerings while 12% respectively identified *changing customer demands* and *discovery of new ways to use resources* as drivers of innovation in offerings. Partner bargaining power accounted for 4% of all selections by partners in this section.

In terms of changes to customer segments, participants from TowerCos indicated that revenue attractiveness (33.3%), changing customer needs (16.7%) and customers demography (16.7%) were important reasons for innovation. For MNOs, revenue attractiveness (38.9%), introduction of new services requiring new ways of working (16.7%) and customers demography (16.7%) were some popular reasons for changes in customer. Partners were motivated to make changes mainly because of competitive pressures (25%), revenue attractiveness (33.3%), and technological trends (16.7%).

The most popular reasons why firms made changes to their prices was *high cost of resources*. For instance, 57.9% of all TowerCo selections in this category were high cost of resources. For MNOs, the main reasons for changes in price relate to socio-economic condition of customers and deliberate firm strategies, with 16.7% selections respectively. For Partners, *discovery of new ways to utilize existing resources* accounted for 29.4% of all selections, while high cost of resources and competitive pressures make up 17.6% respectively of the total selections by Partner respondents.

5.2.1.4. Section Summary and Interpretation: Value proposition and markets

This section sheds light on the nature of innovation as well as why firms made the changes to their offerings and prices. The received responses showed that, in terms of value proposition, mobile operators had a balanced mix of focus on affordability and quality/reliability of services while affordability was a strategic necessity for the content providers, who provide ‘non-essential’ value-added services and face competition from the OTT providers. This focus on

affordability is reflected in the preference of mobile operators and partners to reduce or keep same prices as revealed in the findings on ‘changes in prices within the last three years’. On the other hand, TowerCos, whose core customer segment is large organizations (i.e., the MNOs), were more concerned about reliability of offerings rather than their affordability. These findings show that firms in the SSA telecom value chain are focused on the customers, but for different reasons. The TowerCos are constantly under pressure to offer reliable service quality to their MNO customers, while the partners are driven by the need to offer attractive but affordable services to fit the socio-economic realities of target customers. The MNOs, however, seemed to be more in the middle, playing both sides of the coin. Their simultaneous emphasis on quality and lower prices reflects their need to keep customers satisfied and capture market share.

Direct questions asking the respondents ‘why they made certain changes’ are consistent with the above findings, as they confirmed that MNOs and Partners lowered or kept the same prices due to deliberate management decisions, socio-economic conditions of customers, competitive pressures, and discovery of new ways to utilize existing resources (in the case of partners). At the same time, MNOs innovated their offerings to fit changing customer demands and derive more revenues (revenue attractiveness) while Partners are simultaneously driven by several factors: technology, revenue attractiveness, and changing customer needs. Thus, while MNOs are more interested in the market share and revenues, Partners are driven more by the need to create value, hence their focus on latest technology trends (*interview findings reveal more insights regarding this, especially the dynamics of MNO-Content Provider interrelationship*), but also the need to create revenue making opportunity through new products. As stated earlier, TowerCos differed considerably in their motivations for innovation. The received responses to the questions ‘why you changed your prices’ indicate that TowerCos made changes to prices (i.e., increased their prices) due to high cost of resources. They also innovated their offerings due to pressures from customers, pressures from competitors, and discovery of new ways to utilize resources.

5.2.2 Firm’s core activities, resources, and partnerships

5.2.2.1 Firm Resources

The respondents were asked to rank the resources that were most important to their company. Seven resources were ranked in order of importance from 1-7: human, organizational, relational, financial, physical, legal/intellectual, and informational. Respondents from tower

companies made 189 total selections, representing 7 selections each from 27 TowerCo respondents. The table below shows that human resources was rated as TowerCos' most important resource, with a mean score of 2.19 among TowerCo respondents. Next was financial resources with a mean score 2.48, relational resources with 3.00, and physical resources with 3.07. Informational resources received the least ratings, with 5.33 mean score.

For mobile operators, there were 254 total selections. The data shows that 'human resources' was rated as the most important resource. Human resource had a mean rating of 1.97 compared to organizational resource with 2.43. The next was relational resources (2.59) followed by physical resources (2.65). Legal/intellectual resource was rated as least important by the respondents, with 4.00 mean score.

The partners' most important resource was human resources. However, compared with TowerCos mean rating for 'human resources' (2.19) and MNOs mean rating (1.97), the partners' average mean rating for 'human resources' was lower (2.31). Informational resource was next for partners with 2.88 mean score while relational resources followed with 2.94. The least important resource for partners, according to the respondents, was legal/intellectual resource, with mean rating 4.76.

Table 21: Respondents' ranking of key resources

DESCRIPTIVES		N	Mean	Std. Deviation
Human (e.g., skills, experience etc)	TowerCo	27	2.19	1.388
	Mobile Network Operator	39	1.97	1.547
	Partners	32	2.31	1.857
	Total	98	2.14	1.605
Organizational (e.g., reputation, brand etc)	TowerCo	27	4.15	2.051
	Mobile Network Operator	37	2.43	1.482
	Partners	29	3.76	2.132
	Total	93	3.34	2.003
Relational (e.g., with partners, customers)	TowerCo	27	3.00	1.776
	Mobile Network Operator	37	2.59	1.658
	Partners	33	2.94	1.836
	Total	97	2.82	1.744
Financial (e.g., corporate capital, valuations etc)	TowerCo	27	2.48	1.740
	Mobile Network Operator	37	3.27	2.090
	Partners	29	3.55	1.975
	Total	93	3.13	1.985
Physical (e.g., IT systems, land, logistics infrastructure, equipment)	TowerCo	27	3.07	1.880
	Mobile Network Operator	37	2.65	1.783
	Partners	31	3.26	2.016
	Total	95	2.97	1.888
Legal/intellectual (e.g., licenses, IP, patents etc)	TowerCo	27	3.59	1.716
	Mobile Network Operator	35	4.00	2.236
	Partners	29	4.76	2.166
	Total	91	4.12	2.102
Informational (e.g., customer/product databases)	TowerCo	27	5.33	2.130
	Mobile Network Operator	38	3.11	2.166
	Partners	32	2.88	1.827
	Total	97	3.65	2.287

The table above presents the mean ratings of resources across the organizations. A one-way analysis of variance (ANOVA) is used to determine whether there are statistically significant differences between the means of the groups (i.e., different resources). Because the sample sizes differ among groups (i.e., unequal sample among the cases), the type of ANOVA used is the Welch Statistics, as it does not assume equal variances among populations.

		One-way ANOVA (Welch / Brown-Forsythe)			
		Statistic ^a	df1	df2	Sig.
Human (e.g., skills, experience etc)	Welch	.369	2	60.514	.693
Organizational (e.g., reputation, brand etc)	Welch	8.551	2	52.510	.001
Relational (e.g., with partners, customers)	Welch	.543	2	59.568	.584
Financial (e.g., corporate capital, valuations etc)	Welch	2.548	2	58.778	.087
Physical (e.g., IT systems, land, logistics infrastructure, equipment)	Welch	.938	2	58.254	.397
Legal/intellectual (e.g., licenses, IP, patents etc)	Welch	2.492	2	58.044	.092
Informational (e.g., customer/product databases)	Welch	12.301	2	59.777	.000

a. Asymptotically F distributed.

From the Welch ANOVA test statistics, there was a statistically significant difference at the .05 significance level in the ranked scores for organizational resources ($\chi^2(2) = 8.551, p = 0.001$) and informational resources ($\chi^2(2) = 12.301, p < 0.001$). There was also statistically significant difference at the .10 significance level in the mean outputs for financial resources ($\chi^2(2) = 2.548, p = 0.087$) and legal/intellectual resources ($\chi^2(2) = 2.492, p = 0.092$). However, there was no statistically significant difference in ranking of human resources ($\chi^2(2) = .369, p = .693$), relational resources ($\chi^2(2) = .543, p = .584$), and physical resources ($\chi^2(2) = .938, p = .397$).

Games-Howell (Multiple Comparisons)

Dependent Variable	(I) Type of Organization:	(J) Type of Organization:	Mean Difference (I-J)	Std. Error	90% Confidence Interval Sig.
Human (e.g., skills, experience etc)	TowerCo	Mobile Operator	.211	.364	.832
		Partners	-.127	.423	.951
	Mobile Operator	TowerCo	-.211	.364	.832
		Partners	-.338	.411	.691
	Partners	TowerCo	.127	.423	.951
		Mobile Operator	.338	.411	.691
Organizational (e.g., reputation, brand etc)	TowerCo	Mobile Operator	1.716*	.464	.002
		Partners	.390	.559	.766
	Mobile Operator	TowerCo	-1.716*	.464	.002
		Partners	-1.326*	.465	.017
	Partners	TowerCo	-.390	.559	.766
		Mobile Operator	1.326*	.465	.017
Relational (e.g., with partners, customers)	TowerCo	Mobile Operator	.405	.437	.625
		Partners	.061	.468	.991
	Mobile Operator	TowerCo	-.405	.437	.625
		Partners	-.345	.420	.692
	Partners	TowerCo	-.061	.468	.991
		Mobile Operator	.345	.420	.692
Financial (e.g., corporate capital, valuations etc)	TowerCo	Mobile Operator	-.789	.480	.235
		Partners	-1.070*	.497	.088
	Mobile Operator	TowerCo	.789	.480	.235
		Partners	-.281	.503	.842
	Partners	TowerCo	1.070*	.497	.088
		Mobile Operator	.281	.503	.842
Physical (e.g., IT systems, land, logistics infrastructure, equipment)	TowerCo	Mobile Operator	.425	.466	.634
		Partners	-.184	.512	.931
	Mobile Operator	TowerCo	-.425	.466	.634
		Partners	-.609	.466	.396
	Partners	TowerCo	.184	.512	.931
		Mobile Operator	.609	.466	.396
Legal/intellectual (e.g., licenses, IP, patents etc)	TowerCo	Mobile Operator	-.407	.502	.697
		Partners	-1.166*	.520	.074
	Mobile Operator	TowerCo	.407	.502	.697
		Partners	-.759	.552	.360
	Partners	TowerCo	1.166*	.520	.074
		Mobile Operator	.759	.552	.360
Informational (e.g., customer/product databases)	TowerCo	Mobile Operator	2.228*	.540	.000
		Partners	2.458*	.522	.000
	Mobile Operator	TowerCo	-2.228*	.540	.000
		Partners	.230	.477	.880
	Partners	TowerCo	-2.458*	.522	.000
		Mobile Operator	-.230	.477	.880

The Welch ANOVA results show that there were statistically significant differences in the mean ratings for four resources: financial, informational, organizational, and legal/intellectual. The Games-Howell Post-Hoc test was conducted to detect where these changes lie. From the test statistics, the Games-Howell test showed that there was a statistically significant difference in the score for organizational resources between TowerCos and mobile operators ($p = .002$) and mobile operators and partners ($p = .017$). For informational resources, there was a

statistically significant difference between TowerCos and MNOs ($p < .001$) and TowerCos and partners ($p < .001$). The results also showed statistical differences in financial resources ranking between TowerCos and partners ($p = .088$). Finally, the results reveal statistically significant differences in the mean scores for legal/intellectual resources between partners and TowerCos ($p = .074$).

Changes in the use of resources

The table below shows the distribution of responses to a question regarding the firms' planned innovation.

Table 22: Planned changes in resources

Item	N	TowerCos		MNOs		Partners		Total
		% within all selections	% within TowerCo selections	% within all selections	% within MNO selections	% within all selections	% within Partner selections	
use less costly physical resources to achieve same results	38	47.4%	78.3%	36.8%	53.8%	15.8%	33.3%	100%
retain our current physical resources	10	30.0%	13.0%	30.0%	11.5%	40.0%	22.2%	100%
Use higher quality current physical resources	19	10.5%	8.7%	47.4%	34.6%	42.1%	44.4%	100%
% of Total	67	34.3%	100%	38.8%	100%	26.9%	100%	100%

78.3% of TowerCo participants stated that their company will seek to use less costly physical resources to achieve same results, 13% said they will retain current resources, and 8.7% will use higher quality resources. Similarly, 53.8% of MNO respondents said they will use less costly resources to achieve same results, 34.6% will use higher quality resources, and 11.5% said they will retain their current physical resources. Responses from Partner participants were slightly different as most respondents (45%) said they will use higher quality resources, 33% will use less costly resources and 22% will retain their current physical resources.

5.2.2.2 Firm Activities

This question asks the respondents to rate some core activities in order of importance to their organization. The activities were eight; rated from 1-8, with 1 being the most important. The mean rankings of the activities are presented below:

Table 23: Respondents' ranking of key activities

DESCRIPTIVES		N	Mean	Std. Deviation
Production; transforming resources into final product form	TowerCo	25	4.08	2.431
	Mobile Network Operator	32	3.94	2.514
	Partners	23	2.70	2.098
	Total	80	3.63	2.420
Supplier / partner relationship management	TowerCo	25	2.96	1.989
	Mobile Network Operator	33	3.58	1.768
	Partners	28	2.82	1.945
	Total	86	3.15	1.901
Customer engagement and post-purchase support	TowerCo	26	2.54	1.702
	Mobile Network Operator	34	2.76	1.689
	Partners	28	3.57	2.714
	Total	88	2.95	2.095
Transacting a sale	TowerCo	26	3.69	2.446
	Mobile Network Operator	33	3.39	2.358
	Partners	29	3.72	2.448
	Total	88	3.59	2.391
Resource acquisition or development	TowerCo	26	3.54	2.044
	Mobile Network Operator	34	3.26	2.079
	Partners	23	3.09	1.443
	Total	83	3.30	1.898
Marketing; customer acquisition and retention	TowerCo	25	3.52	2.002
	Mobile Network Operator	34	2.26	1.781
	Partners	24	3.29	2.255
	Total	83	2.94	2.050
Storage and distribution of products	TowerCo	26	5.77	2.519
	Mobile Network Operator	32	4.34	2.010
	Partners	24	4.79	1.841
	Total	82	4.93	2.199
Economic maintenance of resources	TowerCo	26	4.00	2.020
	Mobile Network Operator	32	5.16	2.259
	Partners	23	5.35	2.569
	Total	81	4.84	2.326

Among the TowerCos, the highest rated activity was *customer engagement and support*, which was considered the most important with 2.54 mean score. This includes 44% (11 of 25 selections) at 1st/8 position. The next highly rated activity by TowerCos was ‘*partner relationship management*’ with 2.96 mean score. The third and fourth most important activities by TowerCos were ‘*marketing*’, with 3.52 mean rank and ‘*resource acquisition & development*’, with 3.54 mean score. The least important TowerCo activity was clearly *storage*

and distribution of products, with mean rating 5.77. This was also the least overall rating of any activity across the three categories of participant.

For MNOs, *marketing* was evidently the most important value activity, as 23 of the 34 MNO respondents selected it as their company’s 1st or 2nd most important activity (18, 5). In addition, the 2.26 mean rating of *marketing* by MNO participants was the highest rating of any activity across the three categories of participants. *Customer engagement and support* was rated next most important with 2.76 mean score. This was followed by *resource acquisition* (3.26), *sales* (3.39), and *partner relationship management* (3.58). *Economic maintenance of resources*, with 5.16 mean score, was rated least important by MNO participants.

The partners’ most important activity was *production of services*, with 2.70 mean score and ratings at 1st or 2nd by 15 participants (9 and 6 respectively). This was closely followed by *supplier/partner relationship management*; with 2.82 mean rating. ‘*resource acquisition*’ and ‘*marketing*’ were the third and fourth most important activities, with 3.09 and 3.29 mean ratings respectively. Customer engagement followed with 3.57 mean score. The least important partner activity, according to the respondents, was *economic maintenance of resources* (5.35 mean rating).

One-way ANOVA (Welch)

		Statistic ^a	df1	df2	Sig.
Production; transforming resources into final product form	Welch	2.841	2	50.096	.068
Supplier / partner relationship management	Welch	1.437	2	52.623	.147
Customer engagement and post-purchase support	Welch	1.427	2	52.458	.249
Transacting a sale	Welch	.178	2	55.148	.837
Resource acquisition or development	Welch	.401	2	52.051	.672
Marketing; customer acquisition and retention	Welch	3.646	2	48.055	.034
Storage and distribution of products	Welch	2.711	2	50.367	.076
Economic maintenance of resources	Welch	2.892	2	48.823	.065

a. Asymptotically F distributed.

From the test statistics above, there was a statistically significant difference at the .10 confidence interval, for the mean outputs for *production* ($\chi^2(2) = 2.841$, $p = .068$). Supplier /partner relationship management was marginally significant at the .10 significance level ($\chi^2(2) = 1.437$, $p = .147$). *Storage & distribution of products* ($\chi^2(2) = 2.711$, $p = .076$) and *economic maintenance of resources* ($\chi^2(2) = 2.892$, $p = .065$) were also significant at the .10 confidence interval. *Marketing* was statistically significant at the .05 confidence level ($\chi^2(2) = 3.646$, $p =$

.034). The results show that there was no statistically significant difference in the mean outputs for customer engagement, sales, and resource acquisition.

Games-Howell Multiple Comparisons

Variable	(I) Type of Organization:	(J) Type of Organization:	Mean Difference (I-J)	Std. Error	90% Confidence Interval Sig.
Production; transforming resources into final product form	TowerCo	Mobile Operator	.143	.659	.975
		Partners	1.384*	.654	.098
	Mobile Operator	TowerCo	-.143	.659	.975
		Partners	1.242	.624	.125
	Partners	TowerCo	-1.384*	.654	.098
		Mobile Operator	-1.242	.624	.125
Supplier / partner relationship management	TowerCo	Mobile Operator	-.616	.503	.445
		Partners	.139	.542	.965
	Mobile Operator	TowerCo	.616	.503	.445
		Partners	.754	.479	.266
	Partners	TowerCo	-.139	.542	.965
		Mobile Operator	-.754	.479	.266
Customer engagement and post-purchase support	TowerCo	Mobile Operator	-.226	.442	.866
		Partners	-1.033	.612	.221
	Mobile Operator	TowerCo	.226	.442	.866
		Partners	-.807	.589	.365
	Partners	TowerCo	1.033	.612	.221
		Mobile Operator	.807	.589	.365
Transacting a sale	TowerCo	Mobile Operator	.298	.631	.884
		Partners	-.032	.661	.999
	Mobile Operator	TowerCo	-.298	.631	.884
		Partners	-.330	.612	.852
	Partners	TowerCo	.032	.661	.999
		Mobile Operator	.330	.612	.852
Resource acquisition or development	TowerCo	Mobile Operator	.274	.536	.867
		Partners	.452	.501	.643
	Mobile Operator	TowerCo	-.274	.536	.867
		Partners	.178	.467	.923
	Partners	TowerCo	-.452	.501	.643
		Mobile Operator	-.178	.467	.923
Marketing; customer acquisition and retention	TowerCo	Mobile Operator	1.255*	.504	.042
		Partners	.228	.610	.926
	Mobile Operator	TowerCo	-1.255*	.504	.042
		Partners	-1.027	.552	.163
	Partners	TowerCo	-.228	.610	.926
		Mobile Operator	1.027	.552	.163
Storage and distribution of products	TowerCo	Mobile Operator	1.425*	.608	.060
		Partners	.978	.621	.267
	Mobile Operator	TowerCo	-1.425*	.608	.060
		Partners	-.448	.517	.664
	Partners	TowerCo	-.978	.621	.267
		Mobile Operator	.448	.517	.664
Economic maintenance of resources	TowerCo	Mobile Operator	-1.156	.563	.109
		Partners	-1.348	.666	.119
	Mobile Operator	TowerCo	1.156	.563	.109
		Partners	-.192	.668	.956
	Partners	TowerCo	1.348	.666	.119
		Mobile Operator	.192	.668	.956

The Games-Howell Post-Hoc test showed that there exists a statistically significant difference in the score for *production* between partners and TowerCos ($p = .098$) and a marginally significant difference between partners and mobile operators ($p = .125$). For *marketing*, there was a statistically significant difference between TowerCos and MNOs ($p = .042$). There was also statistical differences in ranking for *storage and distribution of products* between TowerCos and mobile operators ($p = .060$) and a marginally significant difference in rankings

for *economic maintenance of resources* between TowerCos and mobile operators ($p = .109$) and TowerCos and partners ($p = .119$).

Changes in activities

The table below shows the distribution of responses to a question regarding the firms' activities.

Table 24: Planned changes in activities

Item	N	TowerCos		MNOs		Partners		Total
		% within all selections	% within TowerCo selections	% within all selections	% within MNO selections	% within all selections	% within Partner selections	
Give more priority to efficiency of our key activities	32	40.6%	56.5%	25.0%	32.0%	34.4%	61.1%	100%
Give more priority to execution quality of our key activities	34	29.4%	43.5%	50.0%	68.0%	20.6%	38.9%	100%
% of Total	66	34.3%	100%	37.3%	100%	27.3%	100%	100%

The first question asks about firm's plan regarding value activities. The two options were selected almost equally (51.5% to 48.5%). Among those who stated that their firm will *give more priority to efficiency of key activities*, TowerCo respondents represented 41%, MNO respondents 25% and Partner respondents 34.4%. However, among all TowerCo respondents, only 56.5% stated that they will focus on efficiency of key activities, while the remaining 43.5% indicate that they will emphasize the execution quality of key activities. For the MNOs, 68% of respondents indicate that their firm will pay attention to execution quality of key activities as opposed to 32% that selected efficiency of key activities. Lastly, majority (61%) of the Partner respondents stated that their company will emphasize efficiency of key activities while 39% said their company will focus on execution quality of key activities.

5.2.2.3 Partnerships

Types of partnership

Respondents were asked to describe the relationship their companies had with their most important partners, by choosing up to three among eight options. This brought about 173 total selections. The most selected option was '*buyer-supplier relationship*', with 58 selections (33.52% of 173). TowerCo respondents had the highest selection in this category, with 53.44% of the 58 selections. This also represented 50% of all selections by TowerCo respondents. Partners contributed 27.1% to buyer-supplier relationship while MNOs accounted for the

remaining 22.2%. Next most selected type of partnership was *platform/resource sharing relationships*, with 38 total selections. MNOs led in this category with 50% of the 38 selections, which represented 30.2% of all MNO selections. 22.9% of all partner selections were platform sharing relationships, contributing 28.94% to this category. Outsourcing relationships had 21 total selections. 10 of the 21 (47.61%) came from partner respondents, 7 (33.33%) from TowerCos, and 4 (19.04%) from MNO respondents.

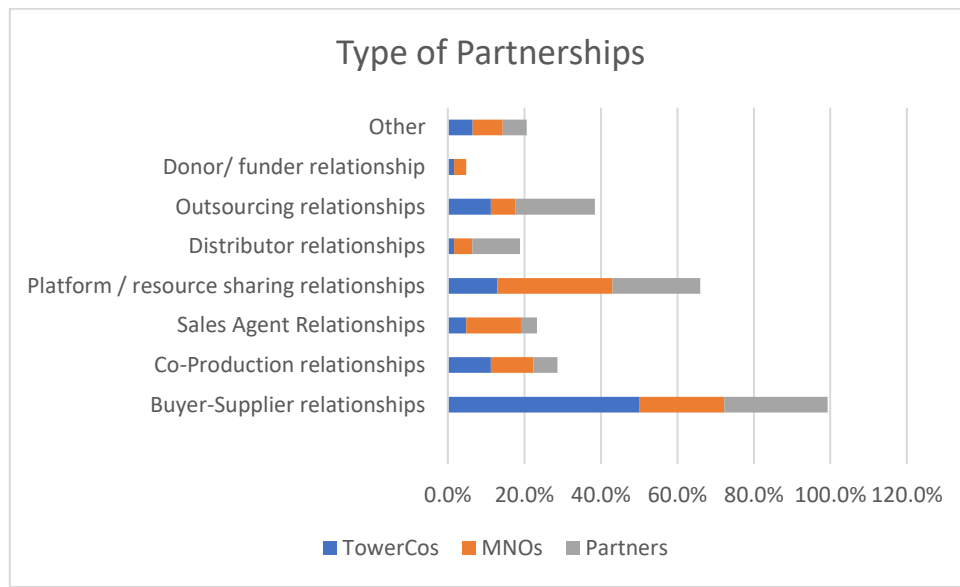


Figure 19: Type of partnerships

Motivation for partnerships

31 of 80 respondents (38.75%) selected *leveraging on partners' expertise for specialized activities* as their main motivation. MNOs had the most selections in this category with 48.38% of the 31 selections, representing 52% of all MNO selections. 12 of 24 (50%) TowerCo respondents indicated *reducing costs/risks* as their main motivation for entering into partnerships, representing 46.15% of 26 selections in this category. This was followed by MNOs with 10 selections. These 10 selections represented 34.48% of all selections by MNOs and contributed 38.46% to all selections of *reducing costs/risks*. Partners' main motivation for partnerships, according to the respondents, were to *leverage on partner's expertise for specialized activities* and to *acquire scarce resources*. 11 of the 27 partner respondents (41%) selected *leveraging expertise for specialised activities* while 8 (30%) selected *acquisition of complementary resources* as their main motivation for partnerships.

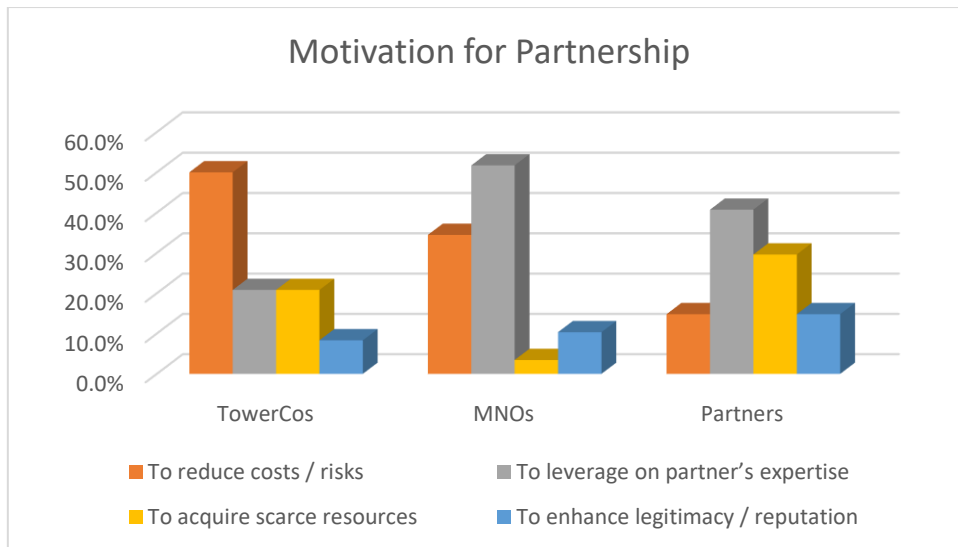


Figure 20: Motivation for partnerships

5.2.2.4 Section Summary and interpretation: Core activities and resources

This section again shows the difference in emphasis among the three group of companies. While the TowerCos signified their most important activities to be *customer engagement* and *partner engagement*, the Partners' most important activities were *production of services* and *partner engagement*. These findings have important implications for TowerCos and Content Providers, showing that both actors emphasize keeping in good terms with the mobile operators, thereby reinforcing the MNO's influential position.

In terms of resources, the participants' responses give a hint as to the form of BMI common in the firms. For example, the TowerCos' overwhelming preference for using less costly physical resources to achieve same results hints to a focus on efficiency and more incremental types of innovation. This is also the case, to a lesser extent, for the MNOs, who could use their large size and economies of scale to spread costs over a larger amount of goods. The Partners, on the other hand, indicated a preference for higher quality resources, which may reflect itself in the introduction of more product innovations.

5.2.3 Operational challenges and competitive priorities

The clustered bar below shows the distribution of responses across organization types. The results of each bar were computed based on percentages of responses in each organization type for each competitive challenge. Thus, for *revenue shortfall*, 40% of selections in this category were from Partners, 22.9% were from MNOs, and the remaining 37.1% were from TowerCos. The next bar, *high cost of resources*, indicates that TowerCo respondents made 45.5% of the

selections, compared to 29.1% for MNOs, and 25.5% for Partners. In the third bar, we see that Partners accounted for 60% of the selections of *higher costs than revenues*, while MNOs and TowerCos accounted for 20% each. Similarly, Partners selected 45.2% of all selections under the category *unpredictable costs*, compared to 22.6% for MNOs and 32.3% for TowerCos. In the fifth bar, *partnership misalignment*, Partners also made the highest selections with 47.8%, followed by TowerCos with 39.1% and MNOs with 13%. The sixth bar shows TowerCos with the highest selections for *overdependence on partners* (40.9%), followed by partners (34.1%) and MNOs (25%). In the seventh bar, we see that 36.4% of the selections of *difficult to acquire new customers* came from Partners and TowerCos respectively, while MNOs accounted for the remaining 27.3%. Finally, the eight bar shows that MNOs accounted for 61.5% of the selections for the category *difficult to retain existing customers*. This was followed by Partners (26.9%) and TowerCos (11.5%).

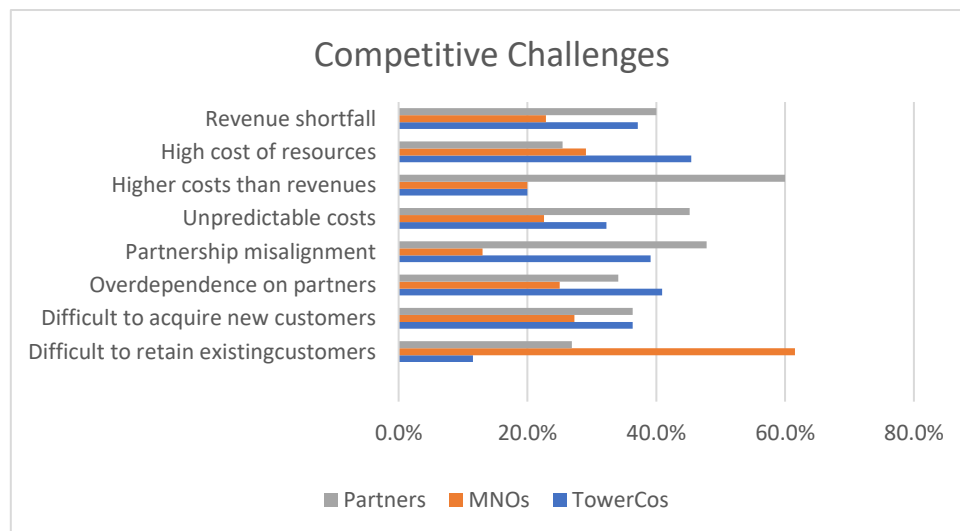


Figure 21: Firms' perational challenges

Competitive priorities

There were four questions in this section. The respondents were asked to indicate which of the given options had priority in their organizations. The descriptive statistics of responses are presented in the table below.

Table 25: Competitive priorities

S/N	Item	N	TowerCos	MNOs	Partners	Total
1.	We aim as much as possible to...					
	expand demand for our services	9	44.4%	33.3%	22.2%	100%
	reach as much of our potential market as possible	23	39.1%	34.8%	26.1%	100%
	Both	53	22.6%	47.2%	30.2%	100%
	% of Total	85	29.4%	42.4%	28.2%	100%
2.	We aim as much as possible to...					
	offer extra incentives to retain customers	50	40.0%	36.0%	24.0%	100%
	offer extra incentives to keep suppliers	3	0.0%	33.3%	66.7%	100%
	Both	18	22.2%	61.1%	16.7%	100%
	Neither	13	23.1%	23.1%	53.8%	100%
	% of Total	84	32.1%	39.3%	28.6%	100%
3.	We aim as much as possible to...					
	make productive use of resources without wastage	37	45.9%	37.8%	16.2%	100%
	use more valuable resources to generate better products/services	41	24.4%	36.6%	39.0%	100%
	% of Total	78	34.6%	37.2%	28.2%	100%
4.	We aim as much as possible to...					
	fix prices below customers' ability to pay	17	11.8%	41.2%	47.1%	100%
	increase customers' willingness to pay	64	39.1%	34.4%	26.6%	100%
	% of Total	81	33.3%	35.8%	30.9%	100%

Responses to the four questions varied from 81 to 85 valid replies. In terms of customer acquisition strategy, 44.4% of participants that selected “*we aim to expand demand for our services*” were from TowerCos, 33% from MNOs, and 22% from partners. Similarly, 39.1% of those that selected “*we aim to reach as much of our potential market as possible*” were from TowerCos, while 34.8% and 26.1% were from MNOs and Partners respectively. On the other hand, the percentage distribution shows that 47.2% of the 53 respondents that selected *both* were from MNOs, 30.2% from partners, and 22.6% from TowerCos.

For the second question, majority of the 50 respondents that stated their firms would *offer extra incentives to keep customers*, were from TowerCos, with 40% selections. This was followed by 36% from MNOs and 24% from Partners. On the other hand, 67% of selections of *offer extra incentives to keep suppliers* were from Partner respondents, while 53.8% of those who would neither offer extra incentives to retain customers nor suppliers were also from Partners. However, 61% of selections of *both* options were from MNO respondents.

For the third question, 45.9% of all selections of *make productive use of resources without wastage* were from TowerCo respondents, followed by 37.8% from MNOs. Conversely, 39.0% of those who indicated their firms will aim to *use more valuable resources to generate better products/services*, were from Partners while 36.6% were from MNOs and 24.4% were from TowerCos.

Lastly, 79.1% majority of the 81 respondents that answered the fourth question stated their companies would aim to increase customers' willingness to pay, rather than fix prices below customers' ability to pay. Among those who aimed to *increase customers' willingness to pay*, TowerCo participants accounted for 39.1%, MNOs make up 34.4%, and Partners accounted for the remaining 26.6%. On the other hand, the percentage distribution shows that among those who would *fix prices below customers' willingness to pay*, Partner respondents accounted for 47.1%, MNO respondents 41.2%, and TowerCo respondents make up 11.8%.

5.2.3.1 Section summary and interpretations: challenges & competitive priorities

The section on operational challenges is particularly relevant for understanding the dynamics of inter-organizational relationships and drivers of BMI in the SSA telecom value chain. Partners scored prominently in terms of challenges relating to misalignment and overdependence on partners, unpredictable costs, lower revenues, and difficulty to acquire new customers. These competitive challenges reflect the Partners' relatively weak position in the value chain, as they depend on the MNOs for key activities such as customer acquisition, sales, and marketing. These findings are explored further during interview.

Findings about the firms' competitive priorities further reflect the differing realities and show where the balance of power resides across each level of the value chain. The MNOs enjoy a central and influential position in the value chain, as indicated by the received responses showing the willingness of both TowerCos and content providers to offer extra incentives to keep the mobile operators either as customers or suppliers.

The results also provide a hint regarding forms of innovation among the different actors. Particularly, the results show that Partners would rather use more valuable resources to generate better services than make productive use of resources without wastage. This suggests a possible indicator of the content providers' focus on innovation. On the other hand, TowerCos were more interested in achieving operational efficiency of their activities. Responses from MNO participants suggest a combined focus on product innovation and efficiency by the mobile operators. Furthermore, responses by the content providers and, to a lesser extent, the MNOs, showed that customers' income-level impact greatly on adoption of services, confirming earlier findings in section 5.2.1 regarding price sensitivity of the average SSA consumer. Thus, as a strategic necessity, the content providers are in a position where they must innovate to create relevant offerings for customers but do so at competitive prices.

5.2.4 Costs Structures

The section asks about the costliest resources or activities that firms engage in. The activities / resources were six; rated from 1-6, with 1 being the most important. *Production* had only 19 selections due to an oversight in the version of questionnaire that was distributed.

DESCRIPTIVES		N	Mean	Std. Deviation
Acquiring and managing physical resources (IT Systems, lands, logistics infrastructure, equipment etc)	TowerCo	26	1.27	.667
	Mobile Operator	35	1.69	1.078
	Partners	31	2.65	1.603
	Total	92	1.89	1.313
Acquiring and managing legal / intellectual resources (patents, IP, licenses etc)	TowerCo	25	2.44	1.003
	Mobile Operator	34	2.82	1.290
	Partners	30	3.37	1.586
	Total	89	2.90	1.366
Managing relationships with existing customers	TowerCo	24	3.17	1.049
	Mobile Operator	31	3.06	1.365
	Partners	30	2.20	1.095
	Total	85	2.79	1.254
Managing relationships with organizations we work with	TowerCo	24	3.88	.947
	Mobile Operator	31	3.29	1.346
	Partners	30	2.60	1.248
	Total	85	3.21	1.301
Marketing & sales	TowerCo	24	3.63	1.377
	Mobile Operator	31	2.23	1.175
	Partners	29	2.86	1.552
	Total	84	2.85	1.468
Transforming resources into final product form	TowerCo	4	4.00	1.826
	Mobile Operator	10	2.20	1.619
	Partners	5	2.40	1.673
	Total	19	2.63	1.739

From the mean ranks, ‘*acquiring and managing physical resources*’ was selected by all the participants as the costliest activity, with 1.89 mean rank. Production was next, with a mean rating of 2.63. This was followed by *managing relationship with existing customers*, with 2.79 mean rating and *marketing & sales* with 2.85 mean rating. Next was ‘*acquiring legal/intellectual resources*’ at 2.90 and managing relationship with partners, with 3.21 mean rating.

The costliest resource/activity among the TowerCos was ‘*acquiring physical resources*’ (1.27 mean score). The 1.27 mean rank of ‘*acquiring physical resources*’ by TowerCo participants was also the highest mean ranking of any activity by any of the participants. ‘*Acquiring and managing legal/intellectual resources*’ was second costliest, with 2.44 mean score. This was

followed by ‘managing relationship with existing customers’ (3.17). Marketing and sales (3.63) and ‘managing relationship with partners’ (3.88) were the fourth and fifth costliest activity for TowerCos. The least costly activity for TowerCos was ‘production’, with only 4.00 mean rank. This was also the least ranking of any activity from the 92 valid responses.

For the mobile operators, ‘acquiring and managing physical resources’ also emerged from the findings as the costliest activity, with 1.69 mean score. Production had a mean rank of 2.20 while marketing & sales recorded 2.23. In fourth was ‘acquiring and managing legal resources’ (2.82 mean score) followed by managing relationship with existing customers (3.06). The least costly activity, according to the respondents, was ‘managing relationship with partners’, with 3.29 mean score.

Respondents from partner organizations selected ‘managing relationship with existing customers’ as their company’s costliest activity. This is indicated by a 2.20 mean score. In second was production with 2.40 mean score followed by ‘managing relationship with partners’ (2.60). ‘Acquiring and managing physical resources’ came fourth with 2.65 mean score while ‘marketing & sales was fifth with 2.86 mean rank. ‘Acquiring and managing legal resources’ emerged as the least costly partner activity, with 3.37 mean rank.

One-way ANOVA (Welch)

		Statistic ^a	df1	df2	Sig.
Acquiring and managing physical resources (IT Systems, lands, logistics infrastructure, equipment etc)	Welch	9.698	2	56.388	.000
Acquiring and managing legal / intellectual resources (patents, IP, licenses etc)	Welch	3.463	2	56.191	.038
Managing relationships with existing customers	Welch	6.414	2	53.836	.003
Managing relationships with organizations we work with	Welch	9.007	2	54.650	.000
Marketing & sales	Welch	7.897	2	51.067	.001
Transforming resources into final product form	Welch	1.381	2	6.955	.312

a. Asymptotically F distributed.

From the results of the Welch ANOVA far, we know that there are statistically significant differences between the groups. All the mean rankings, except production, were statistically significant at the .05 significance level.

Games-Howell Multiple Comparisons

Dependent Variable	(I) Type of Organization:	(J) Type of Organization:	Mean Difference (I-J)	Std. Error	90% Confidence Interval Sig.
Acquiring and managing physical resources (IT Systems, lands, logistics infrastructure, equipment etc)	TowerCo	Mobile Operator	-.416	.224	.161
		Partners	-1.376*	.316	.000
	Mobile Operator	TowerCo	.416	.224	.161
		Partners	-.959*	.341	.019
	Partners	TowerCo	1.376*	.316	.000
		Mobile Operator	.959*	.341	.019
Acquiring and managing legal / intellectual resources (patents, IP, licenses etc)	TowerCo	Mobile Operator	-.384	.299	.410
		Partners	-.927*	.352	.030
	Mobile Operator	TowerCo	.384	.299	.410
		Partners	-.543	.364	.303
	Partners	TowerCo	.927*	.352	.030
		Mobile Operator	.543	.364	.303
Managing relationships with existing customers	TowerCo	Mobile Operator	.102	.326	.947
		Partners	.967*	.293	.005
	Mobile Operator	TowerCo	-.102	.326	.947
		Partners	.865*	.316	.022
	Partners	TowerCo	-.967*	.293	.005
		Mobile Operator	-.865*	.316	.022
Managing relationships with organizations we work with	TowerCo	Mobile Operator	.585	.310	.152
		Partners	1.275*	.299	.000
	Mobile Operator	TowerCo	-.585	.310	.152
		Partners	.690	.332	.103
	Partners	TowerCo	-1.275*	.299	.000
		Mobile Operator	-.690	.332	.103
Marketing & sales	TowerCo	Mobile Operator	1.399*	.352	.001
		Partners	.763	.403	.151
	Mobile Operator	TowerCo	-1.399*	.352	.001
		Partners	-.636	.357	.186
	Partners	TowerCo	-.763	.403	.151
		Mobile Operator	.636	.357	.186
Transforming resources into final product form	TowerCo	Mobile Operator	1.800	1.047	.286
		Partners	1.600	1.180	.417
	Mobile Operator	TowerCo	-1.800	1.047	.286
		Partners	-.200	.907	.974
	Partners	TowerCo	-1.600	1.180	.417
		Mobile Operator	.200	.907	.974

The Games-Howell test shows that there is a statistically significant difference in ranking of ‘acquiring and managing physical resources’ between TowerCos and partners ($p < .001$), as well as between mobile operators and partners ($p = .019$). Also, there was a statistically significant difference in the ranking for ‘acquiring legal/intellectual resources’ between TowerCos and partners ($p = .030$). There was a statistically significant difference in ranking of ‘managing relationship with existing customers’ between TowerCos and partners ($p = .005$) and mobile operators and partners ($p = .022$). Furthermore, there was a statistically significant difference in ranking of ‘managing relationship with partners’ between partners and TowerCos ($p < .001$) and a marginally significant difference between partners and mobile operators ($p = .103$). Finally, ranking for ‘marketing & sales’ differed significantly between mobile operators

and TowerCos (.001). However, there were no statistically significant differences between the groups for ‘production’.

5.2.5 Revenue Structure

Pricing Strategy

The graph below shows the pricing strategy of the organizations in this study. According to 66% of the respondents, all the firms mostly offered ‘*standard prices for all customer and product categories.*’ There were 25 valid responses from TowerCo respondents, out of which 20 (80%) selected ‘standard prices for all customer/service categories’. Similarly, 25 of 37 MNO respondents (representing 67.6%) selected ‘standard prices’. A lower percentage of respondents from partner organizations (53.3%) selected ‘standard prices’ as their pricing strategy.

However, partners led (or had the most selections) in the other pricing categories. For example, while 16% of the respondents chose “*low prices for basic services*”, partners had the highest selections and percentage (20%, representing 6 of 30 respondents) in this category. Partners also had the highest selections of the option ‘*low prices for all customer categories*’ and ‘*higher-prices for higher income earners*’. One respondent each selected ‘*no price is charged to our customers*’ and ‘*customers pay desired amount*’.

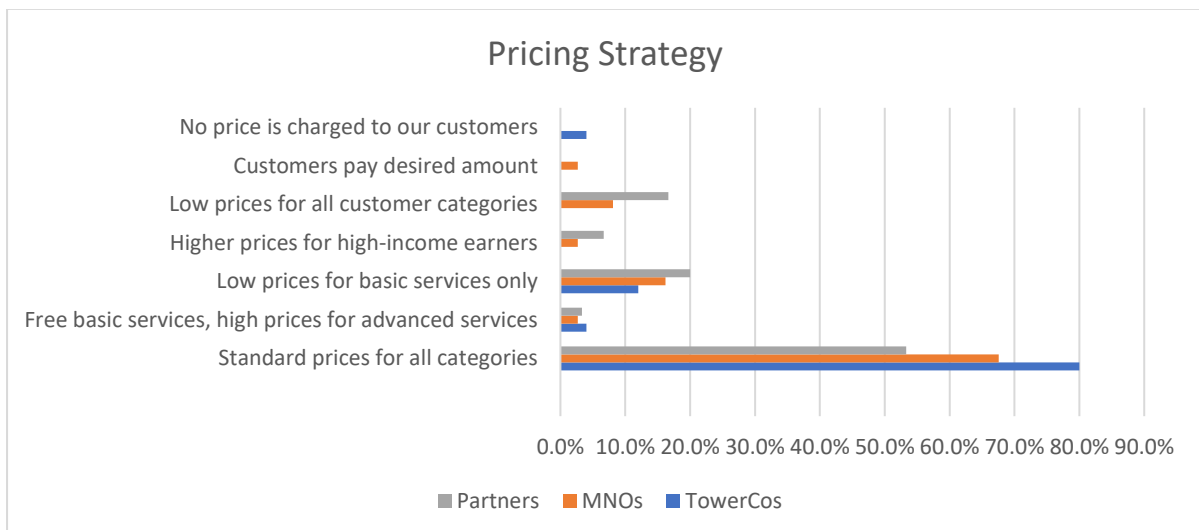


Figure 22: Pricing strategy

Customer mode of payment

This question had 129 total selections. The choice option ‘*recurring payments on usage basis*’ had the most selections, with 56 selections (25 of which were from MNO respondents). The

next most popular choice option among the respondents was ‘*recurring payments of a fixed amount on termly basis*’, with 38 total selections. Out of the 38 selections, 19 (50%) were from TowerCo respondents. MNO respondents had 11 selections of ‘*recurring payments of a fixed amount on termly basis*’, representing 28.94% of the 38 selections in this category, and 20.37% of all selections by MNO respondents. This option was selected eight times by Partners, representing 21.62% of all selections by partner respondents. ‘*One-time payments*’ was more popular among mobile operators, with 33.33% of all selections by MNO respondents. This was followed by partners with 22% and TowerCos (10.52%).

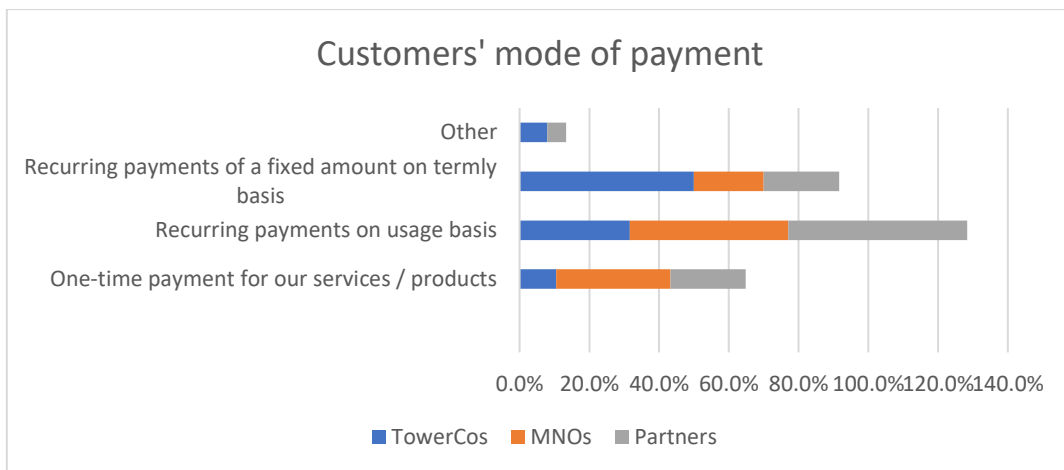


Figure 23: Customer mode of payment

Pricing Mechanisms

There were 199 total selections across five different options. The data shows that the value of product/service (69 selections) is the most common price mechanism selected by the respondents. 37.68% of all 69 selections in this category were from partner respondents, 34.8% from MNO respondents, and 27.6% from TowerCo respondents. In terms of selections within organization type, 40% of partner respondents selected ‘*value of product/services*’, while MNO and TowerCo respondents chose 35.82% and 28.35% respectively. Customer characteristics was selected as the least important consideration in determining prices, as only 25 respondents chose this option. Among these 25 respondents, 12 (17.91%) were from MNOs, 7 (10.76%) were from partners, and 6 (8.96%) were from TowerCos. The highest selected option by a single type of organization, in terms of proportion, was ‘*negotiation*’, with 56.7% selection by TowerCo-based respondents. The remaining 43.3% respondents that selected ‘*negotiation*’ were employees from MNO and partners.

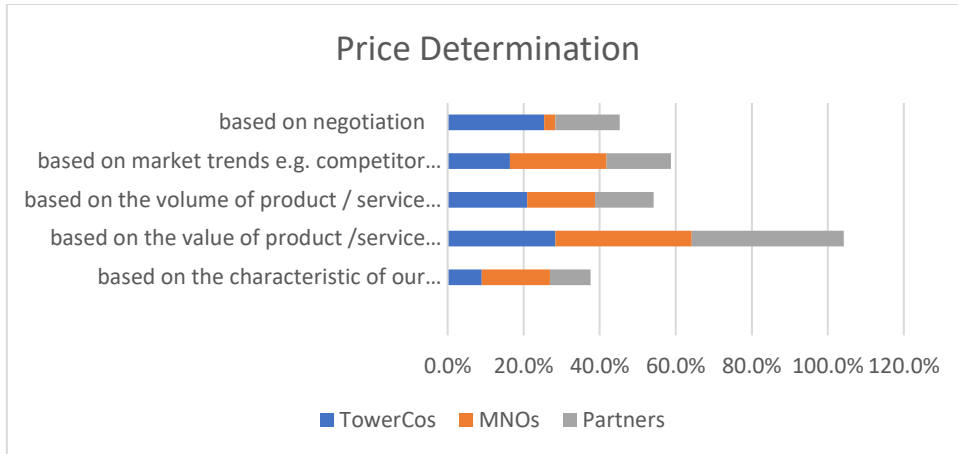


Figure 24: Pricing mechanisms

Revenue Sources

There were 94 total responses. 73 of the 94 (77%) indicated that *actual sale of products/services* is their organization’s main source of revenue. 12 (13%) selected *revenue sharing*, 3 (3.19%) selected *third-parties*, and 6 (6.38%) chose *other* options. 21 TowerCo respondents selected ‘*actual sale of products/services*’, representing 29% of all 73 selections in this category. However, the 21 selections translate to 80.8% of the 26 total selections made by TowerCo respondents. The rest of the selections by TowerCo respondents are distributed as follows: 0% selected *revenue sharing*, 7.7% selected *third-party*, and 11.5% selected ‘*other*’ sources. For the mobile operators, 32 of 37 respondents (86.5%) selected ‘*actual sale of products/services*’, 10.8% selected ‘*revenue sharing*’, 0% selected ‘*third-parties*’, and 2.7% chose ‘*others*’. Finally, 20 participants from partner firms selected ‘*actual sale of products/services*’, representing 64.5% of 31 participants. Other selections were 25.8% for *revenue sharing*, 3.2% for *third-parties*, and 6.5% for *others*.

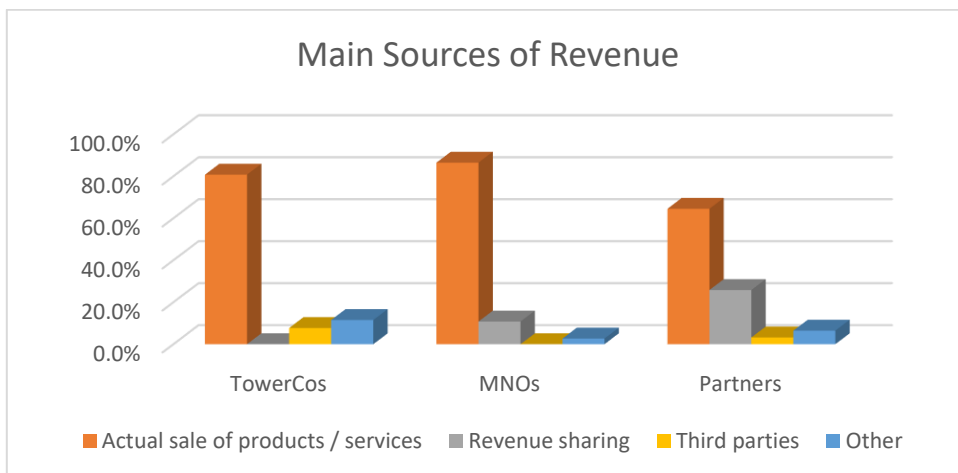


Figure 25: Main revenue sources

5.2.5.5 Section summary and interpretations: Revenue structures

Participants' responses to the questions on revenue sources and pricing strategies help to shed light on drivers of BMI. Consider the Partners, whose responses show that content providers deviated from the MNOs and TowerCos. The content providers had the highest number of selections for pricing strategy that focus on the socio-economic conditions of the customers. Hence, their pricing strategy had a strong element focusing on low prices and charging a premium for higher income customers. However, the responses suggests that the TowerCos did not have any aspect of their activities influenced by the socio-economic condition of customers.

Furthermore, while all the organizations sold (or rented) products and services to customers to raise revenues, the data reveals that revenue sharing was the most important source of revenue for partners. This creates issues of dependence and transaction costs.

5.3 Interview Findings and Preliminary Insights

This section presents key findings from the interviews. Before the findings are presented, a summary of interview participants is displayed.

Table 26: Interview participants

Category of Org	Org Code	Title	Functional Area	Category / Level	Interview Code
Mobile Network Operators (MNO)	MNO1	Group Head, Digital Media	Product Development & Management	Middle Management	INT1/MNO
		Group Head, Digital Media	Product Development & Management	Middle Management	INT2/MNO
		Manager, VAS Planning	Product Development & Management	Middle Management	INT3/MNO
		Senior Specialist, Digital Business	Product Development & Management	Junior Management	INT4/MNO
		Manager, Enterprise Roaming Data and Wholesale Pricing	Sales	Junior Management	INT5/MNO
		Digital Financial Services Specialist	Product Development & Management	Junior Management	INT6/MNO
	MNO2	Branch General Manager	General Management	Middle Management	INT7/MNO
		Group Head, Marketing and Communications	Marketing	Senior Management	INT8/MNO
	MNO3	Assistant Director of Corporate Communications	Communications	Middle Management	INT9/MNO
	MNO4	Billing Integrity Manager	Sales Division	Junior Management	INT10/MNO
	MNO5	Senior Manager, Media & Entertainment	Product Development & Management	Middle Management	INT11/MNO
		Senior Manager, Media and Entertainment	Product Development & Management	Middle Management	INT12/MNO
		Senior Manager, Trade Communication	Marketing & Communications	Middle Management	INT13/MNO
	MNO6	Customer Value Manager	Marketing	Junior Management	INT14/MNO
		Mobile Data Manager	Sales	Junior Management	INT15/MNO
		Senior Database Administrator	ICT Division	Junior Management	INT16/MNO
		Market Development Manager	Marketing	Junior Management	INT17/MNO
	MNO7	Head of VAS	Product Development & Management	Middle Management	INT18/MNO
		Service Innovation Manager	Product Development & Management	Junior Management	INT19/MNO
Head of Operations		Operations	Senior Management	INT20/TOW	
Tower Companies	INF1	Head of HR	Human Resources	Middle Management	INT21/TOW
		Sales Manager	Sales	Middle Management	INT22/TOW
		Head of Sales and Marketing	Marketing	Senior Management	INT23/TOW
	INF3	Regional Manager, Operations	Operations	Middle Management	INT24/TOW
	INF4	Specialist, Utility Efficiency	Operations	Junior Management	INT25/TOW
		Projects Lead	Operations	Middle Management	INT26/TOW
	INF5	Maintenance Engineer	Operations	Non-managerial	INT27/TOW
	INF6	Head of Operations and Finance	Operations	Senior Management	INT28/TOW
	INF7	Executive Director	General Management	Senior Management	INT29/TOW
		Business Development Manager	Marketing	Middle Management	INT30/TOW
	INF8	Sales Manager	Sales	Middle Management	INT31/TOW
	INF9	Technical Director	Operations	Senior Management	INT32/TOW
Technical Director		Operations	Senior Management	INT33/TOW	
INF10	Group Regulatory Senior Manager, Legal	General Management	Middle Management	INT34/TOW	
INF11	Associate Communications Director	Communications	Middle Management	INT35/TOW	
INF12	Enterprise Solutions Architect	ICT Division	Junior Management	INT36/TOW	
Partners	CONT1	Country Director	General Management	Senior Management	INT37/PART
	CONT2	VAS Operations Manager	Operations	Middle Management	INT38/PART
	CONT3	Head of Communications	Communications	Middle Management	INT39/PART
	CONT4	Digital Health Expert	Product Development & Management	Junior Management	INT40/PART
	CONT5	Deputy GM, Informal Sector	Product Development & Management	Middle Management	INT41/PART
	CONT6	Finance Manager	Finance	Middle Management	INT42/PART
	CONT7	Chief HR Officer	Human Resources	Middle Management	INT43/PART
		General Manager, VAS	Product Development & Management	Middle Management	INT44/PART
	CONT8	Chief Operations Officer	Operations	Senior Management	INT45/PART
	CONT9	Content Manager	Product Development & Management	Middle Management	INT46/PART
	CONT10	Content Executive	Product Development & Management	Junior Management	INT47/PART
		HR Officer	Human Resources	Non-managerial	INT48/PART
	CONT11	Vice President, Service Delivery	Product Development & Management	Middle Management	INT49/PART
		Business Development	Marketing	Junior Management	INT50/PART
		Head of Software	ICT Division	Middle Management	INT51/PART
	CONT12	West Africa Regional Operations Manager	Operations	Middle Management	INT52/PART
	CONT13	Group Head of Mobile VAS	Product Development & Management	Senior Management	INT53/PART
	CONT14	Digital Platform Manager	Product Development & Management	Junior Management	INT54/PART
	RET1	Team Lead	Sales	Junior management	INT55/PART
	RET2	Head of Operations	Operations	Junior Management	INT56/PART
RET3	Sales Officer	Sales	Non-managerial	INT57/PART	
RET4	Sales Executive	Sales	Non-managerial	INT58/PART	
RET5	Sales Executive	Sales	Non-managerial	INT59/PART	
Regulators / Policy Makers	REG1	Assistant Director		Junior Management	INT60/REG
		Admin Manager		Junior Management	INT61/REG
	REG2	Deputy Director, Spectrum Administration		Middle Management	INT62/REG
	REG3	Deputy Director, Planning, Monitoring & Evaluation		Middle Management	INT63/REG
Head of HR			Middle Management	INT64/REG	

5.3.1 Template

In this section, the themes emerging from interview data are presented. These themes were derived by recursively running through the literature and data; identifying patterns and common issues to arrive at a template for analysis. The template (summary of results) is first presented before each aspect of the template is explored.

The design of the initial template is based on the research protocol and literature review. Analysis started with identification of some a priori codes expected to be relevant to the analysis. These codes occupy different levels or hierarchy, i.e., top level, level 1, level 2, and level 3. Level one themes were derived based on literature while the majority of the Level 2 and 3 sub-themes were generated through a more iterative process involving initial analysis of eight of the total sample of interview transcripts.

Table 27: Initial template

Top level themes	Level 1 themes	Level 2 sub themes	Level 3 sub themes
Business model innovation elements	Markets	Innovation in customer segments	Underserved markets
			Blue oceans
	Offerings	Expand portfolios Redesign offerings Bundle offerings	Adding new offerings
	Resources and capabilities	Working against the future (dynamic capabilities) Long-term orientation Partnering for complementary resources Using less to do more	
	Activities and Processes	Internal re-organization	Decentralizing innovation process
			Centralizing procurement
			Consolidating operations
		Adding new partners	
		Adding new technologies	
	Partnerships	Getting the job done Outsourcing Joint innovation with competitors	
Revenue mechanisms	Optimizing demand Expanding reach Negotiation		
Costs Structure	Operational efficiencies Outsourcing		
Business model innovation environment	Competition		
	Regulation and government policy		
	Technological trends		
	Socio-economic and cultural norms		

Following closer examination of the data, some of the codes were modified, replaced, or discarded where they prove less useful to the actual data. Ten a-priori level 1 themes were identified. These include seven BM design elements: (i) business model offerings, (ii) targeted

customers, (iii) firm resources and competencies, (iv) value activities and processes, (v) key partnerships, (vi) business model revenue streams, and (vii) business model cost structures. The remaining three a priori level 1 themes are external determinants of business models in the mobile telecoms industry: (i) institutional trends, (ii) technology trends, and (iii) industry competition. Consistent with King's (2004) approach, another level 1 theme (socio-economic drivers) was generated from data as an additional external driver of innovation in the telecommunications sector in SSA. In this chapter, top-level themes representing the seven business model elements are presented, while the remaining four top-level themes (capturing the business model external environment) are highlighted in chapter seven.

Applying King's (2004) template analysis, the level 1 theme generated additional codes. For example, 'offerings' generated two codes: (i) types of need addressed by offerings and (ii) innovation in offerings. The level 2 theme 'innovation in offering' in turn generated two codes, indicating that firms innovate on their offerings in two ways: (i) adding new offerings and (ii) redesigning existing offerings (see appendix 6 illustrating the way codes are derived. Generation of the other codes followed similar pattern.

Table 28: Final template

Top level themes	Level 1 themes	Level 2 sub themes	Level 3 sub themes
Business Model Elements	Offerings	Types of need addressed by offerings	Functional
			Intangibles
			Social
		Innovation in offerings	Adding new offerings
			Redesigning existing offerings
	Markets or Customers	Innovation in customer segments	Adding new customers
			New customer relationships
	Resources and capabilities	Resource challenges	Technical expertise
			Access to funding
			High cost of resources
		Innovation	Leveraging technological resources in new ways
			Using less to do more
			Building new competencies
	Activities and Processes	Core value activities	Marketing and sales
			Operations
			Service
			Production
		Innovation	Operational innovation
			Reorganization
	Partnerships	Factors shaping partnership	Partner's bargaining power
			Strategic / operational fit
			Partner's technical capacity
			Trust
		Types of partnerships	Coopetition
		Strategic alliances	
		Joint venture	
		Getting the job done	
		Cross-sector partnerships	
		Franchises	
Revenue model	Revenue streams	Revenue sharing	
		Transaction-based revenue	
		Third-party	
	Revenue model innovation	New revenue streams	
		New ways to claim customer value	
		New ways to capture value in partnerships	
		New ways for customer to access product	
		New pricing mechanisms	
Costs Structure	Strategies for costs reduction	Technology improvements	
		Frugality	
		Economies of scale and scope	
		Costs transfer	
Business Model External Environment	Competition	Existing competition	Market structure
			Market saturation
		Competition from entrants	
		Substitute products	
		Buyer influences	
		Supplier influences	
	Institutional context	Types of Regulation	Licensing policies
			Environmental laws
			International codes of conduct
			Consumer protection laws
		Pace of regulation	Degree of proactivity
			Bureaucracy
	Regulatory entry barriers	High licensing requirements	
		Local partnership policy	
		Multiple regulation	
		Perceptions about regulation	
	Security and safety		
Technology	Technology advancements		
	Technology access/ adoption		
Social and economic	Customer demography	Income	
		Education and illiteracy	
	Economic infrastructure	Access to capital and money markets	
		State of national infrastructure	

5.3.2 Theme 1: Value Proposition / BM Offerings

The business model offerings refer to the value proposition that firms deliver. The results highlighted three types of needs addressed by the value propositions of firms in the study context. The three broad categories of needs are functional, social impact, and intangible needs.

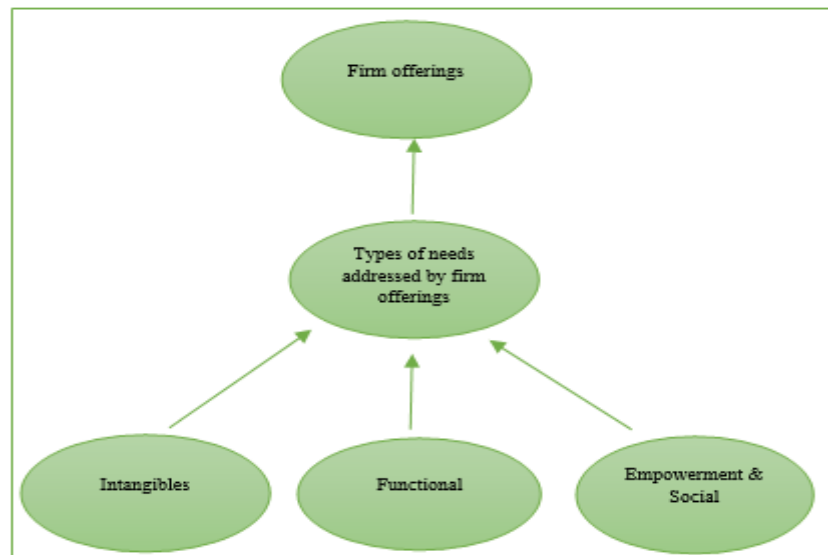


Figure 26: Business model offering coding

The managers interviewed provided evidence of the existence of the type of needs addressed by the companies. The most popular type of need addressed was functional and includes such value propositions as ‘reducing cost’, ‘reducing risk’, ‘high responsiveness’, ‘high quality’. The quote below relates to the ‘reducing cost’ proposition:

“Operators have brought their towers, and in most cases, they go on into partnership with 3rd party towercos, where they remove themselves from day-to-day management and the third party is the face of the business; it takes over marketing and operations of the towers” (INT29/TOW)

The second type of need addressed were intangibles, which relate mostly to non-tangible value propositions such as satisfaction derived from consuming a strong brand or convenience and ease of accessibility of service. A senior manager in MNO5 discusses how his company leverages technology and consumer data to create ‘ease of accessibility’ for its subscribers:

“Our unique proposition is the experience, that’s the new currency. So, I want to listen to Davido’s latest song and I have a brand-new telephone. Because that phone was provided to you, we naturally have a store or platform that you can access on that phone that takes you to find, in a very seamless manner, contents related to Davido; we would have already been able to recommend those things that you are likely to be interested in. So, we are not going to be pushing services to you anymore; we are just going to be pushing what exactly you like” (INT11/MNO)

The third type of need addressed was those with welfare / empowering objectives of consumers and communities. Some Partner firms and TowerCos fall under this category. For example, a quote by a digital health expert stated:

One of our key strengths and what we pursue in all the communities and countries where we work, is empowering women and girl to be able to go and take responsibility for their reproductive and sexual health. We are delivering the services to those who need them the most, but who are unable to pay for them (INT40/PART)

Types of Innovation in Offerings

The data found evidence of two general types of innovation (Level two themes) occurring along the offering component of the business model, which the value chain players leveraged to varying degrees: (1) adding new services / products to product portfolio and (2) redesigning existing offerings. These two types of innovation in offerings are now explored in detail.

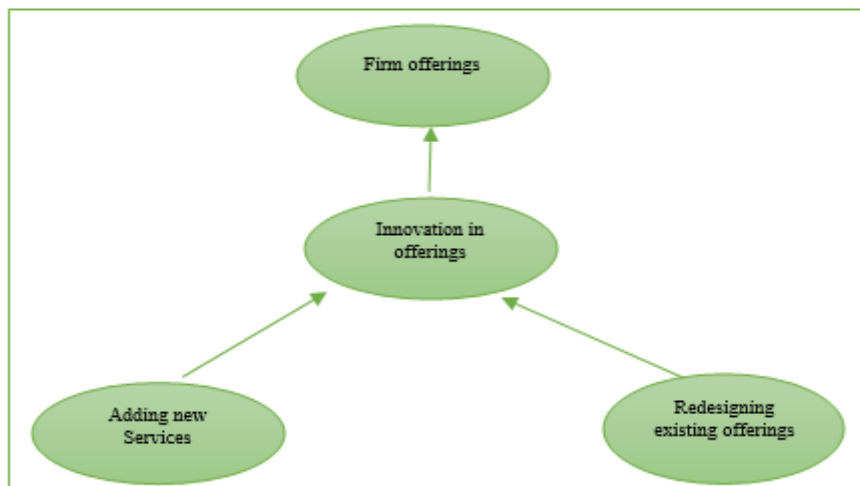


Figure 27: Innovation in offering coding

In the telecom value chain in Nigeria and Ghana, there was a wide innovation focus on *addition of new services* by MNOs, content partners, and to a lesser extent, the TowerCos. In general, there were three main reasons why firms introduced new services: (i) to offer more value to existing customers, such as ‘new experiences’ and unmet needs (ii) to maximize earning potentials from existing customers, (iii) to create new customer segments (iv) to diversify into new markets. Below is a brief description and single quotes representing one of the three kinds of motivation for adding new services:

- To offer additional value: *The more recent change to a chunk of our offer has been the maternity cover, which we were the first to offer to the microinsurance space (INT52/PART)*
- To maximize earning potential from existing customers: *Apart from infrastructure, we sell energy. So, just like a service apartment where instead of buying your own generator set, you already have a big generator that can serve you and the neighbours. So, three occupants will be using one generator rather than three generator sets. To avoid the potential noise, the environmental leakages from occupants, it*

will be more effective with one generator. So, apart from space which the telcos pay for, they also pay for energy (INT25/TOW)

- To create new customer segmentation: *There is a new service on our network today called traffic info. What it does is those guys [the partners] built Maps on USSD...they looked at it and said how can we make this thing available on other channels because app has to do with data; if the customer doesn't have data, he can't use this service (INT6/MNO)*
- To diversify into new markets: *Like I said, the industry is saturated, the VAS companies are looking at different options. So, there is something called enterprise solutions. Besides the normal subscription service, these are ways in which we provide service for govt agencies and other bigger clients. We are now doing promotions for brands like Coca-Cola etc (INT38/PART)*

There were also innovations that relate to changes in existing offerings. The data showed that *redesigning of offerings* happened in three different ways: (1) adding new elements to an existing offering. This type of innovation was used to create a new, improved version of offering, (2) bundling new elements with existing products. With this type of innovation in offerings, companies typically create a new standalone product, (3) creating product – service hybrids. Product – service hybrids were created by fusing together different products and services into a single entity, but the different aspects of the product and service are retained. This type of offering was typically used to offer more value to the customer, and to enhance revenue flows. The quote below is from an Operations Manager in one of the TowerCos:

ATC deployed site monitoring facilities and are still improving on it, and we also give customers right to view the network. You as the customer, you don't have to deploy your own telemetric; if you have your own monitoring centre, we give you right to it, so sitting on your laptop you can view your site, you know if the site is down on power...now, there is an app on the phone, that allows you to check what is working and what is not. That's one of the things we do to keep our customers happy (INT24/TOW)

5.3.3 Theme 2: Markets

Innovation in markets

The second level 1 theme is markets/customers. From the template analysis, the level 1 theme 'markets' generated one level 2 code "innovation in customer segments". This higher-order code in turn generated two lower-order codes: (i) adding new customers, (ii) new customer relationships.

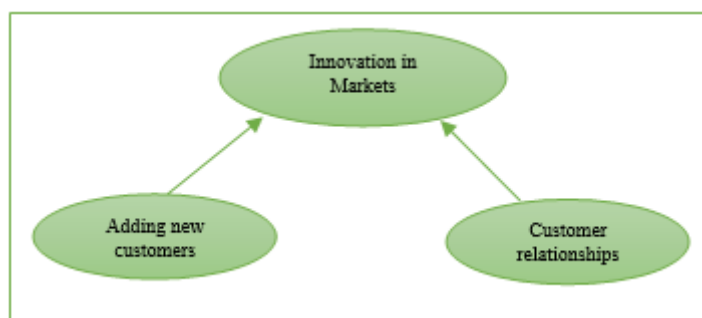


Figure 28: Innovation in markets coding

Adding new customers: The higher-order code ‘adding new customers’ generated two lower-level codes (level three sub-themes): (i) new to company, in which companies target new customers that already exists in the industry, but underserved by competitors, and (ii) new to industry, where firms identify new customers previously unserved by existing competition. The findings showed that firms added new customers either by using existing products or creating entirely new products to serve the new markets. Addition of new customers using new products / services was more common among Partners, who specifically created new offerings for a new customer segment. However, some MNOs and TowerCos also exemplify this type of innovation, as captured by this quote:

“Our present challenge is we are looking to kick-start something with a non-conventional base station, instead of waiting for NCC to do bidding. It is easier for these MNOs to switch to cheaper technology, but I think what they are just waiting to see is a test-run; somewhere we’ve deployed it and they’ve seen the capabilities. So, as a business case, it is something very viable to get across to these MNOs, when they understand there is a cheaper alternative” (INT26/TOW)

On the other hand, some firms added new customers that are served with existing offerings. This type of innovation in markets was equally pronounced in all categories of organizations. A middle manager in one of the tower companies said:

“Offshore Markets is a recent innovation Huawei adopted. We render back-office support to major telecoms companies outside Nigeria on a contract to support areas where they have challenges on their network. Huawei has three clients in these categories (Rain Network South Africa, Orange Telecom Sierra Leone and Swazi mobile in Swaziland). Essentially, we made the change from managing only local MNOs to extending services to offshore markets to increase revenue while using the same staff for all purpose” (INT36/TOW).

Customer relationships: Customer relationships were typically aimed to achieve one or more objectives: (i) customer retention and (ii) upselling i.e., boosting sales. These are realized by creating positive customer experiences around a value proposition, which creates more value for the customers. Broadly, the data showed that this occurred in three different ways: building new experiences, personal assistance, and dedicated personal assistance. Firms built *new experiences* by making self-service possible or easier for customers, for example, through introduction of platforms that guide users to their preferred services. This required deep customer knowledge and was a common strategy among MNOs whose value proposition and differentiation came from building unique experiences.

The second type of customer relationship, *personal assistance*, is a form of human interaction through which firms provide help during or after sales, typically via call centres or the use of field agents to solve customer problems. Personal assistance also involves the creation of offerings with a high degree of customization, which fits with customers' unique characteristics. High customization and use of field agents were observed particularly among Content providers and are effective ways of reaching underserved customers.

Lastly, *dedicated personal assistance* was common among TowerCos, who maintained account managers for each customer. The account managers are responsible for forging close relationships with the MNOs.

5.3.4 Theme 3: Resources and Capabilities

From the interview results, we can identify three higher-level codes associated with resources and capabilities. These themes are resource-based advantages, resource challenges, and innovation. Resource-based advantages are discussed in the next chapter.

Resource Challenges

The high-level code 'resource challenges' generated three additional codes: technical expertise, access to funding, and high cost of resources. In other words, these were the three common types of resource challenges identified in the results.

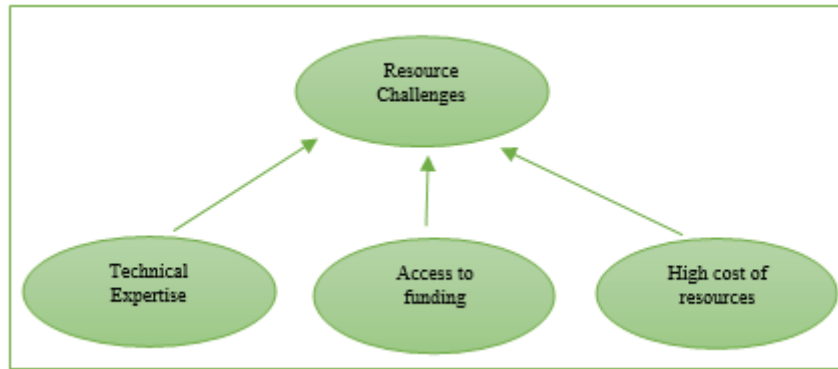


Figure 29: Resource challenges coding

‘Access to funding’ challenge was mostly mentioned by TowerCos and Content Providers. According to a technical manager in one of the infrastructure companies in Ghana:

We’ve never had enough resources to deliver our services. We wish we could readily find some form of funding to be able to expand. There’s always a desire from us to expand our operations and we are limited by funding. If we have 5 R&D products we have developed and we want to take to market, we normally would have wished that we can take all five to the market, but because of limited resources, we are always compelled to take just one. And sometimes, we have to even scale down that one. So, it hampers our operations. We have the technology, we have the products, but we don’t have the funding to expand (INT33/TOW)

The following quote is from a VAS Operations Manager in one of the content partners in Nigeria. Regarding high costs of technical infrastructure, he says:

IVR has been there, but the major problem is a lot of us service providers don’t have the necessary infrastructure to provide the service. There are equipment you need to have to carry them out which are very high cost. So, if we have like 100 VAS providers in Nigeria, I don’t think 10 has the equipment or facility to provide IVR services (INT38/PART)

Innovation in the resources component

The level 2 theme ‘innovation’ generated three codes: (i) expanding the scope of technology, (ii) using less to do more, (iii) building new capabilities.

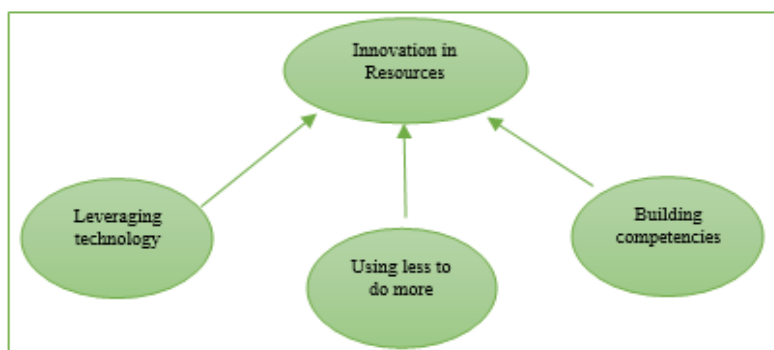


Figure 30: Innovation in the resources component

From the results, it was observed that when companies expanded the scope of technology, it was because they discovered new ways to productively utilize existing resources. A Project Manager in a mid-sized infrastructure firm said:

With the non-conventional base station... instead of waiting for NCC to do all these bidding, we want to kick-start something. I think it will be easier for the MNOs to switch to cheaper technology, but I think what they are just waiting to see a test-run, somewhere we've deployed it and they've seen the capabilities (INT26/TOW)

Below are quotes representing two types of innovation in resources. The first talks about *using less to do more* while the other relates to *building new capabilities*:

If you don't get the right to build, then you have to use an alternative like microwave radios. So, we do that as well where we want to deliver via microwave radios other than via fibres. So, we are going to this place, we don't have any fibre there, we put radio there; it can do the same thing that fibre can do, but not at the same speed and quality, but that's it (INT34/TOW)

They are small content providers, so that tomorrow, when they are alternatives to the telcos - because right now, we are connected to the telcos we are also connected to the banks. If tomorrow, there is internet of things or any other mode of connection or blockchain, we connect to it. So, we basically are positioning ourselves as an alternative. That's what we are trying to do. So, we cannot be profitable in the short term. We are just working against the future and saying the various people who have services should not be limited by worrying about "haha, the telcos will take 80% of my revenues" (INT37/PART)

5.3.5 Theme 4: Key Activities

The level 2 theme 'activities' generated two higher-order themes: key value activities and innovation in activities. The results indicate the following key value activities in the SSA telecom value chain: (i) products development & management, common among MNOs and Partners, (ii) Operations, predominant among TowerCos and MNOs, (iii) Service, which was mainly used as a way to ensure differentiation by MNOs and TowerCos, and (iv) Marketing & Sales.

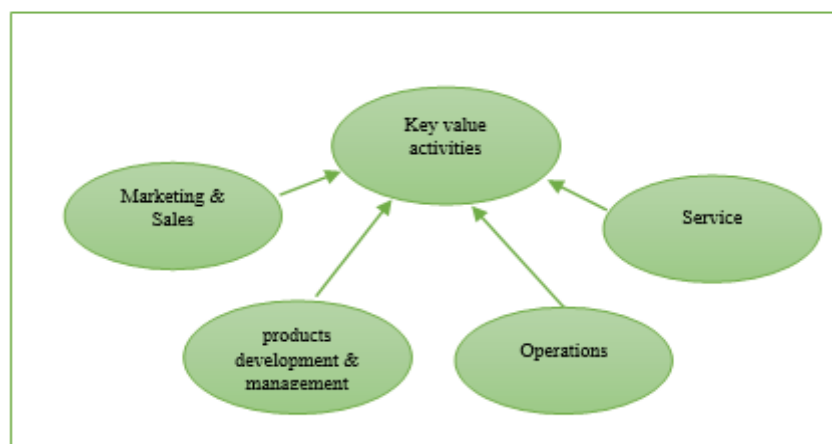


Figure 31: Key activities coding

An example of activity relating to product development is lifecycle management. Along this line, the Head of Digital Media in MNO1 stated:

“...it’s just we’re still trying; they are still work-in-progress. To have a good mix of cash cows, I need to have a massive funnel of question marks: and a lot of the effort is in integrating those question marks because I know that 7 out of 10 of those question marks will not make it out of the blocks either because of demand uncertainty or poor execution quality. So, it’s a trial. There’s no magic bullet to get it right. You know, it’s a mix of a lot of things and so I fill that funnel with a lot of question marks. It’s almost like an innovation cycle: trying and trying and so I’ll say we allow ourselves to fail fast” (INT1/MNO)

The data showed that TowerCos operated direct sales channels, MNOs had mostly direct channels (including apps and shops) but used indirect channels as well. Partners relied mostly on indirect sales channels. A communications manager in one of the Partners said:

So, the Vodafone Farmers’ Club it has a special SIM card. Vodafone’s agents are responsible for getting those SIM cards to the farmers. Once you get those SIM cards, it’s like a closed user group (INT39/PART)

In terms of service, this was a key component of the business models of MNOs and TowerCos. This was an important way to maintain customer satisfaction and provide a unique selling point to customers, as the quote below shows:

when it comes to alarm monitoring system, at the point whereby the generator goes off, we can see and tell the guy who is supposed to go and power it. Then, at the point whereby something is happening, we can monitor; when the voltage begins to drop, we are able to monitor etc. These are some of what we tell our customers that this is what we offer, this is what we’ve improved on (INT25/TOW)

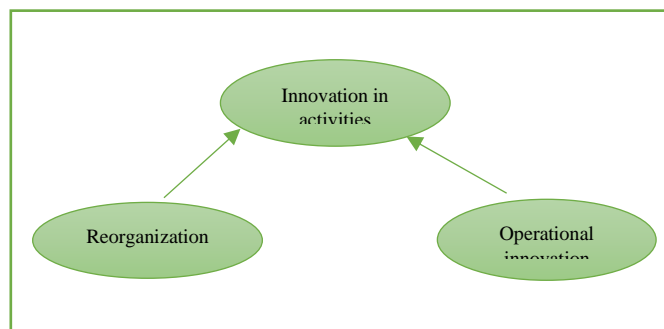


Figure 32: Innovation in activities coding

External and internal reorganization of activities or relationships were common examples of innovation among the organizations in this study. Reorganization was what the Sales Manager in a leading TowerCo was referring to when she said:

“We gave all the sites to one 3rd party to manage. Some years ago, we had about 5 contractors; we divided the country into five and we had different contractors managing the sites. That was also causing a rise in the cost of maintaining the sites. What we did was to give it to one person to manage our sites” (INT31/TOW)

The results show that operational innovation was achieved mainly through the introduction of new technologies to address challenges or improve one or more of the firm’s value activities.

For example, in the quote below, a digital specialist spoke about the introduction of a new technology to address customer complaints:

“We are having to implement a system to ensure that ... on our side, we monitor the validity of that product such that if you send a billing request before the expiration date of that service, we are able to know and deny such a request. So, even if there is an error on your system, we want to make sure that the customer is not affected. For such things, we are bringing something called SDP (Service Delivery Platform). For some of the issues I described earlier, it helps us to manage them on a single platform” (INT4/MNO)

5.3.6 Theme 5: Partnerships

The word ‘partnership’ is used broadly here to refer to inter-organizational relationships between two or more organizations or entities. The level one theme ‘partnerships’ generated two higher-order (level two) themes: types of partnerships and factors shaping partnership.

Types of Partnerships

Five types of partnerships were identified from the data. They are (i) ‘getting the job done’ relationships (ii) co-opetition, (iii) cross-sector partnerships, (iv) strategic alliances, and (v) franchises. ‘Getting the job done’ relationships include buyer-supplier relationships and 3rd-party contractual agreements and was common among tower and infrastructure firms. Co-opetition was mostly seen among Partners and MNOs who collaborate with competitors to deliver a service. For example, an Accra-based value-added service provider entered the Rwandan market by leveraging on the specialized capabilities of one of its leading competitors in Ghana. Also, the assistant head of communications in one of Nigeria’s leading MNOs said:

“We’ve partnered with a number of the OTT players, and we’ll be interested in creating value, empowering people. So long as we share similar visions, we do not see them as competition. Yes, I understand the concerns about OTT players and how they don’t invest in infrastructure and yet they are riding on yours, but you also need to appreciate that they also bring a lot of value while you too also offer value” (INT9/MNO)

Strategic alliances and franchises were predominant among MNOs and Partners. Partners established franchises mainly to aid growth and expansion into new markets while, for MNOs, franchising model was useful for selling products to existing customers through agreements with independent entities. The Head of Operations in an MNO franchise stated:

“There are certain things we cannot do because of our partnership with MTN. For instance, by partnering with MTN, I cannot work with Glo. We only partner with MTN and sell MTN-related stuffs” (INT56/PART)

Cross-sector partnership was more predominant among Partners, but also existed among MNOs and TowerCos. These types of partnership were either collaborative or non-collaborative and included donor-funder relationships and community relations.

“We have some of the research institutions as part of our operations. So, we have agricultural experts at the call centre and they are backed by some of the research organizations...they provide back-up support for our

information services; as we are putting our content together, we take you through a process where it goes through some of the research institutions to make sure that everything is in shape (INT39/PART)

Factors shaping Partnership

This higher-order theme generated four codes: partner's bargaining power, strategic/operational fit, partners' technical capacity, and trust. The factors shaping partnership

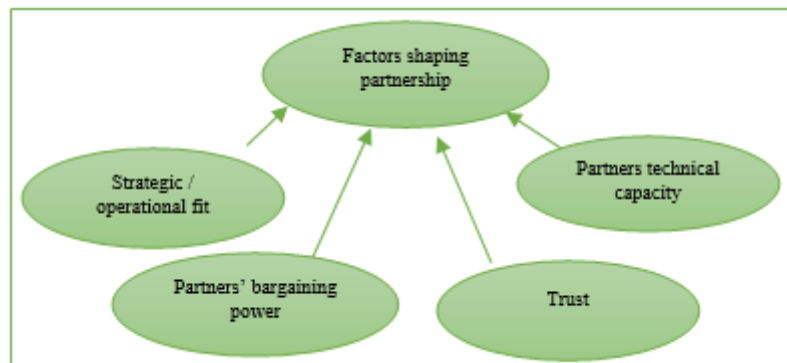


Figure 33: Factors shaping partnership coding

Partners' bargaining power was the most prominent factor, especially among MNOs and Partners. From the results, partners' bargaining power is dependent on a number of factors, including the prestige of partner's brand, degree of partner investment, and control of platforms or resources. High bargaining power can put a partner in position to be able to negotiate favourable deals or acquire new partnerships. A senior manager made the statement below regarding advantages MNOs derive from control of resources:

In some cases, the video-based content providers [complain about the revenue share] because radio-based services are expensive, so that's where we usually have the challenge but to a large extent they still come around because they see the opportunity with the MNOs. So, we cater for the billing where nobody else can...Everybody can be billed by the carrier, not everybody can be billed with alternative payment methods like card payments (INT11/MNO)

Although MNOs derive advantages from their control of resources/platforms, the results also indicate that the prestige of partner's brand or service can also influence direction of power in partnerships. In the two quotes below, the interviewees talk about how prestige of brand/service can make a difference in the relationship between MNOs and Partners.

There are certain services where it's about balance of power. If it's a service that I co-own with Google or Facebook, for instance, so Playstore there is direct card billing on the playstore, it's supported by 9Pay. Actually, Google Play brand supersedes the 9Pay brand because Google are more powerful than I am. And so, it's Google who is able to dictate revenue share. Right, but you have to be a Google or Facebook for you to call the shots. In this space they are bigger. They have 14, 17 million users vs 2million that we have (INT2/MNO)

Now, because of the nature of this service, and because government is a partner, I am able to go to MTN and say, look, for this service, our commercial revenue share of 60-40 shouldn't apply. The best I can do is 50-50% or 60-

40% in our favour. This is the kind of negotiation we can do, but if you don't have the clout, then you can't go and negotiate for preferential revenue share (INT53/PART)

5.3.7 Theme 6: Revenue Structures

This theme generated two higher-order codes or level two themes: revenue streams and revenue innovation.

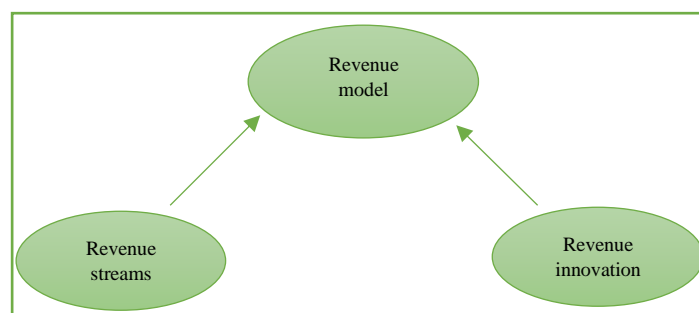


Figure 34: Revenue model coding

Revenue Streams

From the interviews, we found that revenue sharing, actual sales of products / services (transaction-based revenues), and third-parties were important revenue streams for the value chain players.

The results indicate that revenue sharing was the common means of income generation for Partners. Revenue sharing formula is influenced by factors such as the bargaining power of partners (discussed under partnerships). The quote below is excerpts from interview with the Head of mobile content at one of the Partners:

Currently, our business model with the operators is purely commercial and on a revenue share basis. So, we have a commercial VAS agreement with all the MNOs that states responsibility and how we split revenues. So, for every dollar made on MTN, for instance, the split is 60% for the operators and 40% for us...For the others, they take 70% and we retain 30% (INT53/PART)

On the other hand, transaction-based revenues were the common sources of revenues for TowerCos; these includes sales and leasing of assets. Furthermore. some niche partners, such as NGOs, relied on third-party sources of income for their business. In some cases, MNOs also benefited from third-party revenue streams for some section of their business portfolio, especially offerings targeted at underserved segments of society. According to a senior manager in one of Nigeria's mobile operators:

There are models where somebody else pays, an aid agency for example. They cover the costs upfront, usually at a discounted fee and then reverse, sometimes a reverse charge so the BoP person doesn't pay or

pays very little. So, it's very highly subsidized so that they pay for major uptake of the costs upfront (INT2/MNO).

Revenue Innovation

From the results, the value chain players innovate upon their revenue models in five ways: (i) new revenue streams, (ii) new ways to claim customer value, (iii) new ways to capture value in partnerships, (iv) new ways for customers to access products, and (v) new pricing mechanisms.

Firms mostly claimed customer value via the mobile operators' airtime paid for by the end users. However, mobile money was an innovative approach that enabled a cheaper approach for Partner firms to collect customer payments. This is summarized by the quote below:

"Telco airtime is the currency of the telco, the telco then calls the shots. But imagine if you can also get digital content without using airtime, it's like money in the bank. Because it was money in the bank that you first used to buy airtime before buying VAS. What if that money in the bank, you can directly touch it and use it to buy value added service by going to a certain digital portal? You would have removed telcos from the equation. And then that means that more of your 70%, 80% you are giving out can come to you and the people creating content (INT37/PART)

There was also a non-mobile approach to collecting customer money. For example, an organization exited the mobile value chain by opting to use a new technology to claim customer value:

We have moved away from mobile health [partnership with operators]. The policy thrust of the new person was not in that direction. He looked at VC chip; that is the one he prefers. But you see, if you look at efficiency, theoretically the mobile health is more efficient because as a customer, I can pay at my convenience; I can pay based on the amount of money I have; it is granulated but with the VC chip, I must pay my money in bulk (INT41/PART)

In terms of revenue streams, three innovative ways in which companies sourced revenues were observed. One of them is payer innovation, in which firms transitioned from one major source of income to another. The other approaches were asset leasing (common among TowerCos) and diversification into new service areas. Regarding payer innovation, a digital health expert stated:

The way around that challenge is to make sure that our product is designed or built in such a way that they can accommodate higher income end users who will be willing to pay for these services. We are looking at that, but unfortunately, again, our donors' requirements limit us from doing that on a wide scale. So, we are currently working with the government of both states to see how the government can fund part of the costs (INT40/PART)

Another innovation in revenue model relates to pricing mechanisms. Firms introduced different pricing mechanisms mainly to fit with customer needs. For example, two leading MNOs in Nigeria offered a tiered pricing model to accommodate non-affluent customers. Tariff

extension, price discrimination, negotiation, and discount pricing were some of the other pricing mechanisms introduced by firms. With regards to tariff extension, the head of marketing in an up-and-coming niche MNO stated:

Initially people were seeing our network as a network for the rich, high class, but that's not our objective really. So, what we did was we now created plans and bundles that cater for everybody. The only thing is that because we offer better value, we also had to look at some extra issues, for example, somebody saying OK buy a Toyota Corolla 2000 model for 1 million or a 2017 Toyota Camry for 1.3 million Naira, which one will you go for? I'm sure you won't say because of just 300 thousand, you will choose 2000 model over 2017 with better technology (INT8/MNO)

There were two other ways through which firms changed their revenue models. The first is introducing new ways for customers to access product. The results showed three of such innovative ways: (i) combining pay-as-you-use with subscription, (ii) offering bundled one-off sales, and (iii) *freemium to premium* model. A Business Development Manager in CONT11 explains regarding (i) above:

"We thought, rather than get customers that can buy a particular thing for so much and they will not utilize it 100%, why don't you as a company provide that thing, and you get customers to subscribe on pay-as-you-use basis. It gives us the opportunity to serve several customers using the same resources" (INT50/PART).

Another way in which firms changed their revenue models was by seeking new ways to claim value in partnership. For example, in a business relationship between three organizations (comprising of one MNO, a content Partner, and a Bank), the strategic partners successfully incorporated a shared revenue model into their shared-value relationship. According to the firm's VP, Service Delivery:

"When we started, the service was not based on revenue share. There was just a one-off payment that comes to us yearly. But we thought that assuming we are involved in revenue share and we know that the more subscribers we have on this platform the more money we get, then it will make sense to bring a lot of our creative ideas. We told them about this and the response has been positive" (INT49/PART).

As can be observed in the quote above, the decision to translate into revenue sharing model was initiated by the content partner in the relationship, who felt they would be incentivized to do more with a revenue share agreement. Although the form of partnership did not change because of this (i.e., it had always been a strategic alliance built around mutual objectives to share knowledge, resources and build a lasting framework for mutual engagement), the relationship and the value created from it will become stronger after the introduction of revenue share model.

5.3.8 Theme 7: Costs Structures

Firms in this study altered their cost structures by making changes to key resources, activities, and partnership components of their business model. The results showed that firms, particularly TowerCos and MNOs, deployed new technologies to improve their cost structures. The most common types of technologies deployed to reduce costs were billing and network technologies. For example, a Technical Manager in INF9 stated that:

Initially, when we started, there were call drops and sometimes too, it costs so much to process a call. The satellite capacity that is needed to process the call, initially was very high and we were paying a lot for it. Now, we've gotten improved systems that does not require a lot of satellite bandwidth to deliver the service (INT32/TOW)

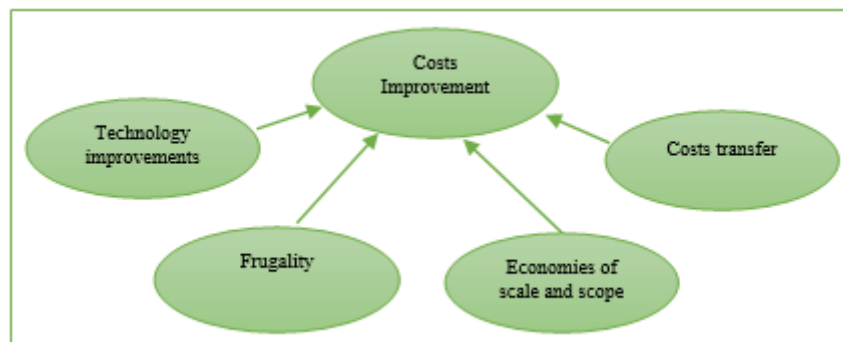


Figure 35: Approaches to improve cost structures coding

The second approach to costs reduction was transfer of costs to partners. TowerCos and MNOs especially benefitted from this approach, as MNOs could partner with content providers to deliver VAS without incurring costs, while TowerCos could shift operational costs to landowners. This was particularly an effective strategy for power generation, as stated in the quote below:

If the landlord's power is reliable, we prefer the landlord to power because from experience, we know that it is cheaper compared to the cost of diesel. Secondly, the generator works for 24-7 if we are to power, meaning for a 250-hour service model, we service every ten days. For a 500-kit, we service every 20 days. This implies more costs; meaning we have people who will come to the sites, who we give 40,000 Naira every 40 days to come and service the generator. Another angle to it is this generator works 24-7; definitely there will be repairs...the costs would now be taken care of by the landlord (INT25/TOW)

The data showed four firms in this study place emphasis on frugality i.e., being economical in the use of available resources. TowerCos and Partners fell under this category. According to the Head of Sales & Marketing in a leading TowerCo:

It will surprise you the level we look at our day-to-day costs. We ask ourselves is there a way we can save costs? Will the batteries help us use less fuel for instance? We promote paperless work as much as possible, some of the unnecessary things that people do suddenly becomes irrelevant, we use fuel efficient cars... there is a clear cost focus within the organization such that from the highest person to the entry level staff, you won't fly business class except for trips above certain distances (INT23/TOW)

Finally, economies of scale and scope contributed to cost reductions. For example, TowerCos either consolidated maintenance teams or leverage in shared activities to enhance economies of scope.

5.4 Chapter Summary

The chapter presents the results and preliminary discussion of findings from questionnaires and interviews. The questionnaire data provided relevant initial insights into the three research questions while the interviews were used to derive more in-depth insights. The interview data are presented based on a template that includes a-priori themes, including eleven top-level themes. Seven of the eleven top-level themes are presented in this chapter. The other four are discussed extensively in chapter 7 and presented in appendix. The presentation of findings in this chapter provided the background for detailed interpretation and discussion in the next chapters (i.e., chapters 6, 7, and 8).

CHAPTER SIX

DISCUSSION OF FORMS OF BUSINESS MODEL INNOVATION IN SUB-SAHARAN AFRICA

6.1 Introduction to Chapter Six

This chapter examines the research question: *What are the forms of business model innovation (BMI) among actors in the Sub-Saharan African mobile telecommunications value chain?*

The chapter progresses as follows. First, an illustration of each of the seven components of the companies' business model is presented, including the observed changes in the components of the business model. Based on this observation, the BMI forms prevalent among the firms are highlighted. Before the business model of each group is presented, it is necessary to present how each category of firms, as well as their products, are configured.

Categorization of firms and product categories: Mobile operators in this study provide a broad range of services to customers, including mobile services and fixed-line services. This study is focused on mobile services such as traditional voice and VAS services. There are two categories of Partners in this study: Content Providers and MNO retailers / distributors. The content partners are value co-creators with the mobile operators in that they provide services that are non-core to the mobile operators' business model, but which are sources of customer value and operator profitability. The MNO retailers and distributors disseminate the operators' products and services to the mass market. The third group of organizations consist of the tower companies and other related infrastructure management companies.

Table 29: Categorization of product categories

	Type of firm	Products / services category
Mobile Network Operators	Mobile operators	Mobile services via 2G, 3G, 4G (including voice, money/wallet services, core VAS services such as SMS, data, and non-core VAS such as ring back tone, advertising, and multimedia services etc)
Partners	Content Providers	Non-core VAS services via mobile (including multimedia and utility services such as insurance, health, agriculture, payment services etc.)
	MNO retailers / distributors	Sales / customer services
TowerCos	TowerCos	Tower rentals, managed services
	Infracos	Managed services

6.2 Forms of Business Model Innovation among TowerCos in SSA

6.2.1 Illustrating the Business Model of TowerCos

The first group of organizations, i.e., TowerCos, occupy a position in the upstream part of the SSA mobile telecom value chain (layer 4 in figure 36 below). The group consists of seven (7) tower companies and five (5) infrastructure management companies (infracos).

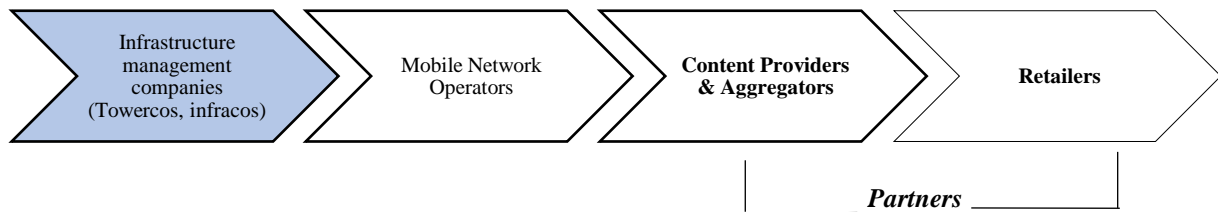


Figure 36: TowerCo position in the value chain

Component one: Value Proposition / Offerings (VP)

The major TowerCo offerings, as observed in this study, include (i) *managed services* or outsourcing, which aims to reduce MNOs' operational expenses and complexities whilst they (the MNOs) retain ownership of the towers and infrastructure. In Nigeria and Ghana, all but one of the operators have sold their towers to TowerCos. Still, the two MNOs purchased 'managed services' from tower companies. Managed services, such as those provided by infracos, also made sense for operators in the context of the shortage of skills to operate complex multi-technology networks (2G, 3G, 4G), (ii) *transmission services*, which enable mobile operators that own and manage their own networks to amplify network signal. INF11 provides such services, by picking up nearby telco signal from the telco's base station and enhancing its reach. A form of transmission service, Distributed Antenna System (DAS) was mentioned by participants in three Towercos. DAS, as the name implies, "distributes" signal received on telcos' frequencies, thereby improving connectivity for end-users. The commonest form of DAS among TowerCos is the in-Building DAS, also known as rooftops, (iii) *infrastructure sharing services*, which is the core solution provided by tower companies. Infrastructure sharing is premised on TowerCos' ownership of towers, derived via acquisition or build-to-suit, and allows telcos to co-locate on those towers.

The fourth (iv) type of TowerCo offering observed in this study is unique from the first three, in that the MNOs are not necessarily the customers. This type of offering is best described as

‘intervention projects’, where infracos are commissioned by government, corporations or regulatory agencies to provide IT projects and services such as computer centre in schools, internet access, and alternative power etc. For this type of projects, infracos do not provide services directly to mobile operators, but may partner with them [the operators] to provide the services. For example, the Nigerian telecom regulator engaged INF4 to provide IT infrastructure in an underserved part of Nigeria. INF4 then looks for the MNO with the strongest network in the area to partner with.

The basic value proposition derived from the above highlighted TowerCo offerings is their ability to reduce network maintenance costs for operators and/or enable high levels of network availability to end users. In general, TowerCos in Ghana and Nigeria deliver homogenous offerings, but the companies also emphasized what could be referred to as ‘selling points’ to enhance their offerings. These include enhanced security (INF6), strong brand (INF2, INF3), strong technical expertise (INF8, INF11), and minimal bureaucracy/accessibility (INF7). For example, the niche TowerCo INF6 that had towers in police stations, relied on their ability to ensure security at tower sites, thereby safeguarding against network and equipment vandalism. For INF7, the company aims to take advantage of its smaller size (and reduced bureaucracy) to engage effectively with customers.

In this study, changes to the value proposition/offerings by tower companies were to provide value-addition to enhance the traditional TowerCo cost-reduction proposition. To varying degrees, TowerCos in Nigeria and Ghana are evolving into full-service providers, managing, or owning other forms of infrastructure especially inbuilding solutions, offering energy services, maintaining sites, and generally diversifying into new service areas. Whereas tenants were responsible for providing energy at tower sites, a variant of the TowerCo business model has emerged in Ghana and Nigeria, in which TowerCos, in addition to selling infrastructure, provide energy-as-a-service to customers. Thus, the TowerCos own, operate, and bear all operating costs for the tower’s energy assets. In addition, tower companies, particularly the MNEs, extended their value proposition by providing network monitoring features for customers. These findings were confirmed in questionnaires, where 38% and 27% respectively selected *adding new services* and *bundling services* as ways in which TowerCos have innovated their offerings.

Component Two: Markets / Customer segments (M)

TowerCos' primary customers are the MNOs, the most influential players within the value chain. The TowerCo business model is directly tied to providing and managing the infrastructure critical to MNOs' services. Thus, the TowerCos are incentivized to seek multiple operators collocating on their sites to enhance margins. According to a Specialist in Utility Efficiency in INF2:

“We have many single tenant sites. On these sites, we hardly make money, but we still keep them. It is not the tenant's fault that he is the only tenant. So, the more tenants, the better for us” – (INT25/TOW)

An important element of the Towerco BM is the firms' customer acquisition strategies. In this study, there were four popular approaches adopted by TowerCos to acquire customers to their sites. The first is via the provision of *related services*, such as Distributed Antennae Systems (DAS) and other in-building solutions. By demonstrating competencies in related services, a TowerCo can convince an MNO of its ability to move to the provision of macro towers. This resembles a low-end, lower cost market entry strategy into a mature market (Potter, 2004). It was an effective market entry strategy for INF7 in Ghana, as the TowerCo was unable to compete with the bigger players for towers that were being monetized.

There is the *build-to-suit* model, in which TowerCos own the infrastructure and the customer for which the tower was built becomes the anchor tenant. The sites can then be leased to other TowerCos. In both Nigeria and Ghana, build-to-suit was not a preferred entry route for the TowerCos, especially the foreign MNEs. However, a pan-African Towerco based in Lagos entered the Nigerian Towerco market by adopting an aggressive build-to-suit growth plan, as most of the investible MNO towers are off the market. Following successful entry by Towercos, the build-to suit model enables them to expand their portfolio and accelerate rollout of network. A variant of the build-to-suit model is the 'push-based model'. Under this arrangement, a TowerCo conducts its own research on an operator's RF plan, builds tower in strategic locations, and then markets the site to the operator.

Tower acquisition was the most common acquisition strategy for MNE TowerCos in this study. Transactions are often completed in a buy-and-leaseback arrangement (BLB), in which the seller becomes a customer by default (i.e., anchor tenant) on the acquired towers. The TowerCos then acquire more customers by leasing space to other operators. In this study, all

MNO-owned towers have been acquired by independent TowerCos, except those owned by MNO2 and MNO6, which the telecom operators have retained in-house.

The fourth customer acquisition strategy of Towercos in this study is the *outsourcing* model. This model allows the TowerCo to provide ‘managed services’ to MNOs, whilst they (the MNOs) retain ownership of the towers. INF1’s entry into Ghana was structured based on the outsourcing model, under a Managed-with-License to Lease (MLL) agreement. In Nigeria, INF6 operates a unique MLL model that allows it to lease up a portfolio of 700 towers built by the Nigerian Government for the Police Network. Under the MLL arrangement, the police are not paying tenants; government rides on the infrastructure for free and shares profits with INF6 to recoup heavy capital investments spent to build the towers. INF6 derive profits by offering colocation and managed services to mobile operators. Although MLL agreements were mostly between TowerCos and MNOs, it can be between a TowerCo and non-MNO customer, as is the case with INF6 and police network.

The findings from fieldwork indicate that TowerCos’ made some changes to their customer components. These changes were mainly in the form of improvements to relations with existing customers as well as development of new customer acquisition strategies. In terms of customer acquisition strategies, one of the firms, INF9, departs from the traditional B2B model by providing connectivity to rural customers and communities through the mobile operators’ network. In other words, as the Technical Manager in INF9 explains:

“The MNOs don’t need to co-locate. They don’t even have to come to the rural sites. You see, we go to the rural sites, we build the infrastructure, we own everything there, but we take the customer traffic and send to the operators; they just sit there, and we bring business to them so that they can process” (INT32/TOW)

There were other examples of customer segment diversification observed among the TowerCos in this study. INF1, INF2, INF3, and INF11 were examples of firms that added non-MNO customers such as Internet Service Providers (ISPs) to drive profitability and growth (further discussion about innovation are discussed under BMI Forms).

Component Three: Resources & Competencies (RC)

Resources relevant to TowerCos in Ghana and Nigeria include licenses, physical assets (and towers), financial resources, institutional capital, social capital, energy resources, and international networks. Table 29 shows data about the firms' presence across SSA, number of employees, firm ownerships, and tower count.

Table 30: Resource profile of selected TowerCos in Ghana and Nigeria

Company	Study context	Org type (ownership in study context)	Employees in study context	Tenancy ratio in study context	Towers in SSA	Towers in study context
INF1*	Ghana	MNE subsidiary	51-100	1.5x	5000+	1283+
INF2*	Ghana	MNE subsidiary (JV)	5-200	1.99x	10300+	2390+
INF3	Nigeria	MNE subsidiary	201-500	2.3x	10300+	4700+
INF6	Nigeria	Privately-owned	50+	1.8x	900	900
INF7	Ghana	Privately-owned	11-20	1.75x	150	150
INF8	Ghana	MNE subsidiary	51 - 200	1.99x	6745	933
INF11	Nigeria	MNE subsidiary	201 - 500	2.1x	23134	16466

Source: Authors' compilation from various sources (field research, TowerCo websites, annual reports, industry reports - Dec 2019)

*INF1's 1283 tower portfolio are now owned by INF2, following completion of an acquisition deal post-fieldwork

Financial resources: As shown in table 29, five of the TowerCos are publicly listed multinational enterprises with parent organizations in the United States and United Kingdom. In terms of finance, these multinational and publicly listed companies have well developed abilities to raise funds within international markets. INF2 was formed from a joint venture between INF2's parent company and one of Africa's largest mobile telecommunications companies, with both companies owning 51% and 49% controlling interest in INF2.

Within the last five years, multinational towercos in Nigeria and Ghana have successfully raised funds from international capital markets, development finance institutions (DFIs), and other investors. For example, INF11 and INF8 both raised \$1.3 billion and \$364 million respectively to fund expansion of 4G mobile services in 2019. Moreover, INF11 got an investment of \$800 million from the Emerging Africa Infrastructure Fund (EAIF), to expand its telecom towers business in Nigeria. This fund was used mainly for acquisition of new tower sites and construction of additional Build-to-Suit towers.

On the other hand, home-grown Towercos in this study (INF6, INF7, INF9) did not have easy access to cheap finance. The Executive Director of Accra-based TowerCo, INF7, explains:

“I mentioned earlier we are accessible. But, also, we are smaller, funding is not as cheap or easily obtained as the bigger players...when we started, we tried to buy some towers, we weren't lucky enough to compete with the bigger players for the towers that were being sold” (INT29/TOW)

The high capital costs required for site building and equipment purchases represented constraints to expansion for smaller Towercos that had lesser access to finance. This limits potential for growth for the firms, who must rely on internally generated resources.

Physical assets and towers: the last column show INF11 with more than 16400 towers, which represents approximately 69% of TowerCo-owned towers in Nigeria. In Ghana, INF2 has the largest number of towers with 2390; this number has grown following closure of INF2's deal to acquire rival INF1. The tower portfolios increase in value with number of customers i.e., tenants on a given site. Firms with the highest tenancy ratios were INF3, INF11, INF8 and INF2, with average tenancies near or more than 2.0x operators per site. INF1 did not report its tenancy ratio nor was it publicly available; however, TowerXchange gives the average tenancy across INF1's operations in five SSA countries as 1.5x.

Energy resources: TowerCos in Ghana and Nigeria rely on off-grid electricity across many sites to maintain high network uptime. The most common Towerco resource for powering sites in both countries is the generator. Another important energy resource for towercos in this study is batteries, which help to enhance power redundancy and savings on fuel costs. Interviewees from five of the companies (INF1, INF2, INF3, INF8, INF11) mentioned their companies' use of renewable energy sources, especially Solar, which reduces towercos' dependence on generator and diesel resources. However, adoption of green technologies by the companies is not yet at scale. The smallest TowerCo in this study, INF7, did not deploy batteries or solar, as most of the company's towers are in urban areas with reasonable accessibility to grid electricity.

International networks and human capital: having a well-established international network was observed to be an important resource among towercos in this study. INF2 and INF3 have presence across 5 continents and 20 countries, including 5 in Africa. Similarly, INF11 is the largest independent towerco in Africa and one of the largest in the world by tower count. These

companies, all multinationals, had advantages in terms of access to intangible resources such as links to international innovation networks, industry experience, and partnerships necessary for developing new technologies and services. According to a participant from INF11:

“For us, it’s always helpful to be able to learn from different cultures where we operate, or from where we have extremely strong diversity in terms of employee base. It helps in coming up with new innovative ideas” – (INT35/TOW).

As the quote suggests, having a strong institutional network contributes to organizational learning and development of innovative ideas. Infracos also benefit from having better access to specialist knowledge and human capital, for example, to cater for the shortage of skills to operate complex multi-technology networks (2G, 3G, 4G).

Trust and relationship capital: building a culture of trust with MNOs is an important TowerCo intangible asset. In this study, trust is driven by factors such as TowerCos’ reputation in other markets and their long-existing relationship with customers, including in international markets. In this view, commercial relationships emphasize specific benefits that flow from the trust. One of the benefits relates to the trust the mobile operators have to agree to a clause of first refusal in contracts with towercos.

In the previous section, managing community relations was identified as an important TowerCo activity in SSA. Thus, TowerCos obtained competitive advantages through the effective management of institutional environment. In this current study, local TowerCos had higher adaptation than their foreign competitors, whose operations were hampered in several ways by international codes of practice. Thus, local towercos had relatively better familiarity with the ways to navigate institutional challenges and negative social norms.

Licences: having a co-location license is not only a requirement to operate in Ghana and Nigeria, but it also represents one of the TowerCo’s strategic resources, helping them to provide a value proposition that is unique. Co-location license enabled a few TowerCos in this study to diversify their business models by altering their resource bases and developing capabilities that enhance value across multiple activities. For example, INF4, which had just received a co-location license, was developing new capabilities for low-cost infrastructure build that will enable it to bridge the infrastructure gap in areas that are considered non-lucrative for the network operators. By so doing, the firm maximizes the use of its current resources [license] while meeting an important market need (Aversa et al., 2017). Moreover,

the changes embarked upon by the firm entailed the development of new value creation opportunities using offerings that are unfamiliar to customers and new configurations of activities and resources.

Component Four: Key Activities (A)

As observed from the fieldwork, the key activities of TowerCos in Ghana and Nigeria can be categorized into six activities, shown below:

Construction and maintenance: The respondents described the TowerCos' construction process as involving three key activities: (i) analysis of MNO radio frequency (RF) plans, to identify viable construction areas, (ii) collection of permits, often from multiple agencies, including environmental and health agencies, and (iii) construction of towers in strategic locations or pre-selected MNO locations. Constructing towers in strategic locations implies building towers where the demand is high i.e., areas where MNOs have little presence and where construction of new towers will not only be commercially attractive to the MNOs but can avoid duplication. The Regional Operations Manager in INF3 explains the importance of strategic location:

“We have an overview of all the towers in the country. Looking at the map, we can see where people have coverage, and we have our people doing RF planning in-house who can map the location. We go to the customers and tell them we've seen a good location for you. If they buy-in, they come on board and we build there” (INT24/TOW)

Maintenance of current assets and replacement of old assets are another set of activities highlighted by participants. Maintenance and continuous monitoring are undertaken to ensure uptime and lengthen the usability of facilities. A major component of maintenance is ensuring security of assets to protect against vandalism and theft, as occurrence of vandalism brings about service disruptions and increases maintenance costs for the TowerCos.

The growing trend of tower construction is one of the changes made by TowerCos in Ghana and Nigeria. The early entrants in both markets started by acquiring towers from mobile operators. However, as most of the investible MNO towers have already been sold, the tower companies, (particularly, INF1, INF6, INF7, INF8) are increasingly building new towers in new locations. Additionally, TowerCos traditionally relied on third-party contractors only for their construction activities; however, it was observed in this study that four TowerCos (INF2,

INF3, INF8, INF11) were moving parts of their maintenance (e.g., routine inspection) to third-party companies. This brings to the fore the importance of another TowerCo activity, managing partners.

Managing partners: The findings indicate that TowerCos rely on contractors to build and manage sites. This raises challenges and risks to the TowerCos, as it impacts on time-to-market for new sites as well as the mean time to restore sites (MTTR). This in turn creates the need for TowerCos to manage partners to manage risks. One of the interviewees explained: “*most of our challenges are with our contractors. We have 3rd parties that we give the contract to for them to go and build the sites. So, our challenge is managing these people. If the contractors haven't finished with the sites, what can we do?*” (INT31/TOW). The questionnaire findings confirm ‘managing partners’ as TowerCos’ second most important activity, with a 2.96/8 mean rating.

As observed from the interviews, specific measures adopted by TowerCos to manage potential risks include emphasis on close relationships with third-party contractors with the aim of bringing them on board to the TowerCos’ vision. Moreover, the tower companies seek to create effective control mechanisms with the contractors to deliver higher uptime for the customer. Towercos in this study also had other external relationships e.g., energy suppliers and equipment vendors; however, these relationships usually do not require close interactions.

Energy provision: energy provision is considered a separate Towerco activity because of its importance in the context of Ghana and Nigeria, where regular power outages affect network availability, and ultimately the services available to end-users. The importance of energy availability was mentioned by all participants in this study. The most common approach to the power challenge in Nigeria and Ghana is the use of generators - a major driver of OPEX, as it requires regular consumption of thousands of litres of diesel a month. The Head of Operations in INF1 explains:

“The biggest cost is power, coming from diesel. Our income is fixed, so once you are able to bring down OPEX, you can improve profitability” (INT20/TOW).

A second approach is the use of solar technologies and batteries to complement generators especially in rural areas without reliable grid electricity. Another participant explains:

“About 50% of our towers are in rural areas. There are sites we don’t have grid; we run 24-7 generator, but to save on fuel we use batteries at times. So, this is what is called a hybrid system (generator, batteries). There are some sites we have solar. So, we try to balance generator, solar, batteries to reduce OPEX” (INT22/TOW)

A third, but less popular approach, relates to partnering with energy service companies (ESCOs) to take care of energy issues. This was mentioned only by two interviewees.

Sales / Marketing: sales and marketing among TowerCos include activities to advertise services and recruit customers to new sites. As observed in this study, there are specific sales activities for the ‘market-push’, build-to-suit offerings: the RF planning unit of tower companies goes to the customers, advertises a location, and seeks the customer’s buy-in. There are also ‘market pull’ situations where the MNOs approach the TowerCos and, in the words of a Regional Manager in INF1, says that *“I have seen one of your sites and will like to come on board”*. If a deal is successful, the sales teams perform activities such as initiation of service level agreements (SLAs) and collection of payments, including rental fees.

Managing customers: Questionnaire respondents considered this activity as the TowerCos’ most important, with a mean rating of 2.54/8. Interviews showed that all TowerCos in this study kept a dedicated team of account managers that manage complaints and build customer relationship. The account managers are responsible for customer responsiveness, a key requirement of the TowerCo business, as mobile operators typically have rigid SLAs in a bid to ensure near 100% uptime. In this study, customer responsiveness was driven by effective communication and immediate follow-up on customer issues. This ensures trust and elevates the customer relationships to a sort of partnership.

Managing community relationships: Findings indicate that all the TowerCos establish departments to cater to issues and disputes that arise from the towercos’ construction and/or maintenance activities in local communities. Community relationships also include the active follow-up on environmental protection agencies and metropolitan assemblies. TowerCos’ that have well developed community engagement strategies enjoyed better relationships and stronger ability to get prompt permissions to build sites and perform maintenance activities. Several firms in this study, especially multinationals, make conscious efforts at localization in order to enhance legitimacy. It is also a way to ensure security of assets in rural locations, as network vandalization significantly affects TowerCo value creation.

Component Five: Partnerships (P)

Partnership is an important component of the Towerco business model. As stated under activities, successful value creation by the TowerCos requires effective management of a contractors who perform activities such as power management, construction, and maintenance, including security of sites.

These partnerships consist of two types: (i) business partnerships to enhance the firm's core value proposition, and (ii) collaboration with other ecosystem players to fill connectivity gaps faster. An example of the latter is the Ghana Investment Fund for Electronic Communications (GIFEC) initiative, where the Ghanaian Ministry of Communications in Ghana partner with Towercos and mobile operators to provide tower infrastructure in areas considered non-lucrative by the MNOs. The MNOs then co-locate on the infrastructure provided by GIFEC, thereby extending service provision to underserved segments. A Director of Policy in the Ghanaian Ministry of Communications sheds further light on the partnership:

“For the telcos, it is not everywhere that they can build, and so we have what we call GIFEC where the telcos contribute 1% of their revenues and is used to provide infrastructure. For example, where they cannot provide coverage per their license, they will not even go because it is not lucrative, then GIFEC goes there, gets a tower company to build, and then you go and co-locate” – (INT58/REG)

The most important reason for Towerco partnerships is to reduce operational risks and uncertainties. The tower companies occupy a high-pressure position in the value chain because of the nature of their services, which are essential not only to their customers – the MNOs, but also to the end-users, regulator, and government. As a manager in INF1 stated, “we are more exposed because they [i.e., the MNOs] are more of a demand organization”. To reduce risks, towercos in this study enter partnership with companies that take over facilities management and guarantee supply of diesel.

The energy service company (ESCO) model is very popular in more developed countries, especially in Europe and the United States. This model is yet to fully take-off in Ghana and Nigeria, as towercos in this study rather prefer the managed service contracts or act to provide their own power. As at the time of this study, INF2 and INF6 were examining the ESCO model for their operations, but the economics on offer have not been favourable. However, INF11

previously partnered with an ESCO on an initiative created to replace power generation systems with more efficient solutions.

Component Six: Revenue model (R)

Three types of revenue models were observed between Towercos/infracos and mobile operators. (i) TowerCos sold or rented their offerings (e.g., tower share, managed services) to the mobile operators using the subscription revenue model. 80.8% of TowerCo questionnaire respondents selected direct sales as TowerCos' main revenue source. The Towercos implement the subscription model by billing the telcos on a regular basis, usually quarterly, (ii) revenue sharing model, typically implemented by infracos for management of infrastructure for delivering value-added services on the telco's platform. (iii) direct payments, especially for customer support and managed services, where the telcos pay a maintenance cost for such services. INF5 is an example of a firm that operated the latter two models.

Towercos introduced several new offerings to customers to boost revenues and market share. These include the shift into services, i.e., power-as-a-service in INF2 and INF3. In addition, many Towercos in this study offered flexible pricing strategies in a bid to maintain customer satisfaction, increase tenancy ratios, and wade off competition. This was commonly achieved through strategies such as offering discounts, trading price cuts for more volume, and bundling multiple services to charge less than the sum of those services.

Component Seven: Costs' structure (C)

Towerco activities generate not just construction costs (CAPEX) but also significant operational costs (OPEX), especially for energy and maintenance of assets. Therefore, achieving operational efficiency was an important theme among Towercos in this study. All the towercos in this study emphasized the critical impact that energy efficiency has on customer satisfaction, uptake and towerco profitability. Towercos in Ghana and Nigeria depend heavily on generators, implying high costs for diesel and regular maintenance. Depending on the service model of the generator, towercos service 500-hour service model every 20 days and 250-hour kit every 10 days. Thus, the Towercos in this study adopt several approaches to manage costs across several dimensions: power and fuel, estate management, and operations and maintenance, including rationalization of overlapping towers in urban areas to improve cost structures, and pushing costs of power supply to the landlord, where possible. A Senior Manager in INF2 explains:

“The landlord might be one wealthy guy or agency that has 24-hour power supply that never blinks. We have two sites in TBS, (a federal parastatal), where there is almost 24-hour power supply. So, if the landlord is also using generator, he also powers us with his generator” (INT25/TOW).

Nevertheless, the towerco business model is undergoing a fundamental transformation. Traditionally, one dimension—tenancy ratio—had generally governed tower businesses (TowerXchange, 2018). However, TowerCos in this study demonstrate that the value of the TowerCo business model is not just in sharing costs but in ability to manage costs effectively. They manage costs through retrofitting of infrastructure for more efficient usage of energy and a focus on execution quality rather than only technological solutions - including controlling vendor costs and properly maintaining equipment. INF6 has opted for a metering system with ESCO partners, while INF3 is emphasizing strategic clustering of owned sites, which provides relatively better way of managing maintenance costs. Furthermore, leading towercos such as INF1, INF2, INF3, and INF11 all focus on improving their ability to track site-level performance with network operating centres (NOC).

6.2.2 Analyzing Forms of Business Model Innovation among TowerCos

Having established that only fundamental changes that affect the core repeated processes of a BM constitute a change in the business model (Cavalcante et al., 2011), the next issue relates to the scope and complexity of business model changes. Following a number of business model scholars (e.g., Taran et al., 2015; Foss & Saebi, 2017) that have examined BMI in terms of architectural innovation framework, this study classifies the changes to the components in terms of radicality and complexity. The conceptualization of the various constructs is based on Taran et al (2015). Thus, complexity ranges from low (any change in 1–4 components) to high (any change in 5–7 components), radicality ranges from low (i.e., incrementally new) to high (i.e., radically new).

A radical innovation breaks with what existed previously (Souto, 2015). Lettl et al’s (2004) definition of radical innovation as involving creation of new markets or changes in existing market structures, provision of a new and/or higher customer benefit, incorporation of new and complex technologies, as well as introduction of organizational changes and infrastructures on side of the firm, guides the conceptualization of radicality in this study. Thus, while a firm might make radical changes to individual components of the business model, a case is classified as example of radical business model innovation if it encompasses radical changes in three

dimensions: market, value proposition, and the organizational dimension, particularly the firms' resources and competencies.

The analysis presented in this section is on twelve (12) cases, representing seven (7) TowerCos and five (5) InfraCos. As shown in table 30, the commonest form of business model innovation observed among TowerCos is "BM Adoption", with seven firms falling under this category. "BM Redesign" and "BM Adjustment" had two firms while one firm was in the category "BM Discovery". However, there exists commonalities across each category. Pure-play TowerCos tended to innovate along the lines of "BM Adoption" while InfraCo-cum-TowerCos were in the category of the much more radical "BM Redesign". On the other hand, pure-play InfraCos were in the least radical category "BM Adjustment". The typology for the forms of business models, as well as the rationale for arriving at these specific forms, are discussed in this section.

Table 31: Analysis of BMI among TowerCos in SSA

Cases	Content	Radicality	Complexity	Components							BMI Form	
				VP	M	RC	A	P	R	C		
INF1	Acquired new resources and proactively undertook new activities to increase efficiency. Added non-MNO customers to diversify revenue sources.	Low (I)	High		√	√	√√			√√	√√	BM Adoption
INF2	Incremental innovations to improve products. Added new value-added services largely based on partly existing competencies. Acquired new resources and proactively engaged in activities to increase efficiency. Added non-MNO customers to diversify revenue sources.	Low (I)	High	√	√	√	√√			√√	√√	BM Adoption
INF3	Incremental innovations to improve products and serve existing markets. Acquired new resources and proactively engaged in activities to increase efficiency	Low (I)	High	√	√	√	√√			√√	√√	BM Adoption
INF4	Operate a dual BM to provide internet services to enterprises, and network connectivity services to individual and enterprise customers. BM changes involve identification of new markets and acquisition of resources through partnerships.	High (R)	High	√√	√√	√√		√	√√	√√		BM Redesign
INF5	Incremental innovations across a small number of components, based largely on existing competencies.	Low (I)	Low	√	√		√					BM Adjustment
INF6	Achieved foothold in the market by renting out managed assets to MNO customers. Partnered with government.	Low (I)	High		√	√			√√	√	√	BM Adoption
INF7	Gained a foothold in the market by adding MNO customers and radical new-to-the company product innovations.	High (R)	Low	√√	√√	√√				√√		BM Discovery
INF8	Continuously redefine value proposition through incremental product innovations, improvement of market relations, and reorganization of partnerships.	Low (I)	High	√	√	√			√√		√	BM Adoption
INF9	Provide connectivity services to a niche market through non-conventional tower solutions, without cannibalizing existing business model. BM changes involve acquisition of resources through partnerships.	High (R)	High	√√	√√	√√	√	√√	√	√	√	BM Redesign
INF10	Continuously redefine value propositions through new products and incremental BM improvements	Low (I)	High	√		√	√√			√	√	BM Adoption
INF11	Continuously redefine business model through improvement of market relations, and new activities aimed at enhancing efficiency.	Low (I)	High		√	√	√√			√	√√	BM Adoption
INF12	Continuously redefine business model through product innovations and improvement in market relations, based largely on existing competencies	Low (I)	Low	√	√√	√				√		BM Adjustment
<p style="text-align: center;"><u>Complexity:</u> “High complexity” = 5-7 components, “Low complexity” = 1-4 components</p> <p style="text-align: center;"><u>Radicality:</u> “√” = incremental changes, “√√” = radical changes, as characterized by high degree of novelty “High radicality” = Includes radical changes in VP, M; more radical if it includes RC “Low radicality” = Excludes radical changes in VP, M & RC.</p>												

6.2.1.1 Complexity of innovation (Scope)

Table 30 shows that the most complex examples of business model innovation were INF9 (seven components), INF2, INF3, and INF4 (six components). Five cases (INF1, INF6, INF8, INF10, INF11) made changes across five components. On the other hand, INF7 and INF12 (four components) and INF5 (three components) were the simplest examples of business model innovation among TowerCos.

Business model changes by TowerCos occurred mostly along the resources & competencies, value proposition, market segments, cost structures, and activities. Partnership was the least affected business model component. In terms of value proposition, TowerCos mostly (i) offered new services as value-added offerings outside of their core tower infrastructure portfolio, including energy services on existing tower portfolios (INF2, INF3, INF11), carrier-neutral DAS services (INF2, INF3, INF7), and customer access to telemetrics (INF3), (ii) offered flexible deals and discounts. In terms of markets, most of the changes were about identifying new market segments (e.g., INF7, INF9, INF12) and enhancing customer relations. Innovations in resources and activities component had a direct impact on value proposition and costs structure in most cases, as the TowerCos' introduction of technologies such as batteries and solar (INF1, INF2, INF3, INF8, INF11), metering systems (INF6), network operating centres, and telemetric systems, enhanced customer value proposition and operational efficiency.

Changes in the partnership component was observed only among four TowerCos. INF8, which previously had five contractors managing sites across five regions, shifted maintenance of all sites to one 3rd party company to cut costs. There were other more specific examples of innovations undertaken by the TowerCos. For example, INF11 undertook several acquisitions, which automatically brought in new customers (market), enable the company to radically exploit industry-specific economies of scale, reduce costs, and improve margins (costs structure) while accelerating revenue growth. A broadband connectivity provider, INF10's changes occurred mostly in its activities and value proposition; for example, the company moved into the provision of outcome-based services or solutions to customers.

The simpler business model innovations involved three firms (INF5, INF7, INF12) that made changes in the value proposition, markets segment, resources & competencies, revenue streams, and activities. One of the changes made by INF12, a managed services provider,

involved the creation of a new offshore market and revenue stream. According to a Senior Manager in INF12, “*we made a change from managing only local MNOs to extending back-office support services to offshore markets. This gave us an opportunity to increase revenue while using the same staff for all purpose*” (INT36/TOW). Also, INF7 expanded its offerings by moving from in-building solutions to full macro tower services.

6.2.1.2 Radicality of innovation (Novelty)

Three cases (INF4, INF7, INF9) were rated as radical innovation. These firms made radical changes to their value proposition and markets & customer relations. Two of these firms, INF4 and INF9, have several common characteristics, mainly that they expanded their services to include connectivity services to a niche market, without cannibalizing their existing business model. The companies extended by deploying radical new-to-the-market non-conventional towers and backhaul solutions that are inexpensive. For example, INF9’s VSAT-based solution makes use of a mini-Mobile Switching Centre (MSC) in rural communities and performs basically the same functions as an MNO switch. On the other hand, INF7 is a pure-play TowerCo that started operations with in-building operations to gain a foothold into the TowerCo market in Ghana. The innovation by the firm was not new-to-the-industry; however, it allowed the company to enter a new market, as the TowerCo was unable to compete with the bigger players for towers that were being monetized.

Majority of the firms, however, were incremental business model innovations. Consider the TowerCo’s business, which offers primarily a cost-cutting proposition to customers. It was observed that the TowerCos bundled ‘*value-added*’ services to enhance customer satisfaction for their existing customers and drive profitability. Thus, innovations mainly involved incremental changes to the core value proposition, market segment, and resources & competencies’ components. Market innovation involved mainly restructuring of relationships with existing customers, for example, INF2 appointed local managers in charge of innovation, which ensures every area can innovate and resolve issues quickly. Although several the TowerCos added non-MNO customers, this was based largely on existing set of activities and competencies as the same set of in-building services are provided for ISPs and mobile operators. This is further exemplified by the fact that INF2 and INF11 deployed indoor distributed antennae systems (DAS) technology to ensure coverage for mobile operators in areas where it was difficult to provide macro-tower services.

There were also largely incremental changes along the TowerCos' core resources and value creation activities. For example, they consistently upgraded their resources (e.g., INF3 upgraded its lithium-ion batteries to one with a lifetime of 10 years compared to 2 years for the conventional batteries). This was necessary to overcome the challenge of poor grid availability. According to a Manager in INF11:

“One of the tricky things about operating in Africa is that we have to create our own power. We’ve designed hybrid power systems that include generators, batteries, solar etc. That is very different from operating in say, the middle east or the USA where the national grid is strong enough to power these towers so that the tower companies do not need to power their own towers” – (INT35/TOW).

The companies also made incremental changes to their activities to improve their operational processes for efficiency. For example, INF8, which previously had five contractors managing sites across five regions, shifted maintenance of all sites to one 3rd party company, INF2 and INF3, both subsidiaries of a global TowerCo with operations in five African countries, are leveraging scale economies to procure things in bulk using a centralized procurement facility.

6.2.3 Section Summary: TowerCo BM components and forms of BMI

This section presents findings about the business model of 12 telecom infrastructure companies called ‘TowerCos’, comprising of 7 pure-play TowerCos, i.e., firms that offer telecom tower and associated services, and 5 Infracos, including those offering ‘managed network services’ (pure-play Infracos) as well as those combining ‘managed network services’ with tower services (multi-divisional TowerCos). The section described the TowerCo BM components and identified the forms of changes in these components.

Building on the description of TowerCo BM components, the analysis in the latter part of this section shows that TowerCos’ innovated their business models mainly along four components: markets, resources & competencies, value proposition, and cost structure. On the other hand, the least changes occurred in the partnership component. The combination of complexity and radicality of the innovations were used to determine the BMI forms. As shown in table 31, changes observed among the TowerCos were more incremental but spread out across most components (architectural).

Table 32: Typology of BMI forms among TowerCos in SSA

Degree of Novelty (Radicality)	Scope (Complexity)		
		<i>Modular BMI</i>	<i>Architectural BMI</i>
	<i>Incremental BMI</i>	BM Adjustment Cases 5, 12	BM Adoption Cases 1,2,3,6,8,10,11
<i>Radical BMI</i>	BM Discovery Case 7	BM Redesign Cases 4, 9	

Based on the dimensions of scope and novelty, the commonest form of business model innovation observed among TowerCos is “BM Adoption”, with seven firms falling under this category. “BM Redesign” had two firms while two firms were in the category “BM Adjustment”. However, there exists commonalities across each category. Pure-play TowerCos tended to innovate along the lines of “BM Adoption” while InfraCo-cum-TowerCos were in the category of the much more radical “BM Redesign”. On the other hand, pure-play InfraCos were in the least radical category “BM Adjustment”.

6.3 Forms of Business Model Innovation among MNOs in SSA

6.3.1 Illustrating the Business Model of Mobile Operators

In this section, the business model of the mobile operators in this study are discussed. The analysis consists of the seven (7) mobile operators that participated in this study. The mobile operators occupy a central position in the SSA mobile telecom value chain (layer 3 in figure 37).

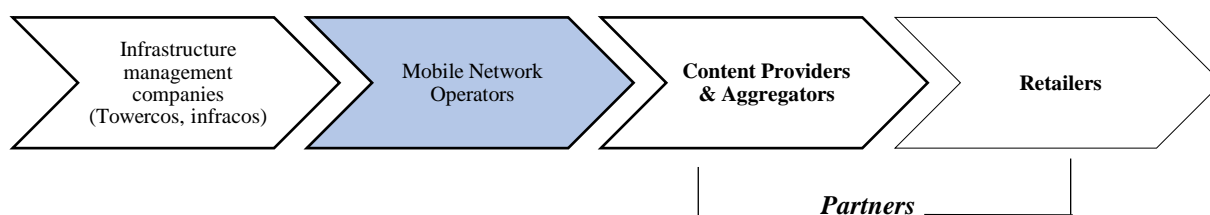


Figure 37: MNO position in the value chain

Component One: Value Proposition / Offerings (VP)

In this study, the MNOs’ major offerings include mobile services such as voice, standard SMS and wallet services, and value-added services like multimedia services and utility mobile contents. Osterwalder & Pigneur (2010) suggests that the value proposition is the reason why

customers turn to one company over another. It was observed that the MNOs did not derive differentiation from their offerings per se, i.e., they generally have similar offerings; hence, points of differentiation came from how these offerings are positioned around the customers. Affordability was the major emphasis for some of the MNOs, especially MNO6 and MNO7, while for MNO1 and MNO2, focus was on creating value through reliability of data offerings. Mobile operators also sought to link each one of their value propositions to a service or product delivery system to determine how to remain valuable to customers. Thus, the telco's core value propositions are the features or services intended to make the MNO offerings attractive to customers. A senior manager, media and entertainment at MNO5 stated:

“Yea, I mean every operator is doing voice and data, it's just how well you do it that matters. Basically, it's the experience, that's the new currency. If you get the customer experience right, and experience is something that is a long journey; you just have to start walking in that path to ensure that you keep bringing the best experience you can give and this is what we are saying “ok, when we bring a platform, we are bringing it in because of experience” (INT11/MNO)

Therefore, making changes to the value proposition is about positioning an innovative product or service around the customer. It also involves a comprehensive rethinking of the value proposition along the dimensions of new or upgraded product features (Achtenhagen et al., 2013). There were few examples of product innovation at the voice and SMS levels. An example of innovation relates to the airtime (which is also a telco resource). Traditionally, mobile operators in Ghana and Nigeria relied on conventional scratch card system, which has a prolonged time to market. In this study, telcos introduced electronic recharge via digital platforms, which enhances the customer experience through well-integrated solutions to access multiple channels - SMS, USSD, or app) to buy airtime in real-time, and provides more opportunities to offer value-added services. In addition, MNOs introduced a service that allows customers to share airtime with friends and family by dialling a simple USSD code.

Bundling was a common strategy for creating a more complete solution (redesigning of offerings). Bundling of SMS, data, and voice was less common than in advanced economies in Europe and America; however, one of the firms, a pure-play operator specializing in broadband services, introduced bundled services to target a range of customers. In general, bundling of multiple products was a strategy to enhance two core types of value proposition i.e., affordability and customer cost reduction.

There was, however, a lot of innovation for data-based multimedia services. Traditional value-added services like SMS, USSD and IVR are dying off while voice usage have declined. A digital financial services specialist in MNO1 observed:

“The reason SMS, IVR, and USSD based services grew is because of the absence of 3G. So, for example, in the 2G era when people were using feature phones and there was limited access to information on mobile, e.g., you couldn’t go to Google and check the scores of Man Utd, Chelsea etc. Then, there were services that push that information to you on weekly basis, such as football news, line-ups etc which were pushed to you via SMS and then you pay on daily or weekly basis. Today, I don’t have to pay for that information because I can easily search on my smartphone” (INT6/MNO).

As the quote above suggests, with the advent of smartphone, data-based services and rich media, grew increasingly popular among mobile operators in Ghana and Nigeria. In addition, a good number of mobile operators introduced new mobile money and smart mobile wallet services which makes paying for apps and digital services easier and reduces reliance on debit cards for purchasing goods. We also saw examples of product innovation that enable firms deliver strong value propositions to low-income customers, for example, one of the mobile operators introduced a new product called Facebook Flex that allows the consumers get on the internet to access limited services on Facebook, without using data. While traditional value-added services are gradually dying off, another operator partnered with a content provider to provide map services that can work on feature phones. The content partners built an app (of a type similar to Google Maps), which can be accessed on USSD. This ensures that people who do not have data can access the service and implies that USSD may be an underrated solution to the deployment of services in SSA.

Component Two: Markets / Customer segments (M)

In this study, mobile operators sold their products and services to individuals and entities in the firm’s value chain that can be categorized into three: (i) consumer markets, (ii) business markets, and (iii) reseller markets. Among these three groups, the consumer market is the mobile operators’ primary customer.

The *consumer market* consists of individuals that buy MNO products and services - such as voice, data, SMS, and VAS, for personal consumption. Depending on their business and marketing strategies, mobile operators had at least three consumer market categorizations, namely: mass-

market, niche market, and segmented market. The business market consists mainly organizations such as MVNOS, enterprises and infrastructure companies that buy services for use in their services delivery process. In Ghana, for example, one of the MNOs previously hosted an MVNO called Alltel, which bought capacity at wholesale prices from the MNO [Tigo] and provided direct services to customers. The reseller markets buy products and services from the mobile operators to sell at a profit. Examples of resellers include SIM and recharge card shops, sellers of prepaid phone deals etc (Ghana only). Mobile phone deals by resellers were more common in Ghana than Nigeria, where operators do not have prepaid mobile service bundles - a norm in more advanced countries e.g., Carphone Warehouse in the UK and Apple Inc. in America. Resellers are similar to retail partners, but they are different, in that resellers simply sell MNO products to obtain profit, while partners engage in a form of revenue sharing or commission sales.

In terms of innovation in customer segments, the mobile operators did not add new customers. However, all the MNOs continuously made changes to improve customer relationships. They emphasized customer satisfaction and experience, for example, by bringing in platforms that make the consumption of digital services more convenient. A number of mobile operators also introduced online self-care, web mobile app i.e., they served as new channels for enhancing functionality and the customer experience.

Mobile operators also adopted segmentation as a strategy to stay competitive. Thus, operators sub-divided their multimedia offerings into multiple branded products by targeted segment. This meant that each customer segment not only had their own segmented service, but also unique pricing plans and promotions. In contrast to the over-the-top (OTT) actors that targeted multimedia towards the high-end user, most operators wanted to create a product that would attract the average consumer by designing an easy-to-use and affordable product. This strategy was visible in the innovation approach of 6 among the 7 mobile operators, which did not focus on technology, but rather on the consumer experience and user benefits of multimedia services. This approach allowed operators to compete successfully with those OTT players that had the capabilities to deploy sophisticated data services.

Component Three: Resources & Competencies (RC)

Licenses: license is one of the mobile operator's major resources. The use of available spectrum space is managed by the government through issuing of licenses. This makes spectrum licenses a strategically important but scarce resource. Based on the RBV, the ownership of licenses

enabled the mobile operators in this study to enjoy resource advantages or erect resource barriers. For example, a rural telephony service provider in this study (INF9) got traffic in the rural areas but had to forward this traffic to the MNOs to process as their own, since the infrastructure company didn't have a GSM license to process calls. All the MNOs in this study, except a pure play new entrant focusing on broadband services, have been awarded spectrum space for 2G to 4G services.

Infrastructure assets: MNO's most important infrastructure assets include the physical network assets, cell towers, and physical sites. These infrastructure resources fit the prescriptions of the RBV as they are valuable and rare (Barney, 2001). Tower assets, for instance, are investible and, thus, valuable resources, as many telecom operators in this study have executed or considering tower assets monetization. When the operators owned and managed their telecom towers, this created extremely high barriers to entry as the sheer size of fixed costs in transmission and distribution networks precludes commercial viability of a second network operating in the same area (S&P Global Ratings, 2019). However, while the spinning off of tower infrastructures have brought about better margins for MNOs, it shifts the source of differentiating advantage away from telecom infrastructure (Barney, 1991). Moreover, mobile operators, particularly former government monopolies in this study (e.g., MNO2), derived resource-based advantages from the ownership of expensive underground fibre optic-cable installations, known as manholes. The Company's Head of Marketing explains:

"We own a Satellite called SAT-A, we also own Manholes – which are fibre, you know this company is former MOTEL [not real name], so all the MOTEL assets are owned by us. You see, instead of breaking ground all over the places - different telcos are putting fibre inside the ground so, if you don't want to break the ground to put fibre, you can rent our manholes through which you pass all your fibres to save cost." (INT8/MNO).

Digital platforms: mobile operators also derived significant resource advantages from ownership of digital platforms, which helps in billing and connecting content providers with consumers. The partners cannot talk to the customers without the telco's platform: this effectively creates a lock-in situation, especially for products that require special customer relationships or that are tied closely with the mobile operators' core offerings e.g., insurance products.

Airtime: the mobile operators control another resource, i.e., airtime. Mobile airtime refers to the amount of time an individual uses a telco’s network. The airtime is a resource because it acts as a ‘currency’ through which an individual accesses mobile contents and services in exchange for money. This resource is strategic, but the high cost of managing and distributing airtime can affect value capture by partners on the telco’s digital platform.

Relational capabilities: one of the distinguishing characteristics of MNOs is their competencies in relating with customers. The operators collect insights relating to the customer, their demography, consumption patterns etc, which enables a targeted provision of services. Moreover, as observed in this study, provision of customer insights e.g., relating to customers’ buying habits, can be used by partners in their lending decisions.

Component Four: Activities (A)

Mobile operators traditionally act within a connectivity business with a strong focus on the consumer segment. Thus, *managing customers* is one of the major business model activities performed by mobile operators in this study. Apart from (i) customer relationship management, there were five other core business model activities undertaken by the operators, as observed in this study. Several activities can be categorized under one of these six broad types of activities, as shown below.

Table 33: Findings about MNOs' core activities

Key Activities	Content of activities	Control of activities
Managing customers	Building customer relationships	In-house, external
Product development / service provisioning	Service setup	In-house, external
	Product lifecycle management	
Billing	Data collection - customer consumption data	Mainly in-house
	Calculation of bills	
	Transfer of bill to customer	
	Processing of customer payments	
Marketing / Sales	Acquiring customers	In-house, external
	Retaining customers	
	Generating sales	
Managing infrastructure	Acquiring and upgrading assets (CAPEX)	Mainly external
	Maintaining assets (OPEX)	
Managing partners	Partnership selection	In-house
	Mutual learning	
	Performance management	

Managing customers: this is the mobile operators' core activity. All the mobile operators maintained an omnichannel presence to relate with customers i.e., offline (including owned and indirect sales/experience centres) and online (including text, instant messaging, social media, mobile applications etc). Managing customer relationships as an activity is discussed in more detail under the "customer / market" component of the business model.

Billing: the billing process includes all activities to collect data about consumer usage of services, calculate charging and billing information, produce bills to customers, and process their payments. Thus, it is a critical part of the operator's value capture mechanism. All the mobile operators in this study billed customers mainly through airtime. The mobile operators reported problems with billing, particularly in connection with value-added services that are co-created with partners, as partners 'forcefully' subscribe customers to products and engage in other opportunistic behaviours (see MNO-content providers interrelationship for further discussion). In such situations, mobile operators surveyed during the fieldwork sought to enforce transparency through the implementation of new technologies e.g., Service Delivery Platforms to manage the user journey on a single platform from beginning to the end and reduce the incidence of multiple billing. Similarly, mobile operators ensured billing efficiencies by introducing mobile app and online selfcare operated directly by customers. Thus, the mobile operators designed their billing process and activities to achieve three key objectives: (i) flexibility (ii) transparency and efficiency. More details are discussed under revenue models.

Managing infrastructure: In this study, mobile operators maintained a combination of in-house and external management of the critical networks, platforms, and applications that support the creation and delivery of mobile services.

Key activities involved in managing mobile networks include construction and maintenance activities. The independent tower company model is the common type of towerco in Ghana and Nigeria (towerxchange.com), unlike other African markets like South Africa, where the operator-captive model is slightly developed. All but two of the seven mobile operators took the management of passive network infrastructure elements (i.e., physical spaces, buildings, masts etc) to third parties. A similar approach is adopted by all seven mobile operators for the management of active elements of mobile networks such as base stations and core networks etc. This places importance on another key activity in the mobile operator's business model – i.e., effective management of partners.

Managing partners: For the mobile operators in this study, respondents highlighted these set of activities as including (i) partnership selection (including idea vetting), (ii) performance management (including pruning off of non-performing/value destroying partners), and (iii) knowledge management (including measures to enhance mutual learning). Specific means to achieve the following include contracting (which specifies the roles, responsibilities, and appropriate governance mechanisms), regular communication, and use of technology to curtail abuse, especially from VAS partners.

Marketing/sales: marketing and sales are considered the most critical for mobile operators, as new competencies now revolve around ‘customers’ and ‘content’, rather than ‘technology infrastructure’ (Al-Debei & Avison, 2010). Questionnaire data confirms this, as the 2.26 mean rating of *marketing* by MNO participants was the highest rating of any activity across the three categories of participants. All the MNOs in this study adopted both direct and indirect sales channels to reach the customers. Examples of indirect sales channels are third-party distributors and retailers, including MNO franchises.

Product development: Mobile operators do not sell products to customers that result in ‘ownership’. Rather, product development for the MNOs is about ‘service provisioning’ i.e., provision of new services to users. For standard services such as voice and SMS, provisioning involves all the processes necessary to set up the service, such as transmission and connections to the MNO’s network. Mobile operators did not directly develop all the services that are delivered on their networks and platforms. Product development also involves the management of the lifecycle of mobile services from development to adoption, and scale.

Component Five: Key Partnerships (P)

Partnerships are a critical component of the mobile operator’s business model. Most of the mobile operators retained third-party distributors in the configuration of their downstream activities. These third-party distributors are closer to the consumers and performed such activities as marketing, sales, and customer acquisition.

Table 34: MNOs' key partners

Type of partners	Example of innovation	Major service / operational category
Third-party distribution channels	Franchising and outsourcing (largely unchanged strategy)	Sales of mobile services
Infrastructure companies	Infrastructure sharing	Passive network infrastructure
	Third-party managed services (service delivery platforms)	Service delivery platforms
VAS providers	Co-opetition (partnering with OTT providers)	Non-core value-added services

Partnerships provided a means for sourcing non-core products and services such as VAS. These partnerships are with local 3rd party service providers or content partners and, in some cases, they are with OTT providers. There was also partnership between mobile operators and infrastructure companies, including tower companies, in which mobile operators share infrastructure owned by the tower companies. This focus allows the MNO to manage costs and focus on core competencies.

There were aspects of the mobile operators' configuration of partnerships that did not change; for example, the firms' strategy for reaching the mass market i.e., indirect sales channels, remain largely unchanged. Moreover, all the mobile operators continued their tradition of outsourcing technical complexity to managed services providers, which provide traditional application and infrastructure management including storage, help desk, and other technical support.

Component Six: Revenue model (R)

Each of the three MNO market segments observed in this study (i.e., consumer, business, and reseller markets) had different revenue streams. For the consumer market segment, the major revenue stream is the usage fee, in which the customer's pay increases as more services are consumed. There were two categories of usage fees namely, pay per use and subscription. Pay-per-use was the common model for voice and SMS services while subscription was the standard model for data. For the business market segments, the mobile operators mainly used *leasing* (of unique assets) and *advertising* as revenue sources. On the other hand, telco's revenue streams for the reseller markets are based on *mark-up*, such as when a recharge card shop purchase product for price X and sell for a price increase X+, or bulk pricing, for example, those that come with prepaid phone deals.

Mobile operators innovated upon their revenue model by applying new and different approaches to make money from the same product or service. Berman (2011) highlight that an existing product or service can generate new revenue from a different customer with different pricing, different packaging (bundling or unbundling the value) or with a different payer (e.g., advertising or sponsorship). In this study, mobile operators found new uses for existing assets through strategies such as rentals. For example, as said earlier, MNO2, leased out its unique asset (i.e., manholes) to other operators to enable them put their fibre infrastructure. This provided new revenue generating opportunities for the company while also providing cost savings for other mobile operators.

The operators introduced innovative approaches to enhance billing flexibility. This manifested in two of the companies, which allow customers to add extra services and products onto their subscriptions or take away any that they're no longer using. An example is a service that allows customers to top-up their bundle. Mobile operators also made changes to enhance billing transparency, especially with the growing importance of content-based services. They initiated mechanisms to regularly update customers on accruing usage fees and explaining hidden costs in advance. This enhanced trust and encouraged customers to continue the relationship.

Many operators altered their prices and offered flexible pricing strategies e.g., through tiered-based pricing - these were targeted not with the aim to generate new revenues, but to promote affordability and convenience in the consumption and payment for services. Thus, the strategies not only provided additional value to customers, but they also enhanced the companies' ability to capture value. There was another innovation in terms of pricing observed in one of the organizations. While most MNOs in SSA use the traditional Pay-As-You-Go (PAYG) with no regular monthly charges for their voice and SMS services, MNO2 offered subscription-based payments for its bundled services (voice, SMS, data).

Component Seven: Costs' structure (C)

The costs structure of SSA mobile operators is categorized broadly into four layers: (i) network (fixed costs) and IT, (ii) the cost of providing the service, (iii) the cost of acquiring customers, and (iv) support functions. To manage the costs associated with the four layers, SSA MNOs are having a shift from cost-cutting to strategic efficiency (i.e., combining growth and efficiency) by defining core and non-core functions. Support functions deal with administrative

and management processes while core functions such as service and customer acquisition are prioritized, and network & IT are outsourced or carried out in partnerships.

In terms of service and customer management, mobile operators are altering their cost structures to allow for value creation in a scenario of profitability pressure. Thus, there is a fundamental shift towards partners and vendors. For example, revenue share arrangements enable the mobile operators to enhance profitability and create value for customers, while strategically achieving cost efficiency. Operational costs for value-added services are pushed largely to the partners while much of the network and IT costs are fixed and are already sunk upfront. Thus, the same integration effort to a certain extent is used for all partners regardless of size and customer appeal of their [the partners'] products.

Also, for several customer service processes, outsourcing models have been an option for the mobile operators. For the delivery of products such as airtime scratch cards, mobile operators need to reduce costs associated with printing and distribution of scratch cards to different resellers who sell them to end-users. The high cost of airtime is why operators are increasingly seeking less frictional ways of working with partners and identifying new cost structures e.g., using wallet (based on mobile money) as a new currency.

Cost is also the reason behind the MNOs' shift to outsourced management of network infrastructure. Ghanaian and Nigerian MNOs are moving away from the traditional operator model of vertical integration i.e., owning and operating towers. In this study, all but two of the mobile operators have changed to shared and leased model. This significantly shifts costs from CAPEX to OPEX. However, an increase in traffic and soaring demand for data requires further investment in the access network. While in the past operators could simply exploit a series of technical improvements and addition of bandwidth to grow the network, the key to catering to increased traffic is further investment in the network, which raises costs.

6.3.2 Analyzing Forms of BMI among Mobile Operators in SSA

Table 34 shows the details of BMI among the seven (7) mobile operators that participated in this study. As shown in the table, the commonest form of innovation among MNOs was known as "BM Adoption" with five examples.

Table 35: Analysis of business model innovation among MNOs in SSA

Cases	Content	Radicality	Complexity	Components							BMI Form
				VP	M	RC	A	P	R	C	
MNO1	Offers products to existing markets based on (mostly) existing technologies and competencies, plus outsourcing of management of passive network infrastructure. Proactively brought new innovations, not just new-to-the-company, but also into the market	Low (I)	High	√√	√	√	√	√	√√	√√	BM Adoption
MNO2	Offer mobile services to a (niche) market. Innovations were based partly on new, and partly on existing technologies and competencies. Emphasis is on in-house service development.	High (R)	Low	√√	√√	√√			√		BM Discovery
MNO3	Offer largely incremental improvements based on (mostly) existing technologies and competencies, plus outsourcing of management of passive network infrastructure. Fully embraces partner-based services	Low (I)	High	√	√		√	√	√√	√√	BM Adoption
MNO4	Innovations include outsourcing of infrastructure, shift to partner-based services, and incremental improvements to activities. Innovation in MNO4 also involved creation of new products to a new (niche) market, without cannibalizing existing market	Low (I)	High	√	√√		√	√√	√	√√	BM Adoption
MNO5	Offer incremental improvements to products, for existing markets, based on (mostly) existing technologies and competencies, plus outsourcing of management of passive network infrastructure. Fully embraces partner-based services	Low (I)	High	√	√	√	√	√	√√	√√	BM Adoption
MNO6	Offer incremental improvements to products and services, and across individual components of the business model. Company focuses on a more conservative approach to innovation.	Low (I)	Low	√	√	√			√√		BM Adjustment
MNO7	Innovations include outsourcing of passive infrastructure, shift to partner-based services, and incremental improvements to products and activities.	Low (I)	High	√	√		√	√	√√	√√	BM Adoption
<p style="text-align: center;"><i>Complexity:</i> "High complexity" = 5-7 components, "Low complexity" = 1-4 components <i>Radicality:</i> "√" = incremental changes, "√√" = radical changes, as characterized by high degree of novelty "High radicality" = Includes at least radical changes in VP & M; more radical if it includes RC "Low radicality" = Excludes radical changes in VP, M & RC.</p>											

6.3.2.1 Complexity of innovation (Scope)

There were business model changes across all components, but the scope of changes differs across the firms. The most complex BMIs involved three cases that made significant changes in at least six of the seven components of the business model (MNO1, MNO3, and MNO5) and two that made significant changes to five of the components (MNO4 and MNO7). The simpler business model innovation involved two companies that did not alter majority of the components of their business model: MNO2 and MNO6. The business model changes occurred mainly in the companies' value proposition, customer relations, activities, partnerships, and profit formula (i.e., revenue streams and cost structures).

There were changes common across all MNOs, which occurred in three components: value proposition, market segment, and revenue streams. In terms of value proposition, the mobile operators did not make changes to their traditional voice and SMS services. However, all the MNOs added new offerings in several areas, such as a shift to internet-based services or rich media offerings and introduction of electronic recharge as alternative to traditional scratch card

systems. All the MNOs also redesigned their offerings and offered incremental improvements in different ways, e.g., through services bundling or tiered pricing. In terms of customer segments, all 7 MNOs introduced mobile app to enhance customer experience and provide more opportunities for customers to access mobile services. There were also changes in revenue structures across all firms, although MNO2 was yet to diversify its revenue streams through partner-based services.

Mobile operators rated as examples of more complex BMI made changes as follows. For some of the companies (MNO3, MNO4, MNO7), they did not make changes to their resources & competencies, as changes made were based on the companies' existing core competencies. For example, the setting up of new partner-based services for revenues did not require the MNOs to change their distribution networks, billing platforms, or marketing channels. However, for MNO1, MNO5 and MNO6, the shift to partner-based services preceded the setting up of new service delivery platforms to manage the user journey on a single platform from beginning to the end and reduce the incidence of opportunistic behaviours from partners. Also, MNO1 introduced a mobile payment service that it plans to use as a resource to remedy the challenges related to inter-organizational value capture. Furthermore, in terms of cost structures, all the MNOs in this study (except the two rated as simpler business model innovations - MNO2 and MNO6) reengineered their cost structures and internal activities by moving the management of their infrastructures to specialized infrastructure companies to ensure higher-quality and efficiency. This change in costs structure component necessitated changes in activities and partnerships.

The simpler business model innovations involved MNO2 and MNO6. MNO2 made changes to its value proposition, customer relations, resources & competencies, and activities but left three components largely intact (partner network, costs structure and revenue streams). The changes made by MNO2 include introduction of an online TV service to stream live events, an online self-care and web mobile app to replace direct recharge cards at physical shops and perform self-service (value proposition and customer relations). The company offers new technology (i.e., 4G LTE-based mobile services) to a new market, made up of largely broadband consuming organizations and affluent individuals. However, while the company did not have a fully diversified revenue stream, especially in the form of partner-based services, it is able to rent out its inherited infrastructure assets, but demand has been unstable. MNO6's changes occurred mainly in customer relations and revenue streams while cost structures, value proposition, partnership, activities, and core competencies remain largely unchanged.

6.3.2.2 Radicality of innovation (Novelty)

All seven cases (except MNO2) were rated as incremental innovations. The six cases that are considered incremental business model innovations offered incremental improvements, or new products for existing markets, based on well-established technologies, organizational competencies, and activities. Consider one of the most impactful business model changes by mobile operators in this study, i.e., the shift to partner-based services. Historically, MNOs in Ghana and Nigeria have relied mostly on their internal competencies for providing content services to consumers, particularly voice and SMS-based services. However, as barriers to entry have lowered and data has become popular, mobile operators in Ghana and Nigeria have shifted to external sources for revenue. As a Senior Manager in MNO5 confirmed: *“our non-core products and services such as VAS are now predominantly sourced through partnership ventures with local 3rd party service providers and in some cases OTT providers”* (INT11/MNO). These partner-based services largely do not require a departure from the MNOs’ existing core competencies, and they are sold to the operators’ existing markets, providing stable external sources of revenue without significantly varying the mobile operators’ existing cost structures. Similarly, the outsourcing of infrastructure to third-party management companies represents a radical departure from MNOs’ traditional practices. However, these changes in the ‘activity’ components of the business model are about internal restructuring of the firm and does not affect the firms’ core value proposition and competencies, nor does it imply creation of a new market for MNO services.

MNO2, on the other hand, can be described as radical innovation. The company inherited legacy assets and GSM network from a former government owned mobile operator. MNO2 invested to get dilapidated infrastructure back into use, but the company installed pure play 4G LTE network on its towers, without building layers upon layers of technology. As the company’s Head of Marketing commented:

“You might say it will not be so easy to deploy in a country like Nigeria with diverse people and income level – it’s a bit tricky, but it’s something you have to take a risk because business is all about risk. We thought, 3G has been there for a while, and 2G is practically phasing out already. So, the next level for us is 4G, in fact 5G is already coming out. So, we said let’s start where nobody wants to be, so by the time the world catches up with us, we would have perfected that technology” (INT8/MNO)

This blue ocean strategy enables MNO2 to provide advanced mobile services including video, Voice-over-LTE, and fast internet access to broadband subscribers and smartphone users in Nigeria. Thus, MNO2 has both acquired and enhanced existing assets, while developing entirely new core competencies. However, the company has adopted a largely firm-centric approach to innovation, preferring to manage its existing assets in-house and developing its services internally.

There was an interesting scenario in MNO4, in which the company kept its core business fully operational but developed a new BM aimed at operating in a new industry and new market. Specifically, MNO4 brought together cross-sector partners, who collaborated to create mobile agricultural services (value proposition) for smallholder farmers (markets), but this service was based on the firm's existing resources and competencies, as all the partners brought complimentary competencies into the relationship.

6.3.3 Section Summary: Mobile Operators' BM Components and BMI forms

In this section, the BM components of seven MNOs are discussed. As observed in the findings, innovations among mobile operators occurred mainly along six components. These include changes *within* (i) value proposition, (ii) markets, particularly alterations of relations with existing customers, (iii) revenue model, and (iv) cost structures. These necessitated changes along two components: (v) partnerships, and (vii) activities, as a number of key activities that represent significant costs to the MNOs were restructured. Specifically, MNOs in this study are altering their costs structure by shifting towards partners and vendors. Thus, operational costs for value-added services are pushed largely to the partners while, for network & IT and customer service processes, outsourcing models have been an option for the mobile operators. Across majority of the MNOs, there were only smaller changes *within* the resources & competencies component.

Based on the changes to the MNO business model, majority of the MNOs (i.e., cases 1, 3, 4, 5, 7) fall under BM Adoption, case 6 is an example of BM Adjustment, and Case 2 represents BM Discovery. There was no example of BM redesign among MNOs in this study.

Table 36: Typology of BMI forms among MNOs in SSA

Degree of Novelty (Radicality)	Scope (Complexity)		
		<i>Modular BMI</i>	<i>Architectural BMI</i>
	<i>Incremental BMI</i>	BM Adjustment Case 6	BM Adoption Cases 1, 3, 4, 5, 7
	<i>Radical BMI</i>	BM Discovery Case 2	BM Redesign

The five cases classified as BM Adoption undertook mainly incremental changes across multiple (five or more) components, especially value proposition, market, revenues, partnership, and cost structures. The firm classified as BM discovery made changes across few components (less than five), but these changes were more radical as they involved radical product innovations in a niche market, based on new core competencies. The least innovative classification, i.e., BM adjustment, involved one MNO that made incremental changes to its value proposition and market relations, through redesigning of existing offerings, marketing strategies, and mode of customer relations. The analysis shows that, among *all* the mobile operators, there were changes (albeit, largely incremental) in three components: value proposition, market segments, and revenue model.

6.4 Forms of Business Model Innovation among Content Providers in SSA

6.4.1 Illustrating the Business Model of Content Providers

The first group, Content Providers, consist of fourteen (14) firms that occupy layer 2 in the value chain depicted below and provide services that are non-core to the mobile operators' offerings. A content provider can combine the role of a value-added service (VAS) provider and a VAS aggregator, to leverage on the MNO's infrastructure. Nine (9) of the firms in the study had a VAS license and therefore did not need partnership with a VAS aggregator. The second group include five (5) retail firms that sold the MNOs' products. This section covers both content providers and retail partners; however, more emphasis is given to the content providers.

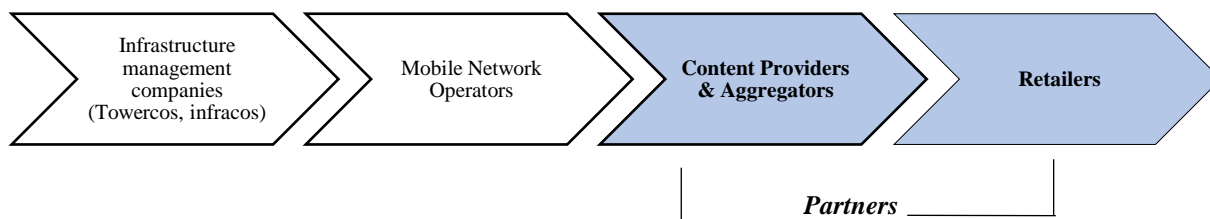


Figure 38: Content Providers' position in the value chain

Component One: Value proposition / Offerings (VP)

The Content Partners provide services that are considered value-added to the operators. The fourteen content partners in this study had several service offerings that include entertainment (e.g., games, music, caller ring back tones) and utility services (e.g., microinsurance, health, agriculture) that are delivered via several channels: SMS, USSD, IVR, and digital channels. Overall, the services provided by Content Partners in this study are in two categories: (i) MNO-led services, in which the MNOs engage the Partners to provide the contents; and (ii) Partner-led services, in which the providers ‘own’ the service. Thus, while the Content Providers provide the service under both scenarios, the difference lies in ownership of the service.

Based on evidence from fieldwork data, SMS was the standard and dominant VAS delivery channel among the content providers. It was observed that services delivered via SMS cuts widely across the mass market as it works on feature phones that do not have data capabilities. However, participants also highlighted the dwindling revenues from SMS contents, with the growing popularity of digital services (data-based services) in Ghana and Nigeria. The spread and uptake of digital services is affected by smartphone penetration in the two markets. Another service type, USSD, was mainly used for mobile financial services, enabling delivery at low cost. One of the participants, the General Manager for VAS in CONT7, explains as follows:

“Our SMS services are more dominant because, traditionally, that’s what we started with. SMS works on feature phones but if you’re doing digital services, you have to also look at the smartphone penetration in the entire country. I have not checked the latest figures, but I’m sure most of our customers are SMS content consumers” (INT44/PART)

IVR services were not common among content providers in this study, as only few providers (e.g., CONT13) have the resources and capabilities needed to provide such services due to the high cost of IVR-voice infrastructure. CONT2, a mid-sized content provider, and CONT3, the Ghana based agri-tech company, used IVR as a channel to reach their customers. The companies later discontinued the IVR services due to technical and customer related reasons.

For CONT2, establishing partnership with a third-party was necessary to access the IVR infrastructure, but the service had to be discontinued due to the involvement of another party which makes revenue sharing with mobile operators unfavourable. CONT3, on the other hand, was confronted with the challenge of high churn due to customer illiteracy.

The retailing partners act as intermediary between mobile operators and the consumers. Unlike the Content Partners that create own services sold on the mobile operators' platform, the retailing partners sold the MNOs' offerings, such as SIM and VAS products. They typically help to advance the operators' brand and value proposition.

There was heightened innovation in this section of the value chain. Three generic business-level strategies have been expounded in the management literature: cost leadership, differentiation and focus (Porter, 1985). In this study, Content Providers used the differentiation strategy for effective penetration and a survival tool in the very competitive and saturated VAS market in Ghana and Nigeria. Thus, product innovation by Content Partners focused on development of products that are not deployed in the very standard way that VAS products are deployed, but rather provide value-addition and utility for the consumers. This was observed in majority of the firms, for example, CONT7 introduced an innovation to include video link to a simple SMS service, thereby meeting its MNO partner's request for digital services. Another firm, CONT11, came up with a utility product which enable customers not only to buy airtime through USSD but also to make transactions through a special bank account while CONT10 introduced an OTT Video-on-Demand platform. The Chief Operations Officer in CONT8 explains the strategies deployed by content providers in Nigeria:

“It is important to start to create products that are very utility-based and not necessarily deployed on the outside to look like VAS. So, there's a focus on building new experiences, you're telling new stories around them, and you're creating things to meet people at their pain points” (INT45/PART)

Another type of innovation among Content Providers relates to the channels for delivering the offerings to customers. Traditionally, CONT3 disseminates a range of agricultural information to smallholder farmers in Ghana via SMS, USSD and Voice SMS. The firm introduced a new channel, i.e., a call centre, to reach customers in several local languages.

Component Two: Markets / Customers (M)

Findings from this study reveal that value propositions by content providers were specifically targeted for the needs of two types of markets – 1.) consumer markets or B2C, 2.) business markets or B2B; ultimately, the end-users of such services are the consumers. Content Providers typically target both categories of markets while Retail Partners mainly provide services for the B2C markets.

In this study, the B2C markets include the mass-market and segmented market. The mass-market are the large, undifferentiated market of consumers, that are typically at the low-middle layers of income. Although the mass market could be served by a range of SMS and data-based VAS products, the services that appeal more to the mass-market, based on findings from the interviews, are data-based services such as video, games and other high-tech stuffs. CONT6 and CONT12 are examples of firms serving lower income mass markets, as they typically provide microinsurance services across multiple coverage areas (e.g., health, accidents) for low-income individuals and households. Regarding segmented markets, firms in this study segment their markets based on identifiable preferences and expectations. There were several examples of segmented offerings in this study, including education and seasonal services like religious services. For example, CONT2 and CONT7 have religion-based services that are targeted at Muslims and Christians during their respective festivities.

Majority of the Content Providers typically do not serve niche markets, as VAS services are usually only viable when provided to a critical mass of consumers. However, there were specific examples of niche marketing in this study, particularly by companies that focus on serving low-income consumers in a single coverage area e.g., health or agriculture. In this study, CONT3 and CONT4 focus on a niche market by respectively providing agricultural and maternal health services to smallholder farmers and pregnant women.

The business-to-business (B2B) model is a growing segment of the VAS market, especially in Nigeria, as Content providers increasingly move away from the traditional business-to-customer (B2C) model. There were two types of B2B markets observed in this study. The first consists mainly organizations that buy services for use in their own services delivery process. Firms in this category (e.g., CONT3) include mainly organizations serving underserved markets. For example, CONT3 uses its data capabilities to provide real-time insights that enable organizations serving smallholder farmers (including NGOs, government agencies) to collect and disseminate information on farmers and their markets. This kind of

data were previously unavailable and CONT3's platform saves resources in terms of the time and costs required to collect data by paper and pen. The second type of B2B market is the telecom operators. This is a market for which the mobile operators ask content providers to provide value-added services for them. B2B transactions with mobile operators are delivered in return for payment, and do not involve revenue sharing.

Component Three: Resources and Competencies (RC)

This study indicates the following resources as critical for content providers in SSA: licenses, digital platforms, financial resources, social capital, reputation, and other complementary assets.

Digital Platforms: the firms maintained well integrated technology platforms for data collection, customer enrolment and record keeping. Majority of the firms do not own a digital platform as they plug directly into the platforms provided by mobile operators to reach customers and perform activities such as marketing and billing. However, a number of content providers, especially firms serving niche markets like CONT3 and CONT4, kept ownership of technology platforms, which help to identify underserved customers, create user profiles, and discover evolving needs.

Licenses: To deliver value-added services, content providers in Ghana and Nigeria are expected to obtain a VAS license. The license is typically issued for five years and is renewable subject to fulfilment of certain requirements. The scope of the license covers a range of service areas such as entertainment, commerce, marketing, and advertising services. Content Providers that do not have a VAS license could only deliver their services by partnering with a licensed VAS aggregator. In this study, five content providers namely CONT3, CONT4, CONT5, CONT6 and CONT12, partnered with VAS aggregators to connect to the mobile operators.

Financial resources: content providers in this study were mainly SMEs and social enterprises that depend on internally generated resources or donor funding. The extent to which these firms can expand is based primarily on availability of funding. Companies that relied on internally generated resources (e.g., CONT2, CONT8, and CONT13) experienced scaling challenges for a number of reasons. They have the technology, the products, but sometimes did not have the funding to expand. The challenge was that resources often became inadequate to support growing number of customers. On the other hand, sponsor reliant CONT4 could not expand

beyond what sponsor requirements allowed. This also negatively impacted on sustainability of initiatives.

Commercial / Social Relationships: This study shows that relationships are one of the most important valuable resources of content providers. This relates to three levels: (i) relationship with mobile operators, (ii) relationship with communities, and (iii) relationship with government / regulators. In this study, Content Providers advance their social capital with telcos by demonstrating competence and leveraging on key employees' industry experience. In addition, content providers in Ghana freely share information among each other, as they approach issues with a united front through the industry association.

In terms of relationship with communities, content providers need the local knowledge and legitimacy to be able to effectively deliver services, profile users, and satisfy traditional chiefs, especially in rural communities. This sort of local knowledge is not available to foreign firms; hence, multinational organizations and NGOs serving rural communities rely on knowledge provided by local organizations. In Ghana, for example, the Consultative Group on International Agricultural Research (CGIAR) engaged CONT3 on a research project for addressing climate change for delivering sustainable food systems. The CGIAR and other partners relied on CONT3's local knowledge and expertise to go to the field, recruit farmers, and deliver public campaigns to tell farmers about the service.

Complementary assets: Complementary assets such as payment and billing systems are important resources that confer high bargaining power on the owner. To capture value in a multi-firm setup, firms seek a good bargaining position with regards to the owners of complementary assets needed to leverage the innovation (Nielsen & Stefan, 2019). Content providers, most of which are young and small-sized, need MNO resources for their value creation and delivery. However, this puts the content providers' resources at risk of appropriation. Thus, the more strategic the asset is, the more advantageous it is for owners of the asset. In this study, two of the content providers were already in the process of creating their mobile wallet systems, similar to Apple Pay. These payment channels reduce the importance of the telcos' airtime resources.

Reputation & size: Like complementary assets, the reputation of content provider influences the bargaining power that a content provider possesses with the mobile operators. Bigger firms enjoyed better access to opportunities because of size and reputation in foreign markets. In this study, CONT9, a Portugal-based global provider of mobile engagement solutions, occupies a

position that gives it control over multiple value activities (including billing) on the MNO1 platform. The firm, a VAS license holder, also successfully secured a deal to manage MNO1's VAS platform. As a result, CONT9's competitors must go through CONT9 in order to provide their service, creating an unfair advantage for CONT9.

Component Four: Activities (A)

The key activities of Content Providers / Retailers can be categorized into five. These are discussed below.

Marketing / Sales: Sales and marketing by content providers include all activities relating to customer recruitment, product advertisement, sales, and consumer training. In this study, content providers invested in research activities to enhance customer knowledge, which in turn helps to identify service beneficiaries and their needs. Developing strong customer knowledge is particularly important, as the Ghanaian and Nigerian VAS markets is reaching saturation and content providers increasingly seek ways to deliver utility products.

The sales and marketing activities by content providers were performed mostly in conjunction with MNOs, who carry out advertisements for a fee. This happened either via direct advertisements or 'bundling strategy with advertising', in which the VAS offerings are pushed to the customers as a value-addition service to the telco's core products. In this study, CONT6 and CONT12 used the latter strategy. However, telcos' involvement in advertisements were not always impactful, especially for products targeting low-income users. For example, CONT4 and CONT11 adopted the use of dedicated sales force in rural communities. They utilized field agents who went around training the mostly illiterate customers on how to use their mobile phones effectively to enjoy the services and contact the call centre.

Managing customer relationships: content providers manage customer relationships in one of two ways: via the telco's platform or directly through owned platform. Depending on the platform used, content providers have different focus in terms of customer relationship management. For telcos' platform, content providers were mainly focused on ensuring lawful user subscription and fair billing. Four of the mobile operators in this study have introduced an innovation – the service delivery platform (SDP), to ensure effective management of the user journey on a single platform. Firms that directly controlled their platforms were more focused on building their brand.

Managing partners: In this study, content providers have two main partners: (i) mobile operators, and (ii) VAS aggregators, for companies without a VAS license. Relationships with mobile operators was mainly about commercial negotiations, lobbying, and resolution of disputes. Common sources of dispute observed among firms in this study relate to the delayed process of repatriating or paying the partner after billing (i.e., monthly reconciliation) and the extent of involvement of telcos in marketing activities. The content providers' individual and collective social capital (i.e., industry association) were important for lobbying and managing relationships with the mobile operators.

Payment processing: activities relating to billing and processing payments are two of the content providers' most important activities, as they provide a means for value capture. Content Providers work with mobile operators to process payments for services that customers buy on the telcos' network. However, a number of the content providers also did billing services. For example, one of the biggest players in the Nigerian market, CONT9, is not limited to providing portals and contents; but also included a billing management service. Content Providers in this study reported that they make money more on subscription services because billing over airtime provides an easier way for content providers to receive regular payment. However, monetizing data applications such as games or music, was more complicated as the telecom operators derive more revenues from it.

Product development: product development involves the management of the lifecycle of content services from idea development to adoption, and scale. Majority of the companies operate a department in-house that generates new ideas and develops product. This department research new trends, identify new product development ideas, and generally look for ways to add new elements to existing products to make them more appealing and differentiate from competitors. MNE content providers typically coordinate these activities in conjunction with their international networks. For example, CONT6 and CONT12 had a centralized internal innovation incubator, based in the United States, that continuously works with the West African regional team to develop new value propositions customized to the needs of the customers in Ghana and Nigeria.

Other important product development activities observed include quality assurance and activities undertaken to ensure scaling. Some content providers put their services through multiple approvals to ensure accuracy and quality before the service gets to the final customers. In this study, this is especially true for organizations delivering information services and niche

products such as health and agriculture. To ensure scalability and sustainability, content providers typically undergo a series of small iterations that anticipate, and respond to, the market's requirements. Thus, in this study, product development by content providers includes gathering feedback and suggestions from users and anticipating their needs to enhance growth. One of the firms, CONT4, which runs a sponsored business model, experienced significant challenges scaling up its digital health projects for underserved markets, especially given the complexities involved in convincing an interested stakeholder – often government, to take over projects.

Component Five: Partnerships (P)

Four major forms of partnerships involving Partners were observed in this study: (i) vertical alliances, mainly between content providers and mobile operators, (ii) cooperation, i.e., partnership between two content providers, (iii) international reseller initiatives, and (iv) partnership between retail partners and mobile operators.

In the case of vertical alliances, the Content Providers' most important partner is the mobile operator. For each of the firms, mobile operators played different but central roles in the value chain. In Nigeria and Ghana, the only technology that is pervasive is mobile, which makes the telco's platform important to reach customers and achieve scale. Moreover, the content providers leverage on the telco's platform for billing, as financial inclusion remains low and only a small percentage of people can make payment with card in both markets. Content Providers also rely on telcos' marketing capabilities and extensive distribution networks for selling services. Whenever the mobile operators do not fully contribute resources to the Partners' marketing and advertisements, as was the case in CONT7, the content providers incur significant additional costs that renders marketing less effective and limits the return on investment (ROI). Thus, several factors impact the providers' standing with the operators and influence the extent of their [the telcos'] resource deployments for activities such as marketing and advertisements (*These factors are discussed in the section MNO-content providers interrelationship*).

Cross-sector partnerships is an important form of vertical alliance observed among content providers in this study. For example, CONT3 collaborated with agricultural experts and research institutions from the nonprofit, government, and private sectors to share resources, capabilities, and ensure reliability control of the information shared with customers. Cross-sector partnerships also helped with sustainability of offerings. In this study, CONT4 operates

a fully sponsor-based business model. Its approach to sustainability is to partner with government (central or state-level) that will take on project responsibility when project sponsorship ends. Thus, content providers also partner with government as co-creators, and for acquisition and renewal of operational licenses.

The second type is between multiple content providers, i.e., horizontal alliances or cooperation. Two of the Ghanaian Content Providers, CONT7 and CONT13, had a strategic partnership to jointly deliver an addressing system (a product diversification strategy) in a foreign country. The international reseller initiatives were used by three of the companies, CONT3, CONT6, and CONT12 to advance operations beyond their domestic markets. The retail partners also partnered with mobile operators to enhance the operators' services to the customers. This partnership can take the form of *franchising*, as was the case between RET1/RET2 and MNO5 or it can be direct retailing, in which partners distribute telcos' products for a fee, as was the case between RET3 and MNO6.

Component Six: Revenue Model (R)

Content Providers used different revenue streams for their two main customer segments. For B2C services that are owned by the content providers, revenue sharing with MNOs was the most common revenue stream. Under this type of arrangement, mobile operators typically took a larger percentage of the revenues (i.e., up to 60% - 80%). For B2B services, content providers typically function as a 'contractor' by providing the expertise for the provision of a telco-owned product. For this type of service, the common type of revenue stream is direct payment from the MNO to the content provider.

Firms mostly claimed customer value via the mobile operators' airtime paid for by the end users. However, content providers in Ghana and Nigeria are turning to mobile money as an innovative and cheaper approach to collect customer payments. One of the firms, CONT5, exited the value chain due to difficulties agreeing a viable revenue share agreement with the collaborating parties (including the MNO).

Retail Partners typically used the affiliation revenue model. Their revenue streams come in the form of commission on the sales of telco products. Two of the retail partners, RET1 and RET2, were franchises of MNO5 i.e., they could not work with any other mobile operator apart from MNO5. For these firms, the amount of money they make is limited to the type of products they sell, and the audience.

Component Seven: Costs' structure (C)

The costs of providing content services are mostly borne by the content providers. In general, content providers incur the service, operation, and maintenance costs but the costs of network and most of the fixed costs (including integration costs) are borne by the mobile operator. Depending on the type of firm, the costs structure of Content Providers in Nigeria and Ghana is categorized broadly into: (i) the cost of providing the service, (ii) the cost of marketing and advertisements, (iii) the cost of IT, especially for multimedia services that are more IT-intensive.

A variety of cost allocation approaches helped the firms to manage costs. The costs of advertisement and customer recruitment is mostly with the content providers, although the allocation of costs varied depending on the firms' relationship with telcos as well as company brand and nature of services. Thus, content providers did not generally incur any costs for MNO-led services while they typically must pay for own services delivered over the telcos' network. In terms of IT costs, content providers typically outsourced maintenance and management of the technology platform as a vehicle to achieve desired cost savings.

6.4.2 Analyzing Forms of BMI Among Content Providers in SSA

A total of 14 content providers participated in this study. However, detailed information could not be obtained about two companies to warrant in-depth analysis of their business model. Hence, the analysis presented here is on 12 of the cases representing content providers in this study. Table 36 shows findings about business model innovation among the 12 cases.

Table 37: Analysis of business model innovation among Content Providers in SSA:

Cases	Content	Radicality	Complexity	Components						BMI Form	
				VP	M	RC	A	P	R		C
CONT1	Proactively pushes innovation into the market, based on largely new competencies and dynamic capabilities to pre-empt environmental changes	High (H)	High	√√	√√	√√	√√	√√			BM Redesign
CONT2	Radical product innovations to serve new markets, based largely on existing competencies	High (H)	Low	√√	√√		√		√√		BM Discovery
CONT3	Operate a dual BM to serve individual and enterprise customers, in a niche market segment. Strong on partnerships with multiple cross-sector players	High (H)	High	√√	√√	√√	√	√	√√		BM Redesign
CONT4	Focus on incremental BM improvements. Global sourcing of critical technologies, plus outsourcing of non-core activities. Strong on partnerships	Low (L)	High	√	√		√	√	√√	√√	BM Adoption
CONT5	No significant innovation across major components, except for introduction of new activities to reduce risk. Eventually exited the value chain	Low (L)	Low				√	√√			BM Adjustment
CONT7	Incremental innovations to improve products and serve new markets, based largely on existing competencies.	Low (L)	High	√√	√	√		√√	√√		BM Adoption

CONT8	Continuously redefine value propositions through new products and incremental BM improvements	High (H)	Low	√√	√√	√			√√		BM Discovery
CONT9	Focus largely on incremental Business model improvements.	Low (L)	Low	√		√	√				BM Adjustment
CONT10	Continuously redefine value propositions through new products and incremental BM improvements	Low (L)	Low	√√		√	√	√			BM Adjustment
CONT11	Explore several radical product innovations to serve new markets, based on existing competencies	High (H)	High	√√	√√	√	√	√	√	√	BM Redesign
CONT12	Continuously redefine value propositions through in-house development and external collaboration. Strong dynamic capabilities to perceive and react to opportunities and design innovative products.	Low (L)	High	√	√		√	√	√	√	BM Adoption
CONT13	Incremental innovations to improve products and serve new markets, based largely on existing competencies.	Low (L)	High	√	√	√		√√	√		BM Adoption
<p style="text-align: center;"><u>Complexity:</u> “High complexity” = 5-7 components, “Low complexity” = 1-4 components</p> <p style="text-align: center;"><u>Radicality:</u> “√” = incremental changes, “√√” = radical changes, as characterized by high degree of novelty “High radicality” = Includes at least radical changes in VP & M; more radical if it includes RC “Low radicality” = Excludes radical changes in VP, M & RC.</p>											

6.4.2.1 Complexity of innovation (Scope)

The most complex examples of business model innovation involved seven components (CONT11), six components (CONT3, CONT4, CONT12), and five components (CONT1, CONT7, CONT13). These companies made significant changes mainly across the value proposition, market (customer relations), partnership, and revenues. All the firms (except CONT5) innovated upon their value proposition. Changes observed in the value proposition by the content providers involved addition of new offerings and redesign of existing offerings. Majority of the content providers with VAS license brought new-to-the-company and new-to-the market product innovations, for example, CONT7 introduced an innovation to include video link to a simple SMS service, thereby meeting its MNO partner’s request for digital services. Another firm, CONT11, came up with a utility product which enable customers not only to buy airtime through USSD but also to make transactions through a special bank account.

Innovations in the revenue stream involved mainly diversification to alternative revenue streams in the face of saturation. In terms of partnership components, innovations by the content providers were prominent among non-telco content providers (CONT3, CONT4, CONT5, CONT12) that coordinated innovation activities among multiple cross-sector partners. Three other firms (CONT1, CONT7, CONT13) adopted an open approach that involved partnership with competitors. For example, CONT7 and CONT13, two direct rivals

in the market, partner to explore a new opportunity in a foreign company. According to the Head of Mobile VAS in CONT13:

“In this industry, I won’t really call CONT7 and the rest competitors. I call them strategic partners. You know CONT7 has an addressing system for Ghana. In Rwanda, you know CarHouse [not real name] has a factory and they are producing vehicles. There is this company that have been there, they’ve been contracted to build something like Uber, you know Uber doesn’t operate in Rwanda. I met this company and I told them that we have an addressing company in Ghana which can be great for this project. We became a partner on that project and then went back to Ghana to bring CONT7 along, because they had the technology” (INT53/PART)

The simplest business mode innovations involved CONT5, CONT9 and CONT10; three firms that made significant changes only to two (CONT 5), three (CONT9) and four components (CONT10) of their business models. CONT5’s innovation involved the introduction of pilot schemes to test-proof its services (activities) and the identification and design of new workable partnerships (partnership), which eventually led to the company’s exit from the mobile value chain. CONT9 and CONT10’s innovation included changes in the value proposition and activities component. While CONT10’s changes happened mainly across four components, the company introduced radical product innovations such as OTT Video-on-Demand products. In addition, CONT10 made changes to its partnership, as it partnered with start-ups to boost innovation.

6.4.2.2 Radicality of innovation (Novelty)

Five content providers (CONT1, CONT2, CONT3, CONT8, CONT11) were examples of radical innovation. These firms had several common characteristics, mainly that they made critical changes to their value proposition and markets & customer relations. These were accompanied by major changes to the firms’ resources & competencies (excluding CONT2, CONT8 and CONT11). CONT3’s core service is the provision of agricultural information to smallholder farmers. The firm created a new market through the introduction of a robust technical platform that enables organizations serving smallholder farmers to collect and disseminate information on farmers and their markets. This was a radical, new-to-the-market innovation, as such data were previously unavailable in the market, and it saves resources in terms of the time and costs required to collect data by paper and pen. The firm made this innovation to enhance the sustainability of its core offerings to low-income farmers. On the

other hand, CONT2 continually sought new ways to use existing capabilities to serve new markets and survive in the face of competition, leading to creation of enterprise solutions. CONT1 was relatively new to the industry at the time of the study and had been proactively pushing innovation into the market that could potentially become disruptive, based on new competencies and dynamic capabilities to pre-empt environmental changes. The company's country director in Nigeria explained as follows:

“...So, there is a growing craze of young boys running start-ups, you know how to write some codes, you can start doing services etc. We are basically providing aggregation of infrastructure for these guys, small content providers, so that if tomorrow, there is internet of things or any other mode of connection or blockchain, we connect to it. So, we basically are positioning ourselves... but we cannot be profitable in the short term. We are just working against the future and saying the various people who have services should not be limited by worrying about the difficulties of working with the telcos (INT37/PART).

CONT11 is another example of radical BMI in this study. The firm introduced radical offerings into the market, including a mobile financial service that runs on existing technological competencies, i.e., USSD and partner's agents, allowing rural users to open bank accounts using mobile phones. Besides this, CONT11's business model involved product innovations across wide market area, setting up an innovation hub that enables it to provide a diverse portfolio of products, reflecting the 'prospector' orientation of the firm.

Majority of the cases are examples of incremental innovation. Firms in this category include CONT4, CONT5, CONT7, CONT9, CONT10, CONT12, and CONT13. These firms are characterized by incremental improvements, based on well-established technologies, organizational competencies, and activities. In this study, incremental innovation among content providers served as a means to (i) protect current business models, as was the case when CONT4 redesigned its products in such a way that they can accommodate higher income users who will be willing to pay for services, thereby ensuring that the company is able to continue offering 'free' services to low-income customers, (ii) serve new markets without cannibalizing current ones, like CONT10 did with its enterprise solutions for financial institutions, which enables the company to serve both corporations and individual customers, (iii) grow sales and profits for existing products, for example, it was observed that VAS licensees continually added multimedia services to their products to encourage sales.

6.4.3 Section Summary: Content Providers' BM Components and BMI forms

There are nineteen (19) firms occupying the most upstream layers in this study, including fourteen (14) content providers that provide services that are non-core to the mobile operators' offerings and five (5) retail firms that sold the MNOs' products. Significant BMI was not observed among the retail partners; hence, the business model of retail partners is highlighted but discussion on BMI form focuses more on the fourteen content providers.

The services provided by Content Partners are in two categories: (i) MNO-led services, in which the MNOs engage the Partners to provide the contents; and (ii) Partner-led services, in which the providers 'own' the service. We observe two types of markets for content providers services – 1.) consumer markets or B2C, i.e., those targeted directly at the end-users, 2.) business markets or B2B, i.e., those targeted at organizations. The findings indicate that for B2C services that are owned by the content providers, revenue sharing with mobile operators was the most common revenue stream. For B2B services in which content providers typically function as a 'contractor', the common type of revenue stream is direct payment from the MNO to the content provider. In terms of cost structures, much of the costs of providing the service, operation and maintenance are borne by the content providers. However, content providers did not generally incur any costs for MNO-led services. The content providers also relied on a number of key resources to perform critical value activities, particularly product development/marketing. Much of the resources/activities are acquired through partnerships.

The analysis indicates that innovations by content providers occurred mainly in the value proposition. Other business model components innovated upon by majority of the content providers are revenue model, activities, and partnership. Three of the Content Providers (i.e., cases 5, 9, 10) fall under BM Adjustment, another four (cases 4, 7, 12, 13) are examples of BM Adoption, three cases (1, 3, 11) are categorized as BM Redesign, while Cases 2 and 8 represent BM Discovery.

Table 38: Typology of BMI forms among Content Providers in SSA

Degree of Novelty (Radicality)	Scope (Complexity)		
		<i>Modular BMI</i>	<i>Architectural BMI</i>
	<i>Incremental BMI</i>	BM Adjustment Cases 5, 9, 10	BM Adoption Cases 4, 7, 12, 13
	<i>Radical BMI</i>	BM Discovery Cases 2, 8	BM Redesign Cases 1, 3, 11

The most radical form of business model innovation occurred predominantly among companies that created ‘blue oceans’, i.e., exploring radical product innovations to serve new markets, based on partly new and existing competencies, and dynamic capabilities to pre-empt environmental changes. Unlike the mobile operators, there were examples of all four forms of business model innovation among content providers.

6.5 Chapter Summary and implications

In this section, the forms of business model innovation observed among the firms in this study are presented, based on the complexity and innovativeness of business model changes (Taran et al., 2015; Henderson & Clark, 1990). Drawing from the scope vs novelty dimensions in Foss & Saebi (2017), a typology for business model innovation forms was highlighted, which include four types of innovation characterized by: (i) low radicality and low complexity, referred to as “BM Adjustment”, (ii) low radicality and high complexity, known as “BM Adoption”, (iii) high radicality and low complexity, referred to as “BM Discovery”, and (iv) high radicality and high complexity, referred to as “BM redesign”.

Among mobile operators, the predominant form of innovation is “BM Adoption”, while there was no example of “BM redesign”. Thus, mobile operators tend to favour “more of the same” innovations that keep them largely on the same line of offerings, aimed at the same target customers, based on the same, or largely similar technologies. They focus on mainly incremental improvements across multiple BM components, i.e., “BM Adoption”, in order to serve existing customers better.

For the TowerCos, the differences in BMI forms were further evident between pure-play vs diversified TowerCos. Pure-play TowerCos were predominantly examples of “BM Adoption” while Infracos-cum-TowerCos were in the category of the much more radical “BM Redesign” because they expanded their services to a niche market without cannibalizing their existing business model. On the other hand, pure-play Infracos were in the least radical category “BM Adjustment”.

Among content providers, there were examples of all four forms of BMI, as well as more balanced representation between incremental and radical types of BMI. Five of the content providers in this study were in the radical category (i.e., BM Redesign or BM discovery), more than any other group in this study. Moreover, the scope of changes to the components also differs greatly across the twelve content providers, with changes ranging from the most

complex (i.e., across seven components) to the simplest, (i.e., two components). The findings show many content providers varying their value creation paths from a focus on MNOs through introduction of new products and expansion into new markets and industries such as Digital TV.

The identification of BMI forms in this study provides insights that helps to enhance clarity about the nature of BMI. In this study, both radical and incremental forms of innovation were observed, and the introduction of a BMI typology helped to cater to incremental or evolutionary innovations that may not have been considered BMI in other frameworks (Comes & Berniker, 2008). Regarding the implementation of radical innovation in this study, a parallel introduction of additional business models was the most prominent approach.

Regarding scope of innovation, the typology for forms of BMI presented in this study shows that BMI can be both modular and architectural. However, it aligns with the view that BMI entails changes to at least two of the business model components, since a significant (radical) change in a single component will result in (at least) incremental changes in other components, given the intertwined nature of a firm's business model. Therefore, any simple change in only a single component, (e.g., value proposition or activities) can be described as product and process innovation. This aligns with the view of Bucherer et al (2012) that BMI can occur with, or independently from, other types of innovation.

Moreover, analysis of the scope and novelty of innovation among the actors enabled the identification of forms of BMI for inclusion. Five organizations (CONT3, CONT4, CONT12, MNO4, and INF9) deployed BMI to achieve inclusion objectives. In this study, there were four firms in the most radical category of BMI, i.e., BM redesign, two of which include firms with inclusivity objectives (CONT3 and INF9). In-depth look at their BMs indicate that these firms operate dual BMs: incorporation of traditional BMs alongside inclusive BMs in the case of CONT3 and introduction of inclusive BMs parallel to traditional BMs for INF9. Moreover, the forms of BMI among the five firms differ in terms of their interaction with the environment. Thus, the findings suggest that business models deployed by historically inclusion-focused organizations create inclusive value by being embedded in wider innovation ecosystems involving cross-sector partnerships. On the other hand, those that resemble traditional low-end market entry initiative can work without extending the value creation activities for offering complementary services. This insight helps to shed light on the variations that exist across business models for inclusion in underserved markets.

The findings also revealed insights into resource-constrained innovation from the BMI perspective. A number of cases exhibited characteristics that are commonly associated with resource-constrained innovations, especially ‘good-enough’ and frugal innovations (Zeschky et al., 2014; Sharmelly & Ray, 2021). Features of ‘good-enough innovations’ were observed particularly among mobile network operators (e.g., MNO3, MNO5, MNO6) and some content providers (CONT3) that provide offerings with basic elements and/or limitations to core features of a standard product in order to serve a segmented or niche market. Infrastructure companies (notably INF4 and INF9) and MNO2 adopted frugal innovations that are tailored for environments with poor infrastructures, and that exhibited medium-high technical and market novelty through the use of modular infrastructure options to serve new markets.

CHAPTER SEVEN

DISCUSSION OF DRIVERS OF BUSINESS MODEL INNOVATION IN SSA

7.1 Introduction to Chapter Seven

This chapter discusses the key factors influencing BMI in the SSA telecom value chain. These factors can be categorized into three, namely: the firm-level, the industry-level, and the country-level (macro) factors. The research question examined in this chapter is stated as follows:

What are the key drivers of business model innovation (BMI) among actors in the Sub-Saharan African mobile telecommunications value chain?

The chapter progresses as follows. In section 7.2, the macro-level factors are discussed followed by the firm-level factors in section 7.3. Thereafter, the industry-level drivers are discussed in section 7.4; however, under a separate heading for the three group of firms. The factors are then summarized and tabularized in section 7.5.

7.2 Macro-Level Drivers of Business Model Innovation in SSA

Macro drivers include county-level factors affecting businesses such as the political, technological, environmental, socio-economic, and legal factors (Wirtz & Daiser, 2017; Davila et al., 2013; Osterwalder & Pigneur, 2010).

7.2.1 Political and Legal Drivers

There are several political and legal factors at play in the mobile telecom industry in Ghana and Nigeria, including stability of the political environment, taxes and laws relating to consumers and competition, and institutional quality. The most important aspects are discussed in this section. However, rules and regulations to control business activity are mainly discussed under industry-level regulation.

Taxes and employment laws: Governments in Ghana and Nigeria have legislations governing employment issues and corporations, which impacts citizens' employment rights and profit of corporations. Government also levies corporation taxes (CIT) which impacts on profits and may differ according to company size. According to PWC, The CIT rate is 30% tax on profits

for large companies in Nigeria (i.e., companies with gross turnover over NGN 100 million), 20% for companies with gross turnover rates greater than NGN 25 million and less than NGN 100 million, and 0% for companies with gross turnover of NGN 25 million or less (taxsummaries.pwc.com/nigeria). The general corporate income tax rate in Ghana is 25%.

Theoretically, taxes can have significant impacts on firm innovation. Examples of corporate taxes that telecom companies in Nigeria and Ghana are subject to include contribution towards universal infrastructure funds and the taxes on VAS, each of which amounts to 1% of total revenues. Because these taxes are based on revenues, not profits, they sometimes reduce incentives for investment and entry into markets. While the challenge of taxing 1% of total revenues cut across both Nigeria and Ghana, it was mentioned mainly by participants from content providers and tower companies. A business development manager in a leading IT services company describes these requirements as an impediment to his firm's growth in the VAS business. In his words:

“Now, it's 1% of parent company's revenues that you make on all your business. It's not even after profit. If your core business is VAS, 1% of company revenue is not too much to ask. But for us, annual revenues can be up to 8 Billion Naira, out of which VAS is not even generating 1 million Naira. So, when we looked at it [i.e., airtime sales], we decided there is no need to venture into that” (INT50/PART).

Thus, a country's tax regime can hinder innovation or discourage entry into new markets. Not surprisingly, there are mostly small companies in the value-added services space in Nigeria, since the high tax requirements provide a stumbling block to the bigger non-specialized players. One way in which larger firms, i.e., those that are keen on VAS, overcome this challenge is to register small companies (subsidiaries) to focus exclusively on VAS, the same way CONT7 did.

Environmental laws: Environmental protection laws are important components associated with TowerCos in Nigeria and Ghana, with major impacts on the implementation of infrastructure development projects. TowerCos are required to meet certain health and safety requirements before obtaining clearance from environmental protection agencies (EPAs) and civil aviation agencies for the construction of towers. These agencies also monitor TowerCos for potential adverse effects on the environment and safety breaches. The TowerCos, especially the larger ones, have mapped out environmental sustainability roadmap as part of their overall corporate

strategy. These largely relates to pollution, tower height, and rules around safe distance from residential locations.

The main implication of environmental laws for the TowerCos is the delay, and sometimes inability, to get approval for tower construction. According to the Marketing Head at INF2:

“We have to apply and explain to the agencies why we need to do it this way, but you don’t always get approval. Rules like you can’t build towers near hospitals and schools, but these are the places that mostly need as good connectivity as they can get. I’m not in the medical field, but within 150 metres of hospital? In the western world, hospitals have antennas in there, DAS solutions in there”.

Similar sentiments were echoed by participants from INF1, INF8, and INF9. Factors such as environmental and safety rules were not mentioned by MNO and content provider participants.

Institutional quality: The World Bank’s worldwide governance indicators show that Ghana has a better score for quality of regulation. Nigeria was rated -0.9 (from a range of -2.5 to 2.5) for regulatory quality and 17.8 percentile rank, while Ghana was rated -0.1 with a percentile rank of 50.5. Another important element of institutional quality is the extent of rule of law in the country. Ghana also rated better than Nigeria in the World Bank’s rule of law index, with 0.0 (on a scale of -2.5 to 2.5) and percentile rank 55.3. In comparison, Nigeria was rated -0.9 and 18.8 respectively.

Institutional quality affects perception of fair or unfair treatment in firm interactions with government. Participants in this study mentioned the discrepant effects of formal business regulations on firm activities in Nigeria and Ghana, especially the perceived differences in treatment of domestic vs foreign-owned organizations. For example, MNO5 is the dominant mobile operator in Nigeria and one of Africa’s largest telecom companies. A respondent from the company complained about the ‘harsh treatment’ the company receives in the hands of regulators, as they regularly incur fines more than competitors. Another participant from MNO5 commented, *“it looks like we are always under attack from government agencies. I don’t know if the reason is because we are an international company or our market size. I think it’s a combination of the two”* (INT11/MNO). In the example cited above, MNO5 did not perceive regulator’s fairness, and so did not trust all the actions of the regulator.

The influence of institutional quality was also prominent among content providers. An institutional feature mentioned by content providers relates to the perceived rent seeking nature of political actors and the importance of institutional power play in achieving objectives. Two participants in Nigeria and Ghana highlighted that regulatory changes are sometimes driven by political motivations, such as the need to enhance popularity of the ruling government as the next election cycle approaches. According to the interviewees, regulators introduce such policies and guidelines without consulting with the industry actors. Another dimension is about the importance of political capital in achieving objectives. For example, agents in the Nigerian VAS industry are leveraging their networks in the Federal House of Representatives to put pressure on the regulator regarding the unfavourable business climates of the content providers. Industry players devise effective ways to push through their agenda, including whooping up sentiments about what they consider “the unfair domination of foreign players to the detriment of home-grown firms”.

Openness is considered an important element that promotes trust and determines firm’s responses to new policy (Islam & Montenegro, 2002). In this study, one participant reflected on a lack of openness in the government’s decision to introduce the VAS aggregator policy. According to the participant, who is one of the leading actors in the umbrella association for VAS providers in Nigeria, some agents in the regulatory body are less concerned with enhancing the environment for VAS and more concerned with political redistribution of benefits as, in his words, “*the regulator cannot be a doctor and a patient at the same time*”. His views reflect the fears of participants who stated that the aggregator policy would not resolve the problems confronting the VAS industry.

International codes of conduct: These relate to rules made by government that affect the operations and conduct of firms (American and British multinationals in this study) in Nigeria and Ghana. These rules prohibit the giving and receiving of bribes, and limits interaction with firms associated with corrupt practices. Although these rules could apply to any type of firm, only TowerCo participants mentioned international codes of conduct as influencing their conduct, especially as TowerCos in Nigeria and Ghana frequently interact with communities and multiple agencies of government. Thus, local interactions by multinational TowerCos (particularly INF1, INF2, and INF3) were governed through relational mechanisms administered by the parent organizations or enacted by international codes of practice. The Head of Marketing in INF2 made this statement:

“Although we are here in Ghana, we operate under strict US laws such as the Foreign Corrupt Practices Act (FCPA). Our parent organization ensures compliance with these rules” – (INT23/TOW).

These mechanisms contributed to the MNEs’ vulnerable positioning in terms of their institutional relationships and hampered their ability to get prompt permissions to build sites and perform maintenance activities.

7.2.2 Social and Economic Drivers

Customer demographics: Customer demographics include factors such as income distribution, sex, religious affiliation, and education level of the population, which influence the level of accessibility/exclusion of customers from services. The factors affect the behaviour of firms in the SSA telecom industry, particularly content providers.

Income level of customers was the most cited socio-economic factor among participants in this study. Lessons from the literature emphasize that the challenge of serving low-income markets requires designing specifically tailored business models for delivering services that are affordable (Muthuri et al., 2020). The challenge of serving low-income customers was high, especially in Nigeria, where about 50% of the population lives in extreme poverty, according to the World Bank. A senior manager in MNO5 shed light on this problem: *“for different reasons such as illiteracy level and income level, emerging market is more delicate in terms of lifecycle management. Sometimes, when we charge for services, the customers start experiencing bell shock and say things like < ‘I’m being charged for this thing, I don’t know how to get out’>” (INT11/MNO).*

The low-income levels of consumers in the study contexts propelled firms to introduce innovations that provide needed services or make it easier for customers to access existing services. Findings from questionnaire are consistent with this view, as both MNOs and content providers stated their emphasis on affordability of offerings. Hence, airtime sharing is a popular innovation in Ghana and Nigeria that is based on SMS or USSD and allows users to send or receive airtime from friends and family. Similarly, firms incorporated flexible billing mechanisms to promote accessibility. As one of the respondents stated:

“We implement a lot of billing strategies that makes sure these guys are not left out. So, first we try and do things in small bits right, like if I ask you to pay a N100 per week or 100 Naira a month; I might allow you pay N5 every two days or N5 every three days” (INT2/MNO)

The education level of customers is another widely mentioned socio-economic factor influencing BMI, especially among content providers. Fieldwork observation shows that service providers that are specifically targeting less educated customers must innovate in terms of their value proposition and customer relationships, to effectively deliver some of their services. This was observed particularly among non-telco content providers that are part of the mobile ecosystem but not a direct VAS licensee. Firms in this category include CONT3, CONT4, CONT6 and CONT12. A communications manager from CONT3 stated:

“When we started our information was English only, but having seen the illiteracy problem, we thought about how we could get our messages to the people, that was why we started doing the Call Centre. It covers about 14 local languages in Ghana, and then that’s why we also added the voice SMS, which can go in local languages” (INT39/PART).

The customer churn rate on CONT3’s services was high. Introducing the call centre helped to address the illiteracy problem and reduce the churn rate. Even with that, the company often goes out to train the users on what buttons to press, and what to do when messages appear. This customization and training are some of the ways service providers increase customer satisfaction and ultimately the loyalty of customers.

Three other demographic factors are prominent drivers of innovation, especially among content providers. These factors are marital status of users, their religious affinity and sex. For services targeted at married women, such as the maternal health service of CONT4, a lot of these women, even though they have phones, their phones are kept with their husbands. Hence, service providers consider these realities in the design and execution of services. These challenges also impact on adoption of services, as advertisements are sometimes not impactful. For example, CONT11, needed partner’s field agents in rural areas to sell the idea of a special account that provides a safe and fast means to save or transfer money without opening a full bank account.

These aforementioned factors suggest that many innovations by content providers and MNOs are based on need, i.e., latent demand for services based on lack of adequate alternative

services. For instance, CONT11 introduced a product aimed at financial inclusion of low-income customers. According to the company's Head of Software:

“What happens is that it came because of a particular problem in opening customer accounts. Most of them [subscribers] don't have the means to visit a bank branch. The target is rural areas. Most of them also cannot be able to afford smart phones. So, they are limited by technology and by reach. So, we created the service to be usable on USSD channels, which allows you to use whatever phone you have” (INT51/PART).

Another participant explains how market need propelled the commercial success of airtime loan, a service that allows users to access airtime before payment has been made.

“When one of our partners came with airtime loan, although initially people were sceptical, but we went ahead, and we tried to push it. Eventually, it became a darling of everyone in the company and became a game changer in the market because it was utility-based, a thing of need” (INT4/MNO)

TowerCos are also influenced by the level of development in a particular location. In areas with very low population density, TowerCos have little incentive to build towers, as they typically find it difficult to find commercial value in those areas. However, such locations may still require telecom towers, depending on the extent of development and industrial ventures at the locations. For instance, INF3 owns and maintains sites in a village, where some of the biggest Oil & Gas companies in Nigeria exist. The TowerCo has multiple tenancies on these sites. Thus, it's not necessarily about the urban nature of a location but also about the customer targets and requirements.

Cultural norms and beliefs: The prevailing cultural norms in the country largely influenced the conduct of firms in this study, particularly content providers and tower companies. One of these is the traditional hierarchies in local communities and the cultural expectations to 'satisfy' the traditional chiefs in such communities. This was a driver for services that are targeted at rural areas and require the firm to do trainings, conduct customer profiling, or deliver face-to-face advertisements. This type of cultural norm is one of the reasons why international companies and NGOs (e.g., CGAIR and USAID) enter partnership with home-grown content providers, e.g., CONT3 in this study.

Availability of grid electricity: In Nigeria and Ghana, power availability is an important consideration in the TowerCo industry, as a substantial number of towers are in areas with no connection to grid electricity. Due to the poor quality and coverage of grid electricity, TowerCos' ability to guarantee more than 99% uptime is an important customer value proposition. According to the Head of Operations in INF6: *"the MNOs' SLAs are rigid. They want a 99.99% uptime, and you know how difficult that is in Nigeria. There is no way you won't have your sites down"* (INT28/TOW). Similarly, another participant from Ghanaian-based INF7 said this statement *"power is the wildcard. If you can deliver power efficiently, it's everything. Power is by far the key to the uptake"* (INT29/TOW). Delivering the TowerCo value proposition using generators and other energy sources is therefore a major cost driver for TowerCos in this study. The poor grid electricity in Nigeria was also what led MNO5 to partner with a solar provider to create a new 'mobile electricity' solution which allows families and businesses in Nigeria to enjoy solar electricity by subscribing through their sim. Availability of grid electricity was not mentioned as major driver among content providers.

Access to finance: Accessing funding is a major challenge that impacts on growth of firms in this industry, especially the smaller sized ones, which typically do not have the ability to raise funds in the international capital markets. The findings show that such firms that are otherwise innovative run out of funding to fund their growth. This was particularly the situation with content providers and smaller-sized TowerCos and Infracos. For example, INF9 is an ambitious company operating across multiple segments of the telecom market in Ghana. As a small-sized organization, it depends mostly on internally generated resources to fund its growth. The Technical Manager in the INF9 highlighted the impact of resource constraints on the company:

"If we have 5 R&D products that we have developed and we want to take to market, we normally would have wished that we can take all five to the market, but because of limited resources, we are always compelled to take just one. And sometimes, we have to even scale down that one. So, it hampers our operations. We have the technology, we have the products, but we don't have the funding to expand" (INT32/TOW)

Therefore, because only macro-towers cover a wide range at once, INF9 and other firms deploying non-traditional network facilities often cannot cover more than a handful of communities due to the capital-intensive nature of such projects. Firms focusing on inclusion objectives, such as CONT4, CONT6, and CONT12, faced similar challenges and were

particularly constrained by a lack of inadequate resources to fund their expansion. A digital health expert in CONT4 made the comment below:

“The aim of mobile health projects is to scale nationally; the only way this can happen is if you are able to find another donor who is willing to fund that project, or you are able to transition that project to government. What the government demanded from us was that for them to take over the project, we had to demonstrate the program across a whole local government. Unfortunately, we did not have the funding to be able to meet the government’s demands” – (INT40/PART)

The lack of access to credit for SMEs, and by extension content providers, is one important factor affecting the growth of VAS providers in Nigeria and Ghana. Most of the content providers in this study mentioned the difficulty to access loans due to the high cost of accessing funds and stringent conditions set by Banks in Nigeria and Ghana. This stringent conditions by financial institutions are due to the high-risk tendencies of doing business with the content providers, most of which are SMEs and one-man businesses. The high interest rates further undermine the chances of SMEs to gain access to finance. Bloomberg reports Ghana’s interest rate at a steady 14.5% in 2020 while the Central Bank of Nigeria’s interest-rate was cut from 13% to 11.5% on concerns of a looming recession in the face of the COVID-19 crisis.

Cost of resources: The economies of balancing costs with return-on-investment influences mobile operators and tower companies in Ghana and Nigeria in several ways. For example, while inadequacy of needed resources was prominent among content providers, MNOs and TowerCos mentioned the inexorable cost of technology as a major determinant of their operations. A look at the questionnaire responses shows TowerCos with the highest number of selections (45.5%) mentioning high cost of resources as a challenge encountered by their organization. A Deputy Director in NCC highlighted how the lack of local technologies capabilities in the country affects innovation by MNOs.

“The telcos are crying out for funding. Part of the problem is that in Nigeria, we don’t have the manufacturing ability, so they need to go and buy the equipment they need. In their purchasing, they have to show intent, make some commitment before these things can be manufactured, and then it takes some review time. So, it’s impacting on roll-out of networks” (INT57/REG)

Rural vs Urban Differences: In Nigeria and Ghana, the level of incentives to deploy a particular technology differs considerably between rural and urban areas. These differences influence the

choice between macro-towers or modular ones, between 3G or 4G towers, between satellite or microwave backhaul, and between diesel or renewable energy technologies. For example, many towers are currently connected to non-reliable electricity from national grid or are completely dependent on diesel-powered generators. This translates to a high potential to convert off-grid and bad-grid sites to renewable energy, combined with the use of batteries, to reduce costs and the amount of CO₂ emissions from generators.

Thus, findings from fieldwork indicate that rural connectivity is driven largely by innovation. In areas with difficult topographical features, TowerCos typically use non-traditional network technologies and infrastructure like satellite backhaul or rooftop towers to extend coverage. For example, INF4 and INF9 used a satellite network design to bypass terrestrial network limitations and expand wireless network optimized to deliver service with a capacity suitable for low-population areas where terrestrial capacity is costly or not suitable. Leveraging this network technology, INF9 developed a mobile telephony infrastructure for rural areas in Ghana.

It was common for mobile operators to co-locate or share infrastructure in areas with less potential users and places with difficult topographical features. In Ghana, for example, mobile operators tend to engage more in co-location in the Northern part as a cost cutting measure, because distances between towns in the northern part of Ghana are usually far and the population in some of these towns are not much. An industry commentator stated: *“If you go to the Northern side [of Ghana], you’ll see more but if you come Southern, you’ll see more of singular telco towers. So, it’s going on more in the Northern part of the company than the South”*. Therefore, the MNOs prefer to attach antennas to a single tower owned by Towercos rather than having to build towers in such locations.

Theft and vandalization: Threat of vandalization was a prominent factor mentioned by participants from TowerCos. This problem is worsened by the weak implementation of legal regimes in place to deter theft and vandalism. TowerCo assets that are most in danger of theft or destruction include batteries, buildings, and diesel.

7.2.3 Technology Drivers

The main technological factors affecting firms in the telecom industry include level of technological change e.g., relating to the evolution of wireless technologies, technological access, and level of innovation (de Reuver et al., 2015; Bouwman et al., 2008). Questionnaire

questions asking respondents ‘why they made changes to their offerings and markets’ confirm that while MNOs are interested in the market share and revenues, Partners are driven more by the need to create value, hence their focus on latest technology trends

Evolution of wireless technologies: The main technological factor influencing MNOs, towercos, and content providers relates to the evolution of wireless technologies. With regards to the mobile operators, the issuance of new wireless generation licenses to MNOs in Nigeria and Ghana led to operators’ investment in 3G or 4G networks, as well as upgrade of mobile backhaul systems to enhance mobile internet access and improve service experience for users. In Nigeria, the NCC licensed the 2.6GHz spectrum frequency and issued successful bidders ten (10) year National Spectrum Licenses (www.NCC.gov.ng). The Commission released the Spectrum on a technology neutral basis, to fast track the deployment of any telecommunications and broadband services. Similarly, in Ghana, where a leading mobile operator (*not part of this study*) had been the sole MNO with a 4G spectrum slot, the NCA took steps in 2018 to ensure that all the MNOs were in the 4G space with the sale of the remaining spectrum slot, according to a Ghanaian website (www.myjoyonline.com). For example, MNO4 acquired its own block of 4G spectrum in the 800MHz band (www.commsupdate.com). The issuance of the 4G licenses ensured that more mobile subscribers in Ghana could be served with broadband services.

On the TowerCo side, demand for new 4G-capable towers grew in Nigeria and Ghana. Thus, a few TowerCos, notably INF2, INF3, and INF8 invested in new build-to-suit (BTS) towers to support MNOs’ requirements in the two countries. This growth in the number of towers not only expanded network coverage for the mobile operators, but the addition of 4G towers added network capacity for the MNOs, thereby improving the speed and quality of services to customers. This network densification was mainly in the urban areas.

The content providers’ imperative to innovate is also largely driven by technology factors. In the past, VAS was based primarily on SMS, MMS, and other messaging services that use wireless application protocol (WAP) wireless data bearer technologies. With the mobile operators continuing to roll out 3G and 4G networks, WAP services that function on older phones are now largely obsolete and the VAS market continues to upgrade their existing services to new generation technologies. Thus, technological evolution has consequently brought about a substantial improvement in the quality of VAS offerings in Ghana and Nigeria.

Technological adoption and access: The unique mobile internet subscriber rates in Nigeria and Ghana were around 35% and 40% respectively in 2019, according to GSMA. Similarly,

smartphone penetration in Nigeria and Ghana was about 10-15% in 2015, but currently stands at about 30%. With growing subscription in both countries, the barriers to entry for data services have continued to fall and there has been an emerging shift towards mobile data. This was emphasized by majority of the interviewees who highlighted their company's focus on data services. One of the firms, MNO2, is a 4G/LTE mobile broadband network that is leveraging on the growth of high-speed network technologies to offer broadband-only services delivered via smartphones.

The evolution of wireless technologies has not only led to a shift in customer preferences from feature phones to smartphones, but from basic SMS and MMS to multimedia services. Nevertheless, although demand for data-related services is growing with advances in technology, USSD still remains a popular channel for service delivery in Ghana and Nigeria, as smartphone penetration is still relatively low at around 30%. For example, one of the MNOs partnered with a content provider to provide Map services on USSD which works on feature phones. Furthermore, due to low smartphone penetration, the adoption of mobile and internet banking solutions is still very low, especially in Nigeria. On the other hand, mobile operators and Banks in Nigeria focus on USSD, which is simple and allows the users to check balances and transfer money using a simple code. Among TowerCos, the growing penetration of 4G among end users and demand for broadband services create new opportunities for new build-to-suit towers.

Influence of emerging technologies: new technologies such as mobile money, payment systems, and billing technologies affect the operations of the industry and the market. In Ghana, mobile money has grown as a viable means to conveniently transfer money and make payments using a mobile phone. Hence, the quality of mobile money services has become a major source of competitive advantage (or disadvantage) for mobile operators in Ghana. Mobile money is also emerging as an alternative technology to airtime billing. However, the level of innovation is still low, especially in Nigeria, where the regulatory incentives remain limited.

Another emerging innovative technology in Ghana and Nigeria is mobile banking. Mobile banking is more popular in Nigeria, as while using a wallet as the store of value has not been widely adopted, the use of mobile apps or USSD to access bank accounts has continued to rise. Furthermore, the mobile VAS industry is generally moving from a vendor focused billing strategy to a centralized platform, or service delivery platforms, which helps the MNOs to manage the user journey on a single platform from beginning to the end and reduce the

incidence of multiple billing. There were also impacts of technological innovations on the side of TowerCos. These relates mainly to emergence of renewable energy technologies or improved batteries for power infrastructure.

7.2.4 Section Summary: Macro-Level Drivers

Findings from questionnaire and interviews indicate that the most significant macro-level factors influencing business model innovation in the SSA telecom value chain are socio-economic factors, technology drivers, and institutional features such as regulatory quality. The least mentioned macro factors relate to environment laws and political instability.

Table 39: Summary of macro-level BMI drivers

			MNO	TOW	CONT
Political and Legal	Political stability	Political violence / terrorism		x	
	Taxes and employment laws	Corporate income tax			x
		Labour laws	x	x	
	Institutional quality	Openness in political decisions	x		x
		Regulatory quality	x	xx	xx
		Political actors' rent seeking behaviours	x	xx	x
	Environmental laws			xx	
International codes of conduct			x		
Social and Economic	Customer demographics and geographical characteristics	Customer profile (e.g., age, religion, income, education)	xx		xx
		Population density/urbanization	xx	xx	
	Cultural norms & beliefs		xx	x	
	Availability of grid electricity		xx		
	Access to finance		x	xx	
Theft and vandalization			xx		
Technological	Evolution of wireless technologies		xx	xx	xx
	Technological awareness & adoption		xx	x	xx
	Emerging technological innovations		xx	x	xx

Factors mentioned by participants as influencing TowerCos include the threat of political instability (especially in Nigeria), international codes of conduct, and institutional quality, especially the rent seeking behaviour of political actors and quality of regulations. Cultural beliefs and availability of grid electricity were socio-economic factors influencing TowerCo activities, as were environment-related regulations. In terms of technology, the most significant driver of innovation among the TowerCos relate to the evolution of new generation wireless technologies.

The findings show that mobile operators were significantly impacted by all factors, except certain socio-economic factors such as cultural norms and access to finance. The most significant factors were customer profile, institutional qualities, and technological factors. The table further shows that the most significant macro-level factors impacting content providers were technology factors, socio-economic factors (including customer demography and firm's access to finance), and institutional quality, especially the quality of regulations. For example, a significant observation was the effect of high corporate taxes on content providers, as it reduces incentives for investment and entry into markets.

7.3 Firm-Level Drivers of Business Model Innovation in the SSA Telecom Value Chain

This section highlights the internal factors observed during fieldwork as drivers of business model innovation. The firm's innovation strategy has been argued to determine the choice and nature of a firm's business model changes (Taran et al., 2015), since "a business model is a reflection of the firm's *realized* strategy" (Casadesus-Masanaell & Ricart, 2010, p. 205). Thus, in this section, the firms' corporate innovation strategies are taken as constant (i.e., have effect on the intensity of innovation) across all organizations; however, each firm's strategic context is discussed to understand the nature of their influence.

7.3.1 *Strategic context of innovation*

To have a detailed discussion of how firm strategic context influences business model innovation among the firms in this study, the discussion is placed under three classifications, representing the three groups of firms. The strategic context within which the innovation occurs is described based on Miles et al.'s, (1978) framework. The authors describe strategic context in terms of three strategies (i.e., prospector, defender, analyzer). Miles et al's framework specifies relationships among strategy, technology, structure, and process thereby viewing organizations as integrated wholes in dynamic interaction with their environment (p. 550). Therefore, strategic postures can be discussed in relation to the firms' proactiveness in interacting with the environment (proactive vs. reactive) (Taran et al., 2015). The analysis presented in this section entailed looking at the available interview findings about BM changes and firm conduct to search for patterns that are related to the various aspects of organizational behaviour identified in the literature (Miles et al., 1978; Taran et al., 2015). A firm's strategic context determines how the firm innovates as well as the degree of its innovativeness.

Strategic context of BMI among MNOs in SSA: A majority of the mobile operators in this study (MNO1, MNO3, MNO4, MNO5, and MNO7) can be described as ‘analyzers’, that is, they combine the ‘defender’ behaviour by aiming for efficiency and preservation of market shares in the core market in which they operate while simultaneously trying to be adaptive and exploiting new product and market opportunities (Miles et al., 1978). For example, the ‘analyzers’ made incremental changes to their value proposition and market relations, through redesigning of their existing offerings, marketing strategies, and mode of customer relations etc. On the other hand, a number of these companies also proactively brought new innovations into their industry, such as MNO1’s introduction of Airtime loan. Such proactiveness can also be seen in how MNO4 sourced innovations from cross-sector partners, through a collaboration strategy aimed at developing solutions for social objectives.

On the other hand, two cases deviate from the ‘analyzer’ strategy and can be situated closer to the ‘defender’ end of the continuum. MNO2 can be described in terms of the more proactive ‘defender’ strategy while MNO6 adopted a more reactive, ‘defender’ strategy. Although both MNO2 and MNO6 opted to retain the management of their infrastructure in-house, MNO6 had more than 25% of the market share compared to 1% for MNO2 and had towers spread across every part of the country compared to MNO2 with presence in three states of the country. Thus, when compared with the rest of its larger competitors, MNO6’s strategy is more related to the idea of ‘defender’ strategy. Moreover, the strategic objective of MNO6 was to compete on low prices. A product development manager in MNO6 stated that “*We have the cheapest data plans in the country; for us, it is actually a deliberate strategy to compete on low prices*” (INT16/MNO) This resembles the ‘defender’ strategy, in which firms focus on creating and maintaining an environment where stability can be achieved.

MNO2 was also rated as a ‘defender’ because its strategy involves a focus on a portion of the market, creating a niche, stable domain (Taran et al, 2015). According to Miles et al (1978), defenders typically produce only a limited set of products directed at a narrow segment of its potential market. Pursuing a ‘defender’ strategy is consistent with the way MNO2 describes its business strategy. The company focuses only on mobile broadband services targeted at a niche segment of the market. Miles et al. (1978) suggest that ‘defenders’ strive aggressively to prevent competitors from entering their “turf” through standard economic actions like competitive pricing or high-quality products. Thus, unlike MNO6 which mainly strives for efficiency and stability, MNO2 chooses a more innovative approach that enables it to create high-quality products for which the customers are charged a premium.

Strategic context of BMI among Content Providers in SSA: There was a balance in terms of strategy of content providers as, compared to the MNOs and TowerCos, all three strategies (prospective, defender, and analyzer) were observed among content providers. There were more companies at the extreme ends of the continuum: Five companies (CONT1, CONT7, CONT10, CONT11, and CONT13) adopted the more proactive ‘Play-To-Win’ (PTW) strategy and are therefore referred to as “prospectors”. On the other hand, three companies (CONT3, CONT4, and CONT5) operated a more reactive, ‘Play-Not-To-Lose’ (PNTL) strategy, otherwise known as “defenders”. Lastly, four other companies (i.e., CONT2, CONT8, CONT9, and CONT12) operated the “analyzer” strategy, that is, a blend of “prospector” and “analyzer” orientation.

The companies identified as “prospectors” tended to be more dynamic than other types of organizations, as will be shown later regarding the content of their innovations. Their main capability relates to finding and exploiting new product and market opportunities; thus, they operate in a wide area. CONT1 was a great example of a company that adopted the “prospective” approach, as its focus was on adaptiveness in the dynamic market. According to Taran et al (2015, p. 308), prospectors “emphasize the development of new products, technologies, and markets...They continuously experiment with responses to emerging market trends and changes”. This was exactly the approach of CONT1, as the company’s Country Director stated:

“So, what is happening with CONT1 is we have decided to approach Value Added Services not from the usual ‘we sell music, we sell health tips and so on’. We are actually going to the developers and investing in that ecosystem. If tomorrow, there is internet of things or any other mode of connection or blockchain, we connect to it. So, we basically are positioning ourselves to be an alternative to telco. So, we cannot be profitable in the short term. We are just working against the future” (INT37/PART)

The defenders (i.e., CONT3, CONT4, and CONT5) create a stable domain for themselves by focusing on an area of the total market. As observed in this study, the defenders tended to be content providers targeting low-income customers in a narrow VAS area and do not own a VAS license, but their services pass through the mobile operators. For example, CONT3 provided agricultural services via SMS and voice to smallholder farmers while CONT4 and CONT5 offered health-related services mainly via SMS. Having chosen a niche market

domain, these companies invested a great deal of resources, such as distribution channels and contact centres, to effectively deliver their services.

The cases in the “analyzer” category also proactively pushed innovations into their markets. They combine the ‘defender’ and “prospective” behaviours by aiming for efficiency in the core market in which they operate while simultaneously trying to be adaptive and exploiting new product and market opportunities (Miles et al., 1978). CONT9 and CONT12 attempts to minimize risk while maximizing profitability. For example, CONT12’s approach is geared towards regular product innovations combined with risk minimization through a patient strategy of ‘drumming up’ the importance of insurance services to consumers.

Strategic context of BMI among TowerCos in SSA: The majority of TowerCos in this study are “defenders”, in that they seek to defend their turf, and not lose existing customers. In other words, findings showed that TowerCos aim for efficiency and preservation of market shares in the core market in which they operate. Thus, these companies made incremental changes to their value proposition and market relations, through redesigning of their existing offerings, marketing strategies, and mode of customer relations etc. This was a necessary strategy to maintain customer satisfaction in the high-pressure environment in which TowerCos operate. The TowerCos in this category emphasize a focus on their unique strengths, as explained by a senior manager in INF8:

“For us, everybody is building, INF1 is building, INF3 is building, and we are also building. So, it’s like we are competing against each other in same market. So, everybody is striving to make sure they deliver quality service to the customer. So, we are not in a hurry to say that because my competitors are doing so and so...of course, it can also be a factor, but we want to focus on what we have ahead of us; we focus on our strengths and we think of other things we can also do” – (INT31/TOW)

The Executive Director of INF7 corroborated the claim that TowerCos largely took a defender approach to innovation:

“The landscape is pretty big, we are not fighting them per se, we’re just taking our own part of the pie; we are comfortable with what we’re getting” – (INT29/TOW)

On the other hand, two firms (INF4 and INF9) adopted a strategy that resembles “prospector” approach to innovation. These companies proactively brought new innovations into the

industry and seek growth and profitability across multiple segments of the market. This influences the nature and intensity of innovation brought by these companies.

7.3.2 Deliberate Decisions and Corporate Social Responsibility

This was an important influence particularly among mobile operators. Findings from interviews and questionnaire indicate that mobile operators are increasingly under much more pressure from shareholders in the face of dwindling revenues. This impacts top managers' motivation to seek new revenue generating opportunities and high-value partnerships. Therefore, all the mobile operators in this study see the VAS business as an attractive area to meet revenue targets. An industry commentator stated thus *"the MNOs are under much more pressure, they have shareholders that are more impatient, and so they always see the VAS provider as a place to cover the shortfall ...so anytime they don't meet their revenues, they go back there and squeeze the revenue share"*. Thus, it was common to see mobile operators, including MNO1, MNO5, and MNO6, maintaining partnerships with hundreds of content providers at the same time, since it is low-cost to the mobile operators. Another factor relates to firm's deliberate decisions, for example, MNO6, as well as its subsidiary in Ghana (not part of this study), are the only major mobile operators that still manage their own infrastructure end-to-end, as a policy decision.

Social responsibility was observed as a common factor among MNOs and TowerCos. For example, in Ghana, INF5 contributes to local welfare and education needs of communities by developing local ICT talents, while INF2 has a "beekeeping initiative", which provides training and safety kits to beekeepers to prevent the invasion of bees at its tower sites. The beekeepers are also able to harvest honey for distribution in their communities. This helps INF2 to keep tower sites safe and provides a source of income for local communities. In Nigeria, INF3 is partnering with local companies and communities. A marketing manager in INF3 made the following statement *"we localize ourselves in the local communities; whatever dues they pay, we also pay just to identify with them, and we contribute to the communities"*. Specifically, the company (i.e., INF3) is using its communications infrastructure in an innovative way to build "digital villages", which brings broadband connectivity to communities by leveraging on partnerships with organizations and governments.

One of the main drivers of CSR initiatives by tower companies is the need to build local legitimacy and give communities a sense of ownership of assets. This strategy ultimately helps to enhance security of sites as, in the words of another participant in INF3, *"our sites are so*

secure in some communities because of communal efforts". Overall, social responsibility was observed as a big deal mainly among the multinational TowerCos. Among the mobile operators, all but one of the MNOs mentioned the existence of CSR activities as part of their overall strategy. This MNO is a niche mobile operator formerly owned by the government of Nigeria. Factors relating to company's corporate responsibility were not commonly mentioned by the content providers in this study

7.3.3 Founding purpose (Altruistic considerations)

In the previous section, it was mentioned how CSR activities were not a major factor among content providers. However, it was interesting to observe how altruistic considerations influenced the nature and type of innovation for a small number of the content providers. This relates mostly to the founding purpose of the firm. A few content providers, particularly those without a VAS license, have been using the mobile channel to reach underserved populations, such as those in rural areas where illiteracy is high. CONT6 and CONT12 started as NGO before becoming for-profit businesses; this history continues to influence the firms' nature of services and type of customers served. For example, CONT12 prides itself as the first company in the Ghanaian microinsurance space to introduce maternity cover to its chunk of offerings. The regional manager in CONT12 explained as follows:

"Our core orientation in this industry hasn't only been financial, if you do know, we started off as an NGO; it has been the mentality for us, we have an insurance orientation to the mass-market because we want to make sure that the things that would ordinarily have troubled them are taken care of" (INT52/PART).

In general, content providers in this category typically target low-income users, while they deploy innovative approaches and partnerships that enable them to offer products at subsidized prices. Another firm, CONT3, did not start as an NGO. Rather, the company is a social business that combines a vision of social welfare with economic motive. The firm relies on cross-sector partnerships that enable it to offer its core service i.e., pushing market prices out to smallholder farmers via SMS alerts, while ensuring sustainability by targeting big organizations and agribusinesses with B2B services. Such large organizations are mainly in the social and government sectors. CONT3's basic aim is to improve value chain management for stakeholders in the agricultural sector and increase the livelihood of farmers across ten African countries. On the other hand, CONT4 is an international NGO that focuses on reproductive health in several continents of the world, serving low-income populations.

7.3.4 Firm-level characteristics and internal technological environment

Firm-level characteristics, such as size and ownership structure, were observed as closely associated with ability of firms to invest in technologies or access funding needed for growth. As discussed in section 7.2.2, larger actors in the Ghanaian and Nigerian telecom industries enjoy better access to external finance. As such, there appears to be a correlation between innovation and firm size/age in the SSA telecom industry. This is not surprising because development of new products in this industry involves high levels of investment and fixed costs. MNO2, for instance, was able to enter the Nigerian telecom industry the way it did partly because it inherited technology assets from its much larger predecessor company. The Head of Digital Media in MNO1 explains her company's resource advantages.

“The irony is that my costs are fixed. The same integration effort to a certain extent is used for a small player and also for a player who appeals to 2 million people. I already have sunk that cost upfront” (INT1/MNO)

Unlike the MNOs and TowerCos, majority of the content providers are micro and small enterprises (MSEs) that have limited resources compared to the bigger actors. This reality influences the pace of innovation in the VAS space. For instance, interactive voice response (IVR) is not a popular service among content providers because of the expensive nature of the IVR infrastructure. Others that have delved into such services have had to partner with service providers that have the IVR facilities, further introducing a third-party player into the revenue sharing arrangement with the mobile operators. The VAS Operations Manager in CONT2 stated as follows:

“We do not have IVR services. Actually, I can say if we have 100 VAS providers in Nigeria, I don't think 10 has the equipment or facility to provide IVR services. When you don't have the facility, there is nothing you can do” (INT38/PART)

Findings indicate that companies that had technological know-how, notably CONT1 and CONT11, were more able to rapidly bring new innovations to a partnership and to market. The VP Service Delivery in CONT11 is quoted below:

“We know what service means, for you to work here, you must do ITIL. You must know about IT processing. So the issue [poor turnaround] is not from me, it's from the partners....another thing is assuming we are involved in revenue share and I know that the more subscribers we

have on this platform the more money we get... if that's the case we have creative guys in our innovation hub, we can say to the telco, this is another way to do things" (INT49/PART)

Such innovative firms are also better able to deploy technologies in new ways, for example to broaden their footprints or services through diversification or alteration of revenue model. The analysis from this study points to the prevalence of this factor among mostly content providers and TowerCos. In the TowerCo space, INF2 innovated by deploying its telemetric facilities to new uses, i.e., giving customers access to real live tracking of their facilities. As at the time of this study, CONT11 was test running an innovation that will allow the firm to use its special multi-firm service, called 'Bronze Purple Account' (not real name) for transactions by using a BPA card instead of visa card. The quote below is from a Business Development Manager in the firm stated:

"If you have a BPA account, you can usually use your card. What that means is that if you go to an e-commerce site...you can actually say you want to use your BPA card" (INT50/PART).

Lack of technical capacity in vendor specialties is another observed BMI driver, especially among MNOs. It was observed that mobile operators in Nigeria and Ghana tended to outsource management of their access network to companies that originally sold the network equipment to them. Mobile operators do not make network devices such as switches; hence, they prefer to strike a managed service agreement with the vendors (e.g., INF5 and INF12) because of the vendors' in-depth knowledge and capacity, which the MNOs lack. These findings are in line with Heikkilä & Cordon (2002), who highlight that a firm's lack of know-how is related to the difficulty in developing relevant competencies in-house. Another participant explained the challenge of resources in the management of access networks:

"Resources are a major challenge especially because of frequent disruptions in the industry. Few resources are experts in 2G, fewer resources are experts in 3G, and much few resources are experts in 4G...resource in some vendor specialty is quite scarce". (INT36/TOW)

The shortage of skilled human resources in certain vendor specialities explains why, in Nigeria and Ghana, companies like INF5 and INF12 rely on foreign expatriates (mostly Indians and Chinese) to cater to shortage of skilled personnel.

7.3.5 Section Summary: Firm-Level Drivers

The firm-level factors observed among the firms in this study can be classified into two types: (i) company strategy / teleological factors (including strategic context, founding purpose, CSR, and shareholder pressures), and (ii) firm-level characteristics/internal technological environment. The strategic orientation of each organization had a major influence on business model innovation across all three types of organizations, since, as Casadesus-Masanell & Ricart (2010) puts it “business models are reflections of the realized strategy” (p. 204), with significant implications for innovation. Inadequacy of resources was also mentioned across all firm categories, but this was most prominent among content providers. On the other hand, firm’s altruistic considerations were the least commonly mentioned, as this was observed only among content providers.

Table 40: Summary of firm-level drivers in the SSA telecom value chain

				MNO	TOW	CONT	
Firm-level factors	Company strategy and teleological factors	Shareholder pressures		xx	x		
		Social responsibility		x	xx		
		Altruistic considerations	Founding purpose				x
		Strategic context	Reactiveness vs proactiveness		xx	xx	xx
	Firm-level characteristics and internal technological environment	Firm-level characteristics (size, ownership structure)			x	x	xx
		Technical expertise	Discovery of new ways to utilize resources / assets		x	x	x
			Lack of technical know-how		x	x	x

Among the three groups of firms in this study, the strategic context is taken as a constant, that is, in terms of their implications for the choice of business model and nature of innovation in the firms. Mobile operators in this study largely adopted the “analyzer” strategic orientation, as innovations by these firms aimed for efficiency and preservation of market shares in the core market in which they operate while simultaneously trying to be adaptive and exploiting new product and market opportunities. TowerCos were mostly in the “defender” end of the continuum, protecting their own turf; hence, there were largely incremental changes by TowerCos across multiple business model components. Content Providers, on the other hand, were mainly prospectors, although three firms serving niche markets were classified as

“defender”. This highly prospective nature made content providers the most innovative group of firms in this study (see RQ1 for more in-depth discussion of forms of innovation).

Majority of mobile operators in this study are subsidiaries of publicly listed multinational enterprises, which provide better access to finance to fund capital projects. TowerCos were like MNOs in this regard as they were able to secure finance in public markets. Corporate social responsibility was also commonly mentioned by MNOs and particularly TowerCos, as they seek to achieve legitimacy in the communities in which they operate. Technical expertise was observed as a common innovation driver among TowerCos and MNOs, influencing decisions to outsource important value creation activities to third-party actors. Among content providers, the most observable driver is their small-sized nature, which impacts their ability to access finance and determines the company’s position in the value chain and ability to negotiate favorable deals with mobile operators. It was also interesting to observe how altruistic considerations influenced the nature and type of innovation for a small number of the content providers that aims to leverage the power of mobile technologies to reach underserved markets.

7.4 Industry-Level Drivers of Business Model Innovation in SSA

The industry-level factors influencing BMI refers to the environmental factors that are external to the firm, but resident at the industry level, i.e., micro-external factors. Six factors are discussed and analysed in this section: (i) industry rivalry, (ii) availability of substitutes, (iii) threat of new entrants, (iv) bargaining power/influence of suppliers, (v) bargaining power/influence of customers, and (vi) industry-level regulation.

7.4.1 TowerCos’ Industry-level Drivers

Competitive rivalry: The industry in Ghana and Nigeria is characterized by the presence of a small number of TowerCos. In Nigeria, the industry consists of three multinational TowerCos (including one global firm) and a few smaller home-grown firms. In terms of size of market, the Ghanaian and Nigerian tower industries are characterized by dominance of a single firm, with ATC (70%) and IHS (65%) respectively dominating the market share of TowerCo-owned towers, according to info obtained from (www.towerxchange.com). The Head of Operations in INF6 confirmed the existence of a dominant player in Nigeria: “*it is a challenge to us; there is no place you go that you will not find their site. How will customers want to leave that site and come to you*” – (INT28/TOW). The Ghanaian tower industry, on the other hand, was more

evenly balanced among three competitors before the acquisition of the second biggest player by the dominant firm, about twelve (12) months after the conclusion of this study’s fieldwork.

Table 41: TowerCos' Industry-level drivers

	Industry-level factors		Y/N
	Industry-level factors	Established competition	Market structure
market saturation			N
Competitive imitation			N
New entrants		Threat from new entrants	N
Substitutes		Availability of substitutes	N
Bargaining power of customers		Customer pressures / preferences	YY
Bargaining power of suppliers		Pressure from partners / suppliers	Y
Industry-level regulation		Multiple licensing/permission	YY
		Mobile network portability	N
		Regulatory bureaucracy	YY
		Universal access regulations	N
		Consumer protection	N
		VAS licensing framework	N
		Mast & tower guidelines	YY
		Inter-agency factors (e.g., inconsistent regulation, multiple levels of taxation)	YY
		National infrastructure policy (broadband, right-of-way etc)	Y
“YY” = confirmed by majority of interviewees, “Y” = confirmed by minority of interviewees, “N” = not mentioned			

These factors, coupled with the oligopolistic nature of markets and homogeneity of offerings, often resulted in price competition and strategies to remove competitors from the market through acquisition. While questionnaire and interviews confirmed the influence of existing rivalry on TowerCo conduct, it was observed from interviews that the market dynamics of price competition was more common in Nigeria. In Nigeria, two TowerCos emphasized how the dominant firm deliberately lowers its prices as a market strategy, by relying on its size and scale economies to absorb costs and assume price leadership. For example, the regional manager in INF3 explained this market dynamics: *“we learnt that they (IHS) dropped their cost of energy charges. So, every operator will always want to go with lower prices. Before we knew it, even Airtel that was our anchor tenant left and went with IHS. We had to renegotiate with Airtel”*. Lowering prices was an effective strategy for IHS to keep its customers whenever it lagged competitors in terms of quality of service and uptime. In response, less dominant MNEs and smaller TowerCos are sometimes forced to lower their prices, but they typically sought to adjust by focusing on unique strengths and capabilities.

Table 42: TowerCo owned towers in Ghana and Nigeria

	Tower Companies	Estimated number of TowerCo owned towers	Estimated market share of TowerCo owned towers (%)
NIGERIA	IHS Towers	16,481	65.28
	American Tower Corporation (ATC)	5442	21.55
	Pan-African Towers	1300	5.14
	BCTek	900	3.57
	Communication Towers Nigeria	500	1.98
	Africa Mobile Networks	322	1.27
	Estimated count of other smaller towercos	300	1.19
	Total Count	25245	100
GHANA	ATC	3928	70.03
	Helios	970	17.29
	Pan African Towers	300	5.34
	African Towers	209	3.73
	Estimated count of other smaller towercos	200	3.57
	Total Count	5609	100

Source: Data from individual tower company websites and TowerXchange (2020)

The competitive dynamics in the two countries have also led to the growth of the build-to-suit model, and thus, more network coverage, as the build-to-suit model has become the most feasible path to growth because most of the investible MNO towers has already been acquired. For example, as stated earlier and from the table above, IHS is the dominant firm in Nigeria. One participant from a middle range rival stated regarding IHS: “*They [i.e., IHS] are almost everywhere. I mentioned that we have an overview of all towers in Nigeria. So, the only thing we are trying to do is ask ourselves: where are these people not present, where don’t they have a tower? Let’s quickly go there immediately before they go there*” – (INT24/TOW). Thus, build-to-suit model grew more common in Nigeria, as other TowerCos pre-empt IHS’ moves, using foresight to establish a first-mover advantage in new locations.

7.3.1.2. *Buyer pressures:* TowerCos’ most important relationship is with the MNOs; the most influential players within the value chain. There are few MNO customers (four in Nigeria and three in Ghana), further reflecting the high bargaining power that the MNOs have over the TowerCos. The MNOs exert pressure on TowerCos to provide improved quality, lower prices, and generally dictating terms. The highest-pressure relationships are usually with the anchor tenants – i.e., the leading, featured, customer that rents space in the towercos’ site, who continue to have attachments to the towers they previously owned. This in turn influences the pace and intensity of innovation, as TowerCos continually seek to drive the highest levels of performance across their sites and respond quickly to any issues that arise.

Moreover, mobile operators can switch between different TowerCos if the quality offered by the firms differ considerably. Prices also determine the tendency of MNOs to switch providers, especially when a rival TowerCo is competing on prices. However, prices and quality are usually not significantly different between competing TowerCos. Therefore, TowerCos endeavour to maintain high quality of service in order not to lose any customers. Another strategy the TowerCos adopt is to establish long-term relationships with the MNOs. This is achieved through lock-in strategies, i.e., tying MNOs to long term contracts, typically 10 years. This approach is reflected in TowerCos' insertion of a 'clause of first refusal' in contracts with anchor tenants. This clause implies that the MNO would not go to a competitor unless the provider TowerCo is unable to meet the customers' needs.

Pressures from supplier: It was observed that TowerCo business models require working with a third party, e.g., for power management, equipment maintenance, and construction. Thus, TowerCos' success depends on the quality of the partnering agreement with the third parties. The potential costs of switching to another TowerCo is high as there is a high number of vendors striving to secure a contract with any of the small number of TowerCos in Nigeria and Ghana. According to the Head of Operations in INF1, "*in the first place, they [i.e., the vendors] have nowhere to go. Everybody wants this contract; we have so many people on the touchlines right now trying to come in for such a contract*" – (INT20/TOW). As observed from the fieldwork, TowerCos often emphasize close relationship and aim to achieve a common vision with third-party contractors to manage potential operational risks that may arise from such relationships. This further makes it difficult for vendors to switch and creates a high entry barrier to new vendors. However, data from questionnaire presents some contrast regarding TowerCo dependencies on supplier. While TowerCo respondents did not select supplier power as shaping innovation, 40.9% of the respondents stated they were overdependent on partners. This could be due to the fact that many TowerCo value activities are performed by third-parties, which influences TowerCo's ability to satisfy customers.

Threat of substitutes and new entrants: the major threat of substitutes derives from the mobile operators themselves, since they can decide to substitute the TowerCo service by switching back to vertical integration i.e., internal management of infrastructure, whether directly or indirectly through the set-up of a captive company dedicated to infrastructure management. However, there is currently no operator captive TowerCo in Nigeria or Ghana. Moreover, this trend of infrastructure assets separation from retail telecommunication has continued to grow, not reduce, as it frees capital for MNOs and enables them to focus on servicing customers.

Similarly, the threat of new entrants into the tower sub-sector is low due to the high regulatory and competitive barriers to entry. The market is an oligopoly and is characterized by consolidations through mergers and acquisitions.

Industry-level regulation affecting TowerCos in SSA

Mast & Towers Guidelines: A common observed feature among the towercos is the passive nature or slow pace of regulation. This causes outpacing of regulation by rapid advancements in technology. For example, the NCA, NCC and environmental protection agencies have guidelines for the deployment of communication towers that must meet certain height and distance requirements. However, rules about tower location in both countries were created in an era of only 2Gs and 3Gs. With the emergence of 4G, TowerCos need to be able to densify their networks to provide the best levels of service and drive broadband penetration especially in high-density urban areas that needs to be served with latest technologies. The existence of such outdated rules often requires TowerCos to apply, sometimes unsuccessfully, for special permits from the regulator. TowerCos partially overcome this challenge by deploying rooftops and distributed antennae systems (DAS).

Infrastructure policy and rules governing accessing of land: Another driver that influences TowerCos' conduct in Ghana and Nigeria relates to infrastructure-related policies, including factors that govern accessing of land and national broadband policy. Thus, from the point of view of TowerCos, there were significant challenges relating to right-of-way and land acquisition permissions, which adds to the costs of service delivery.

Bureaucracy: This relates to inter-agency factors (including inconsistent regulation, multiple levels of taxation), slow pace of regulation, and international codes of conduct. TowerCos in Ghana and Nigeria require licenses to deploy services and build new towers, often from multiple regulatory agencies at national and local levels. This results in inconsistent application of rules among regulatory bodies and delays in obtaining permissions. A participant in INF1 explained that “for each tower you have to get all the permits, and these are all regulated by multiple authorities. There are about 5 permits you have to get before you can build a single tower”. The multiplicity of regulatory agencies not only causes delay in obtaining permissions, it also directly impacts roll-out of networks and leads to multiple at multiple levels.

7.4.2 Mobile Operators' industry-level drivers

Table 43: MNOs' Industry-level drivers

Industry-level factors		Industry-level factors	Y/N
	Established competition	Market structure	Y
		market saturation	N
		Competitive imitation	Y
	New entrants	Threat from new entrants	YY
	Substitutes	Availability of substitutes	YY
	Bargaining power of customers	Customer pressures / bargaining power	Y
	Bargaining power of suppliers	Pressure from partners / suppliers	N
	Industry-level regulation	Multiple licensing/permission	N
		Mobile network portability	YY
		Regulatory bureaucracy	YY
		Universal access regulations	Y
		Consumer protection	YY
		Competition practices regulation	YY
		VAS licensing framework	Y
Mast & tower guidelines		N	
Inter-agency factors (e.g., inconsistent regulation, multiple levels of taxation)		Y	
National infrastructure policy (broadband, right-of-way etc)	Y		
“YY” = confirmed by majority of interviewees, “Y” = confirmed by minority of interviewees, “N” = not mentioned			

Competitive Rivalry: no single or two set of operators individually or collectively held significant market power in the retail market segment in Ghana or Nigeria. There are at least four large mobile operators in Ghana and Nigeria, out of which 3 firms collectively control over 75% share of the market. However, smaller MNOs have found it difficult to compete effectively against the bigger players. As a result, the smallest actors in both markets (i.e., Nigeria and Ghana) are focusing on getting revenue from internet-based services – For MNO8 in Ghana, this means a shift in focus from network-based services to partnership-based value-added services, while MNO2 is projecting itself as a pure-play network providing broadband only services in parts of Nigeria.

Table 44: MNO market shares in Ghana and Nigeria

	Mobile Network Operators	Estimated number of subscribers (million)	Estimated market share of MNOs (%)
NIGERIA	MTN	79,035,514	39.54
	Globacom	54,594,502	27.32
	Airtel	53,425,229	26.73
	9Mobile	12,808,582	6.41
	Total Count	199,863,827	100
	MTN	23,706,102	58.39
	Vodafone	8,215,126	20.23

GHANA	AirtelTigo	7,914,511	19.49
	Globacom	758,843	1.86
	Total Count	40,594,582	100

Source: Data from NCC and NCA (2021)

Threat of new entrants: The threat of entrants is low, due to the capital-intensive nature of the industry. However, the retail market for mobile services is exposed to stiff competition from non-MNO actors. For example, another driver of the shift to data offerings relates to the heightened competition from new entrants, especially OTT players. Furthermore, for the average MNO, OTT players are the main competitors for digital services, because the services provided by mobile operators are broadly homogeneous and undifferentiated. Thus, the same set of partners in one mobile operator are usually found in others: thereby diluting the intensity of competition among the MNOs in the data services space.

Availability of substitutes: Mobile operators complained about declining voice revenues, as users increasingly adopt alternative OTT services such as WhatsApp call. Also, OTT players provide close substitutes to the MNOs' data offerings. For example, an average telco in Nigeria or Ghana is not able to compete with OTT players in rich media, as it is not the MNOs' core area of capability. According to the senior manager Media and Entertainment in MNO5:

“If we develop a music streaming service internally, we will never be able to do it to the level at which a Spotify will develop it, because it isn't our core business. I mean, there are not many of our partners who will go ahead to develop such sophisticated service like a Spotify, because it is expensive” – (INT11/MNO).

The availability of substitutes influences the conduct of mobile operators. For example, they segment their markets and develop decent but basic offerings, which are used to target low-end and bottom of the middle-class customers who are unserved by the more sophisticated OTT offerings. According to two (2) participants, the basic services that are used to target low-income customers are either owned-rich media services or white-labelled (i.e., branded third-party services).

Bargaining power of buyers: Mobile operators traditionally serve a mass market of individuals and families. The mobile operators in Ghana and Nigeria offer homogenous offerings, with identical service quality and different areas of strength. Thus, users can easily and cheaply switch between different mobile operators, depending on several factors that customers value such as price and quality. However, the lack of MNP policy in Nigeria increases customers' switching costs. In Nigeria and Ghana, the mass market is price sensitive; as such, user demand

changes when the cost of a product or service changes, as users can easily switch among network operators. Moreover, as mentioned earlier, operators' services are increasingly substitutable by OTT services, which enables customers to switch easily to substitute products.

For B2B customers, the size of their orders is usually large, which theoretically should confer a higher bargaining power on the customer. However, B2B providers, for example, content providers, buy bulk services (e.g., SMS) from a small number of MNOs, to be able to sell their (i.e., the content providers') own services. The B2B customers also typically rely on and pay for the distribution, marketing, and billing platforms of the mobile operators. This confers on most B2B customers a low bargaining power.

Bargaining power of suppliers: Although the Nigerian and Ghanaian telecom tower industry is made up of a small number of buyers (mobile operators) and an equally small number of suppliers (TowerCos), the number of buyers is large in practice, as all the MNOs have end users and require network availability across different parts of the country. Thus, the small number of TowerCos aim to have multiple mobile operators (i.e., tenancies) at each tower location, but operators can easily switch among TowerCos without significant costs, thereby conferring the operators with a moderate bargaining power. Moreover, operators can substitute the TowerCo service, by reverting to vertical integration. These findings are confirmed in questionnaire responses, as no respondent mentioned supplier power as influencing innovation among MNOs.

An interesting scenario was also observed, in which the content providers are not buyers, but suppliers to the mobile operators. This is true for services and products where the mobile operators request the supply of the content providers. There is almost no competition in the areas that MNOs request such services e.g., underserved markets, which means that the mobile operator cannot easily switch providers.

Industry-level regulation affecting mobile operators in SSA

Mobile Network Portability: Mobile network portability (MNP) is the process which allows mobile subscribers to change from one network to another without changing any part of their mobile number. MNP has been in place in Ghana and Nigeria since 2011 and 2013 respectively. However, MNP has been less successful in Nigeria than it is in Ghana where the regulator, NCA has introduced clear guidelines for its implementation. According to a Billing Integrity Manager in Ghanaian operator, MNO4:

“The customer in Ghana can easily switch to other networks because getting a SIM is so cheap. Number portability is there too, if a person doesn’t want to lose his number, he just switches” (INT10/MNO)

The absence of MNP, in addition to MNOs’ “location superiority” in certain areas of the country (*see environmental factors*) and similarity of service offerings, is one reason why most users, especially in Nigeria, will rather buy a new SIM from another service provider, instead of porting from one mobile operator to another. This is also a reason why dual-SIM phones are common in Nigeria.

Universal Access Regulations: To drive services in rural areas, encouraging market-based approach to universal service through lower licencing fees and infrastructure sharing are some of the strategies adopted by NCC and NCA. A portion of the NCC’s Licensing Framework for Unified Access Service in Nigeria 2006 states that “the Commission is developing universal access regulations in order to achieve service penetration that also includes marginalised groups and disadvantaged regions” (p. 5). Furthermore, the NCC and NCA have developed mechanisms to encourage universal service access, such as establishing a universal access fund, offering free spectrum, and designating universal access operators. An Assistant Manager in NCA, the Ghanaian telecom regulatory agency, stated as follows:

“The NCA granted UMTS (900) spectrum free of charge to enable MNOs extend service to underserved and rural areas” – (INT55/REG).

The rapid expansion of tower sharing in Ghana and Nigeria has been partly due to government’s universal service access regulations. For instance, the Ministry of Communications in Ghana introduced the Ghana Investment Fund for Electronic Communications (GIFEC) where the mobile operators contribute 1% of their revenues to fund provision of tower infrastructure in areas considered non-lucrative by the MNOs. The mobile operators then co-locate on the infrastructure provided by GIFEC, thereby extending service provision to underserved segments. The Electronic Communications Act, 2008, Act 775 of Ghana provides the legal framework for the activities of the Fund.

Competition practices regulation: In Nigeria and Ghana, mobile telecom services are very regulated. Take for instance, the Competition Practices Regulations 2007 under the Nigerian Communications Act and the National Communications Act of Ghana 2008 provide a regulatory framework to enhance fair competition and protect against anti-competitive

practices. The NCC and NCA documents also empower the regulators to deliver remedies when a dominant licensee engages in acts determined to substantially lessen competition. One of the important aspects of the competition regulation is to lay out a regulatory benchmark on the minimum price an MNO can charge for voice, data, and SMS, as confirmed by participants in this study. The regulators' objective to promote fair competition sometimes come at the expense of the customers. For example, a senior Manager in MNO5 mentioned the public outcry that arose when the NCC mandated the MNOs to sell data at 2 Naira per MB. In his words, *"tariff is one of the areas we think the regulator can do better. If I tell you that I am able to run my business at 1 Naira per MB why are you saying I must run it at 2 Naira per MB when I can potentially lose customers? The general public resisted, the House of Representatives got involved, before they [the NCC] came down on that decision"* (INT11/MNO).

Consumer protection / Quality of Service regulations: Telecom service providers in Nigeria and Ghana are governed by guidelines and codes regarding consumer protection. The consumer codes of practice regulation in Nigeria and Ghana, introduced under the Nigerian Communications Act 2007 and the Ghanaian Communications Act 2008, mandate that service providers provide for consumer protection, as part of their licence conditions. The consumer protection touches on several aspects such as consumer billing, advertisement, and representation of services. Therefore, before a customer enters a service, the service provider is required to inform the consumer of things such as: the applicable rates or charges, the frequency of the charge, and the conditions and terms of renewal of the contract. In addition, consumer protection acts include regulations that prohibit unsolicited advertisement.

License holders are also mandated to maintain a minimum quality of service standard prescribed by the NCC and NCA. The regulations set acceptable service threshold in areas such as disconnection complaint rate and resolution time, charging for services not rendered, unsolicited messages, and customer care performance indicators etc. In Nigeria, these regulations are stated under the Quality-of-Service Regulations 2013 under the Nigeria Communications Act 2003 while Ghana is governed by the Electronic Communications Act of Ghana, 2008.

Policies about VAS: In terms of value-added services, the aggregator policy is a new policy introduced by NCC, the Nigerian regulator. In this study, interviewees from three (3) of the five (5) operators in Nigeria were already anticipating the impacts of the policy on their VAS

offerings, partnerships, and ability to appropriate value from those partnerships. A manager in charge of enterprise roaming data and wholesale pricing in MNO1 explained this policy:

“Now, the government is coming up with an aggregator, which will be like an intermediary between the MNOs and the partners. They are now limiting us more to a transporter; it is going to impact our business negatively because our revenue on VAS services will go down” – (INT5/MNO).

The above reflects the challenge of balancing value creation and value capture and brings to the fore the tension loops that exist in multi-firm arrangements (Stefan et al., 2021). Moreover, there is another implication – consider that traditional services like SMS and IVR grew largely because of the absence of 3G and 4G broadband. With the growth of 4G, big players in the rich media space, mainly OTT players, are unlikely to have layers of middlemen for them to render their services to a large audience. This potentially will shrink the operators’ margin from VAS, thereby reducing the incentive for mobile operators to engage in VAS and endangering the market for VAS in Nigeria.

There were other aspects of regulation that impacted on the conduct of the mobile operators. For instance, in Ghana and Nigeria, the regulators introduced a subscription policy that aims to protect end users from opportunistic behaviours from content providers. In response, mobile operators in this study devised ways to tighten governance of partners by introducing new technologies to manage the user journey on a central platform.

Bureaucracy: It was observed that mobile money services in Ghana have picked up strongly compared to Nigeria due to minimal instances of inter-agency rivalry between the NCA and the financial services regulator. In Ghana, mobile money is led by the MNOs and that has led to wider adoption as mobile technologies provide a more effective way to reach the unbanked population, where the opportunity for mobile money resides. On the other hand, mobile money has been less successful in Nigeria partly because of restrictions from the Central Bank that limits the involvement of MNOs in mobile money. This impacts on the kinds of service that the operators can provide in Nigeria. For example, two (2) of the interviewees in Nigeria expressed that their firm have not been active in the mobile money space because the license they obtained from the Central Bank allows the MNOs to do only a limited number of mobile money transactions.

7.4.3 Content Providers' industry-level drivers

Table 45: Content Providers' industry-level drivers

Industry-level factors		Industry-level factors	Y/N
	Established competition	Market structure	N
		market saturation	YY
		Competitive imitation	Y
	New entrants	Threat from new entrants	Y
	Substitutes	Availability of substitutes	YY
	Bargaining power of customers	Customer pressures / bargaining power	N
	Bargaining power of suppliers	Pressure from partners / suppliers	YY
	Industry-level regulation	Multiple licensing/permission	Y
		Mobile network portability	N
		Regulatory bureaucracy	YY
		Universal access regulations	N
		Consumer protection	YY
		Competition practices regulation	N
		VAS licensing framework	YY
		Mast & tower guidelines	N
		Inter-agency factors (e.g., inconsistent regulation, multiple levels of taxation)	Y
		National infrastructure policy (broadband, right-of-way etc)	N
	“YY” = confirmed by majority of interviewees, “Y” = confirmed by minority of interviewees, “N” = not mentioned		

Bargaining power of suppliers: As shown from the table above, pressures from suppliers, i.e., mobile operators, has been the content providers' most important driver. The mobile operators control several activities critical to the content providers' business, including customer relationships, billing, and marketing. As such, the type of product that the content providers market on the MNOs' platform is highly dependent on the telco's own business strategy. For instance, participants from CONT7 and CONT13 mentioned during interviews that one of the mobile operators in Ghana require a certain percentage of the offerings to be data-related rather than voice or voice SMS. The control of resources by mobile operators also enhances their ability to dictate revenue sharing percentages, sometimes getting up to 80% share of the revenues. Furthermore, there are only a small number of mobile operators, but there are several hundreds of content providers licensed to provide VAS in Nigeria and Ghana. This enhances the MNOs' bargaining power, although bigger content providers with strong capabilities have a moderate bargaining power.

Competitive rivalry: The high pressure from telecom operators heightens the competition among service providers, as they all attempt to bring out the most innovative services that

cannot easily be ignored by the mobile operators. The industry is saturated with VAS products, which increases the pressure on service providers to offer unique offerings. The Chief Operations Officer in one of the content providers stated as follows:

“Initially, there were not many VAS providers in Nigeria and the MNOs network was not already saturated with a lot of product innovation. As the years have gone by, there is a sense of saturation, and that usually leads to an evolution because now we need to be able to evolve our business too. If not, you might die” – (INT45/PART)

This ‘saturation’ accentuates the need for innovation in this kind of market space; even how a firm advertises its product could make a big difference. Moreover, there are very few universal strong players in the VAS sub-sector. It was observed that some players are very strong with one mobile operator, but not the other, depending on the level of relationship with the MNOs. Thus, there is some level of favouritism which determines, for example, how much resources or marketing push a mobile operator is willing to invest in the services etc.

Threat of new entrants and substitutes: There is an OTT leg to the level of competition in the VAS sub-sector. The average content provider in Nigeria and Ghana is small and possesses capabilities for SMS offerings, thus is not able to compete with OTT players in rich media. Thus, a music App-based service running through the MNO and requiring a 3-step user validation, is unlikely to attract the same level of usage as a Spotify or iTunes, which does not require such validation processes. In other words, the threat of substitutes is high for VAS, as there are other firms providing similar services but not running it through MNOs. It is therefore important to create products that are very utility-based and not necessarily deployed to look like VAS. Thus, with the proliferation of content providers in partnerships with MNOs and the OTT players shrinking the size of the VAS markets, the growing saturation puts a demand on the content providers to innovate, first for survival, before any growth objectives.

Industry-level regulation affecting content providers

Consumer protection: Regulations about consumer protection influenced the conduct of content providers in this study. For instance, in Ghana and Nigeria, the Do-Not-Disturb (DND) regulation and double confirmation subscription policy were introduced by the NCA and NCC to protect the consumer against opportunistic behaviour from content providers, particularly, unsolicited messages and unwanted subscriptions for VAS. Although the policy was implemented at the level of the MNO, who are responsible for pushing the services to the

subscribers, the content providers were significantly affected. For example, while such regulations removed ‘bad eggs’ from the industry, it also had far-reaching effects on the industry, as cancellation of auto-renewal, and introduction of the DND and double opt-in, put a halt to consumers’ monthly subscription to ‘non-essential’ services, thereby increasing costs of marketing and leading to a significant drop in VAS revenues. According to a report in Nigerian newspapers, the Punch, the VAS sub-sector in Nigeria declined from over N300bn in 2017 to about N79bn in 2020, mostly due to regulation. This has led to the exit of many VAS providers from the value chain.

VAS licensing framework and bureaucracy: The license framework for VAS in Nigeria and Ghana mentioned licensed forms of VAS services to include text and picture messages, ring tones, games, videos, multimedia, and all services using short codes etc. In Nigeria, the VAS license is for five (5) years that can be renewable. In Ghana, a licence is not required for the provision of VAS; however, potential service providers are required to apply for registration with the NCA. This requirement for service providers to apply for permission to provide services, continues to impact service delivery in the VAS space, particularly in Nigeria. In this study, there were instances where firms had the capability and infrastructure to deliver certain services e.g., those requiring short code, but were unable to immediately do so because of licensing, which has been a major entry barrier. This licensing problem is worsened by the occurrence of delays and bureaucracy characterizing the issuance of licenses. For content providers without a VAS license, e.g., CONT3 and CONT12, their sector is not really regulated, as regulatory drivers reside mainly with the partners, e.g., the mobile operators, insurance providers etc.

Another form of entry barrier in the VAS space relates to the content policy in Nigeria and Ghana. In Nigeria, the National Information Technology Development Agency (NITDA) introduced guidelines which require ICT companies to maintain 50% (fifty percent) local content to encourage Nigerian participation in the sector. The NITDA regulation allows for local content ownership requirement to be either directly or by outsourcing to local businesses. Similarly, the NCA requires a certain shareholding percentage to be Ghanaian. This restricts the entry of foreign companies into Ghana and provides a form of level-playing field for the home-grown players, most of which could not compete against the financial power of the larger-sized foreign companies.

While the NCC and NCA have introduced consumer protection guidelines, participants in this study highlighted the ‘passivity’ of regulators’; three (3) participants complained that the regulators in Nigeria and Ghana are too laid back in policing the VAS industry against opportunistic behaviour from unruly service providers. This causes the mobile operators to take a hard-line stance that affect every VAS company.

As part of the regulator’s regulatory framework for VAS sector in Nigeria, the NCC has recently added a compulsory layer to the VAS subsector through the introduction of an aggregator policy that prohibits content and applications service providers from connecting directly to mobile operators. Instead, content providers, most of which have combined both the function of a service provider and an aggregator, can now only transmit their services through dedicated VAS aggregators. The ‘VAS aggregator policy’ aims to ease revenue collection and sharing between telecom operators and content providers and address the challenge of unsolicited text messages sent to customers. Although this policy had not yet been fully implemented as at the time of this study, participants were not very hopeful that the aggregator policy will improve the fate of the VAS sub-sector. The growing impact of technology and OTT players, as well as effects of regulation have continued to erode the Nigerian VAS market.

Inter-agency factors: This came up strongly among those content providers that are non-telecommunications company. Examples of content providers in this category are firms in the insurance space (e.g., CONT6 and CONT12) and mobile health services providers (e.g., CONT4 and CONT5) etc. These companies are not VAS licensees but require connection to VAS aggregators. Inter-agency factors impact on the conduct of players, their services, and innovation, as content providers are sometimes governed by non-telco regulatory authorities. CONT6 and CONT12, for example, must balance requirements from both the telecom regulators and those in charge of insurance services in Ghana and Nigeria.

7.5 Chapter Summary and Implications

This section presents findings about the drivers of BMI among the telecom value chain actors in Ghana and Nigeria. In the table below, the innovation drivers for the three group of players in this study are represented in one of three ways: i) “YY”, used to describe prominent drivers most mentioned / observed as having influence on BMI, ii) “Y”, describes prominent factors that were less commonly mentioned / observed in the study, iii), “N”, factors not mentioned / not confirmed in any of the interviews.

Table 46: Summary of observed drivers of BMI in the SSA telecom industry

				TOW	MNO	CONT
External	Technological and environmental trends	Technology	Evolution of wireless technologies	YY	YY	YY
			Technology awareness and adoption	Y	YY	YY
			Technological innovation	Y	YY	YY
		Environment	Geography (e.g., terrain)	Y	N	N
			Climate and weather	Y	N	N
	Political and legal	Political stability	Political violence / terrorism	Y	N	N
		Taxes and employment laws	Corporate income tax	N	N	Y
			Labour laws	Y	Y	N
		Institutional quality	Level of openness in political decisions	N	Y	Y
			Regulatory quality	YY	Y	YY
			Actors' rent seeking behaviours	YY	N	Y
		International codes		Y	Y	N
	Environmental laws		Y	N	N	
	Social and economic	Social institutions	Cultural norms and beliefs	YY	N	Y
		Economic infrastructure	Availability of grid electricity	YY	N	N
			Access to finance	Y	N	YY
			Existence / quality of national network backbone	N	Y	N
		Customer demographics	Customers' income distribution, education, and literacy level	N	Y	YY
		Location characteristics	Population density and urbanization	Y	Y	N
	Insecurity	Theft and vandalization	Y	N	N	
	Industry related factors	Established competition	Market structure	Y	Y	N
			market saturation	N	N	Y
			Competitive imitation	N	YY	Y
		New entrants	Threat from new entrants	N	Y	YY
		Substitute products	Availability of substitutes	N	YY	YY
		Buyer power	Pressure from buyers	YY	Y	N
		Supplier power	Pressure from suppliers	N	N	YY
		Industry-level regulation	Multiple licensing/permission	Y	Y	Y
			Mobile network portability	N	YY	N
			Regulatory bureaucracy	Y	Y	Y
			Universal access regulations	N	Y	N
			Consumer protection	N	Y	Y
Competition practices regulation			Y	Y	N	
VAS licensing framework			N	Y	YY	
Mast and tower guidelines	YY		N	N		
Inter-agency factors (e.g., inconsistent regulation, multiple levels of taxation)	YY	N	Y			
National infrastructure policy (broadband, right-of-way etc)	Y	Y	N			
Internal	Company strategy and teleological factors	Realized strategy		YY	YY	YY
		Shareholders	Shareholder/owner expectations	N	Y	N
		Corporate responsibility	CSR	Y	Y	N
		Founding purpose / firm culture	Altruistic considerations	N	N	Y
	Firm-level characteristics and internal technological environment	Technical expertise and resource inadequacies	Discovery of new ways to utilize resources / assets	Y	Y	Y
			Lack of technical know-how	Y	Y	Y
		Firm-level characteristics	Size and ownership structure	Y	Y	YY

Observation varied in terms of the prominence of each factor in the business model of players in this study. Three of the factors were the most prominent across all firm categories: (i) changes in technology (especially evolution of wireless technologies and technological innovations), (ii) industry regulation (e.g., ongoing licensing requirements which serve as entry barriers and regulatory bureaucracy), and (iii) competitive dynamics, particularly customer pressures. The least observed drivers were macro-factors (environmental factors and political stability) and firm-level factors (altruistic considerations and shareholder pressures).

Apart from the above-mentioned factors, there were factors that were distinctively more significant across a single group. For the mobile network operators, these cut across macro (technology) and industry levels (regulation, competition), and include technology access, mobile network portability, universal access regulations, nature of existing competitive rivalry (particularly market structure and competitive imitation), and customer preferences. For the content providers, significant factors are mainly industry related (e.g., pressure from MNOs, licensing framework, threat from new entrants) and socio-economic related (e.g., customer demographics and access to finance). Interestingly, organizational altruistic purpose was mentioned among content providers, especially those without a VAS license. On the other hand, the TowerCos' business model was mostly impacted by a combination of industry, environmental, and political drivers, including inter-agency factors & bureaucracy, pressures from buyers (i.e., mobile operators), quality of grid electricity, insecurity, and community-related factors.

In terms of resource-related drivers, discovery of new ways to utilize resources were most mentioned by the Content Providers and tower companies, as they emphasized opportunities to be more creative in their use of resources or to benefit from economies of scope. Similarly, inadequacy of resources was a prominent driver among the tower companies and content providers.

In addition to factors discussed in earlier parts of this chapter, participants in this study also mentioned the impact of another factor: weather. For example, harsh climates and heavy rainfall can sometimes affect the condition of telecom assets. Tower companies reported network incidents directly caused by natural phenomena, such as severe lightning. These occurrences, when they happen, create operational challenges for the Tower companies, affects customer satisfaction, and ultimately may result in call-drops for end-users. To reduce the

impact of natural incidents, Tower companies deploy surge arresters to protect their sites and equipment.

There were similarities between mobile operators and content providers, in terms of the nature and impact of certain drivers. For example, it was common to see imitation in the value-added services (VAS) space, as mobile network operators and content providers aim to achieve competitive parity by incrementally adapting their business models. Moreover, availability of substitutes was also a prominent factor among both mobile operators and content providers. For these firms, customer switching costs are particularly low, making the threat of substitutes even more pronounced. This contrasts with the tower companies, where customer switching costs are relatively high due to the stickiness of firm relationships with customers (i.e., the MNOs).

The findings in this study confirms that business models are not a one-time design, but dynamic systems that require constant adjustments to internal and external changes (Demil & Lecocq, 2010). Specifically, the extant literature refers to business model innovation as occurring either as a reaction to threats or opportunities in the business environment or as a means for growth (Geissdoerfer et al., 2018; Wirtz & Daiser, 2017). The literature on internal drivers adopts a dynamic perspective and links business model innovation to firm's strategy, resource inertia, and discovery of new ways to utilize resources (Demil & Lecocq, 2010; Teece, 2010). These factors were also confirmed in this study. In addition, this study confirms a firm-level driver that constitute important sources of recent business model innovations in the Sub-Saharan African (SSA) telecom value chain; this relates to firms' founding purpose, particularly the growing drive of socially motivated enterprises to plug developmental gaps through their business activities.

Management scholars have largely focused on industry-level drivers of innovation and placed little attention to the effects of macro-level factors. This study has identified a granular set of factors that influence firms' business model changes, divided into several unified categories of macro-level, industry-level, and firm-level factors. In doing so, it highlights a set of drivers that were hitherto not discussed extensively in the literature. These include prevailing socio-economic realities of a country, firms' altruistic purpose, and environmental factors. Moreover, the study draws on scholars (Taran et al., 2015; Casadesus-Masanell & Ricart, 2010) in drawing out the relationship between firm strategy and business model. Thus, this study highlights the

importance of seeing business model innovation not as an isolated activity, but as one that aligns with a firm's long-term corporate strategy.

CHAPTER EIGHT

DISCUSSION OF BUSINESS MODEL INNOVATION AND INTER-ORGANIZATIONAL RELATIONSHIPS IN SSA MOBILE TELECOM INDUSTRY

8.1 Introduction to Chapter Eight

This section examines inter-organizational relationships (IORs) and how they shape value creation in the SSA telecom value chain. Specifically, two important aspects of IORs are discussed: (i) the nature of interactions, and (ii) the factors influencing inter-firm relationships in the SSA telecom value chain. The research question is formulated as follows:

How do inter-organizational relationships shape business model innovation in the Sub-Saharan Africa telecom value chain?

8.2 Mapping of the Value Chain Linkages between Actors in the SSA Telecom Industry

In this study, the inter-organizational relationships are discussed based on value chain linkages. Key players in the telecom industries in Ghana and Nigeria comprise several participants (actors). Three groups (TowerCos, MNOs, and Content Providers) are described in terms of four linkages: (i) TowerCo → MNO linkages, (ii) TowerCo ← MNO linkages, (iii) MNO → Content Provider linkages, and (iv) MNO ← Content Provider linkages. The linkages are depicted in figure 39 below.

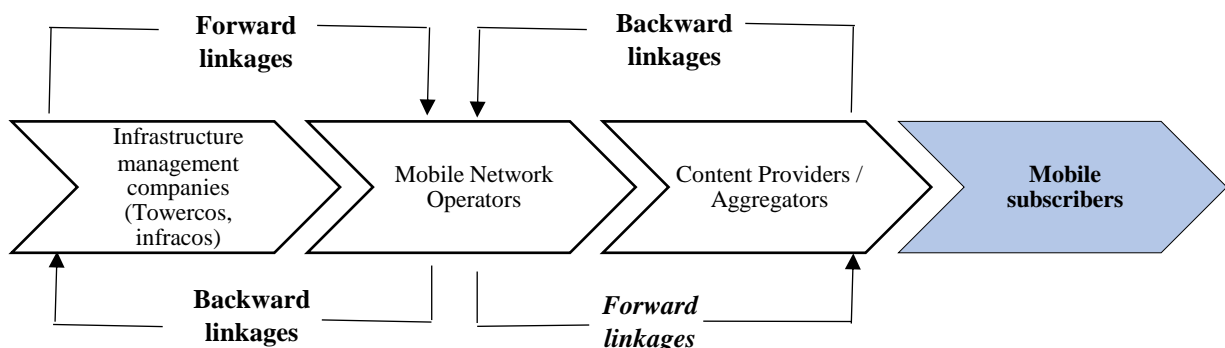


Figure 39: Value Chain linkages among three actors in the SSA Mobile Telecom Industry

8.2.1 Forward Linkages (TowerCo → MNO)

The TowerCos' business model has significant forward linkages as the TowerCos' main output is used by the MNOs as intermediate inputs to their [the MNOs'] services. The emergence of TowerCos in the SSA telecom value chain has introduced a new way of operating telecom networks, in which MNOs rely on TowerCos for the supply of tower infrastructures. Thus, mobile operators remove themselves from day-to-day management of infrastructure to focus on the downstream of the value chain. The Executive Director at a Ghanaian TowerCo summarizes the motivation for a shift to TowerCos:

“Historically, operators controlled their towers and there was always one operator on a tower. But for the most part, most of the operators have very similar footprints; there isn't much of a competitive advantage in there. Today, the ecosystem has changed a little bit, and the operators rather see their relationship with consumers as being their competitive advantage. So, it's a trend that has really rolled out a more mature wireless market in Sub-Saharan Africa” – (INT29/TOW).

In this study, observations from fieldwork reveal that the major TowerCo input i.e., the provision of managed infrastructure, mostly took the form of asset leasing, in which mobile operators do not own the towers but pay a regular fixed amount to use the tower space provided and managed by TowerCos. As the Sales Manager in INF8 explains:

“We provide space on the towers for them [the MNOs] to mount their antennas, the microwaves to provide services to their customers etc...we bill them on a quarterly basis” (INT31/TOW).

There were also examples where TowerCos' inputs took the form of 'managed services' or outsourcing, in which tower companies help to reduce operational expenses and complexities whilst they [the MNOs] retain ownership of the towers. While 'managed services' is less common for passive infrastructures such as sites and towers, the findings indicate that 'managed services' is the major form of TowerCo output in the active parts of the MNO network. For the active infrastructure, such as access network, MNOs retain ownership while relying on TowerCos (such as INF5 and INF12) for management of the access networks. A participant from INF12 explains:

“Airtel and MTN have kind of surrendered their access network to us. They only have a hold on the Backbone (MPBN) of their network. Though the MNOs have myriads of other vendor equipment like Ericsson, Nokia and ZTE etc. scattered all over the network, we have a contract to manage the network under a comprehensive managed services contract” (INT36/TOW)

This shift of infrastructure ownership or management to TowerCos offers several benefits to both the MNOs and the ultimate end-users. It enables the MNOs to achieve network coverage across wide geographical areas through a rapid proliferation of towers and thus allows MNOs to provide services more effectively to subscribers (GSMA, 2017a). This reduces overall cost for mobile operators and ultimately reduce consumer prices. As confirmed from fieldwork interviews, TowerCo and MNO participants highlighted the TowerCos’ ability to provide near 100% network availability and efficiency in managing towers. In comparison to towers managed by MNOs, Ernst & Young (2020) stated that a typical location of a wireless network managed by TowerCo is approximately 40% more efficient than one managed by an MNO.

However, the MNOs derive cost benefits in other ways, particularly through the usage of TowerCos’ own assets which allows the MNO to cut costs by having coverage in a location without building additional base stations. A Senior Manager in MNO2 explains further, stating how TowerCos’ network-neutrality has helped MNO2 to reduce costs even though MNO2 has no outsourcing relationship with a TowerCo:

“A lot of the sites are still wholly owned and managed by us. What we did was just to use INF11’s infrastructure to deploy radios. This means that in a location where INF11 already has several base stations, we build just one base station that has signal and then put transmitters and receivers on those other base stations owned by INF11” (INT8/MNO).

The analysis of the TowerCo-MNO linkages suggests that both actors wield power and are mutually dependent on each other. While the MNO network connectivity is a critical resource through which mobile services are delivered, it is enabled by the TowerCos’ ownership of infrastructure assets and competencies in managing these assets. Still, there are only a small number of MNOs in the value chain, and who have the power to pressure the TowerCos to provide high quality services and lower prices. Thus, in the questionnaire findings, majority of TowerCo respondents stated their company will offer extra incentives to keep customers. The Head of Operations in INF1 explains:

“The telcos [MNOs] call the shots because they are the client and the client has to be satisfied. But as I said, they don’t do it for the fun of it, they only do when it’s necessary. Apart from that it’s a cordial relationship” (INT20/TOW).

Although the TowerCo-MNO linkages is characterized by the existence of mutual influence by both actors, the relationship is MNO-driven, that is, governed by the MNOs because they define the basic operations of the linkages. This is consistent with the argument of Kaplinsky & Morris (2001) that a relationship may remain buyer-driven even when much of coordination has shifted to the supplier. Both formal (contractual) and informal rules (relational) were critical for the success of the TowerCo-MNO interrelationships. The formal contracts involve the signing of agreement between both parties, typically 10 years for every tower site the MNO rents from the TowerCo. This contract includes the Service Level Agreements (SLA), which focuses on the performance measuring and service quality agreed by both parties. The informal governance mechanism mainly took the form of relational contracting i.e., trust, which developed as the inter-firm relationship between both parties progressed. The findings show that both parties establish close relationship that is based on information sharing and loyalty to the purpose of the relationship, i.e., to maintain high quality service delivery at minimum levels of cost.

8.2.2 Forward Linkages (MNO → Content Provider)

The composition of the mobile operators’ forward linkages with the content providers is to provide input to the content providers’ own value chain. For the mobile operators, forward linkages are driven mainly by the need to recoup costs and develop alternative revenue streams to traditional services in the face of shrinking revenues. On the part of the content providers, critical activities and resources needed in their value chain are provided by the MNOs. In these linkages, it is easy for both parties to enter and exit the relationship. Naturally, the content providers are incentivized to spread their services across several MNOs to extend their reach while, as several MNO participants explained, the MNOs have sunk most costs upfront and do not worry about costs of adding new content providers.

In this study, MNO inputs can be classified broadly into two categories. The first relates to connectivity capability, i.e., the MNOs’ ability to connect subscribers with each other via mobile networks, which enables the transmission of the content providers’ services to a broad range of customers. This core input highlights one of the major influences on value creation in inter-firm relationships between MNOs and content providers in the SSA telecom value chain.

Stabel & Fjeldstad (1998) postulate that size and composition of the customer base can be driver of value in mediating technologies such as telecommunication firms. If the potential customer base is limited or unbalanced, then the cost of providing the service will either be too high for the content provider or the MNO's returns from VAS will be below industry average (Burchell & Smith, 2014). The General Manager of VAS in CONT7 explains:

“If a new VAS company joins the industry, the first telco he looks at is MTN because they have bigger share of the market, which means potentially more revenue for you...At the end of the day, you have to accrue something substantial, you need a big number because these are services that are not expensive, they are cheap so that everybody can get on board. So, you have to have a very large number of people to translate to revenues” (INT44/PART)

Similarly, the Head of Marketing in MNO2 commented as follows regarding the importance of a large customer base:

“We are not focusing on VAS services for now. You need critical mass, at least 1 million subscribers. It doesn't make a good business case to do VAS with 200 thousand subscribers. It's in the pipeline, we have a blueprint. Once we have 1 million, 2 million, the numbers can add-up and we can now consider VAS services” (INT8/MNO)

The second major MNO input is the business and support infrastructure, which includes consumer-oriented capabilities (e.g., customer relationship management and billing systems), well-known brand, and extensive distribution networks. The importance of the MNOs' billing system is the provision of a means for the content providers to appropriate part of the value they create from VAS. According to the Senior Manager, Media & Entertainment in MNO5:

“We cater for the billing where nobody else can, and what I mean is carrier billing. Everybody can be billed by the carrier, but not everybody can be billed with alternative payment methods like card payments so they [i.e., the content providers] see that opportunity” (INT11/MNO)

The implication of the above is that every content provider in Nigeria and Ghana leverages on the pervasive nature of mobile technology and requires partnership with the MNOs to deliver at scale, especially in the prevailing circumstance of low financial inclusion, in which only less than 15% of the population make payments with credit or debit cards (GSMA, 2020).

The literature on inter-organizational relationships specifies that reliance on a partner for valuable resources or activities has the potential to create power imbalances that increases inter-

organizational uncertainties and one-sided dependencies (Rindfleisch, 2000). In the interrelationship between MNOs and content providers, the mobile operators own and control most of the critical resources, including the customer relationship and the billing systems. These dependencies are reflected in the questionnaire data as, compared with MNOs, content providers (35%) mentioned their over-reliance on suppliers as one of their major competitive challenges.

The mobile operators typically do not bear much of the cost of providing the service, except for those that are owned by the MNOs themselves. As the Head of VAS in MNO7 stated, “*whether we deliver VAS or not, our costs are the same*” (INT18/MNO). Thus, in the MNO-Content provider relationships, the MNOs are mainly interested in the value they can appropriate and not willing to invest much in the relationship. In the questionnaire, 60% of content provider respondents stated that their costs were higher than revenues, compared to 20% selected by MNOs. Moreover, the use of the mobile operators’ critical airtime resources for billing is expensive due to the costs involved in distributing airtime. This complexity is reflected in the typical share of the revenues which significantly favours the mobile operators. An MNO participant explains as follows:

“Airtime billing is a very expensive method of doing business because of people in that value chain. If I send 100 Naira airtime to you, you expect that the value is 100 but the costs (ORSC, bonus costs) for the MNO is 28%. So effectively, 100 Naira to me is like 72 Naira...if you’re coming to a telco, at least you have to understand that we cannot do 50-50” (INT1/MNO).

The MNOs’ control over critical resources also means that they call the shots in the relationship. For example, they determine what kinds of services are delivered on the network, when the services will be delivered, and how the customers will be communicated to. The MNOs also governed the relationship through obligational contracting. Unlike the relationship between TowerCo and MNO, trust is largely deficient in the interrelationship between MNOs and the content providers. This is because of the MNOs’ perceived high risk of opportunism on the side of the content providers. Some of the VAS providers are SMEs and one-man businesses, which makes these companies particularly prone to opportunistic behaviours, according to the Manager, Media and Entertainment in MNO5. According to the Head of Digital Media in MNO: “*You might hear something like false activations or illegal billings. In a way, they are passing through the MNO, but we don’t necessarily have 100% control over what happens*” (INT1/MNO). Thus, governance in the interrelationships came in the form of

standards setting, monitoring, and control. Coordination was by technologies, as MNOs introduce platforms to manage the user journey to prevent abuse.

8.2.3 Backward Linkages (TowerCo ← MNO)

The findings suggest that the MNOs' business model in SSA is characterized by limited backward linkages, as there is limited supply of inputs by the MNOs to the TowerCos' own resource extraction. The regional operations manager in INF3 sheds light on this:

"We are more exposed. They are more of a demand organization rather than giving back" (INT24/TOW).

Nevertheless, several TowerCos in this study (e.g., INF1, INF2, INF3, INF11) entered the Ghanaian and Nigerian telecom value chain by acquiring towers from MNOs. The MNOs then become customers by default on their previously owned sites. This sale of infrastructure represents needed inputs for TowerCos' growth in the industry. Moreover, the TowerCos' infrastructure assets are of little value without the MNOs. A middle manager in INF3 explains the critical need to have multiple MNOs on a TowerCo site:

"On these sites [single tenant sites], we hardly make money but we still keep them. A landlord that has just one single tenant must still perform his responsibility to you. It is not the tenant's fault that he is the only tenant. So, the more tenants, the better for us" (INT25/TOW)

Therefore, for maximization of assets, TowerCos emphasize having multiple MNOs on each tower site. This is reflected in the case of INF6, a mid-sized TowerCo that operates a unique managed services model with the Nigerian Police. The tower company must lease out spaces to the MNOs to derive profits since its anchor tenants, the Nigerian Police, are not paying customers.

The MNO and TowerCo interrelationships (i.e., TowerCo→ MNO linkages and TowerCo ← MNO linkages) show the actors with cross-cutting influence across each other's value chains. The asset specific and oligopolistic nature of the industry ensures that both actors are mutually dependent. However, the MNOs govern the relationship as they ensured consequences along the value chain.

8.2.4 Backward Linkages (MNO ← Content Provider)

Content Providers sometimes establish backward linkages with MNOs when the production of the MNO's final output to the end consumers requires substantial intermediate inputs from content providers. This scenario occurs mainly with MNO-led VAS services. In contrast, while MNOs derive revenues in Content Provider-led services, they are not directly responsible for providing the service. In the MNO ← Content Provider linkages, three examples of content provider inputs were observed. First, in MNO-led scenarios, the mobile operators invite the content providers to provide the actual content to be delivered to end-users. From the questionnaire data, majority of MNO respondents (52%) selected *leveraging partner's expertise for specialized activities*, as their main motivations for partnership. This can take the form of SMS or rich media developed for specialized markets such as agriculture or health (i.e., niche products) in underserved markets. For example, CONT3 provides agricultural information service for MNO4, on techniques to enhance crop yield for smallholder farmers registered on MNO4's network. The Head of Communications of CONT3 explained how the MNO ← content provider relationship works:

“Right now, the closest relationship we have with a telco is with MNO4. With them, we have a product called the Farmers' Club. That is a partnership between us and MNO4; so essentially, they asked us to provide this service for them. It is an MNO-led initiative, we provide the content and support; they pay us for the service basically” – (INT39/PART).

Second, MNOs may benefit from the credibility and implementation experience that a content provider brings to the inter-firm relationship. It was observed that since this type of inter-firm relationship typically arises when MNOs want to serve niche markets like underserved markets, the content providers involved are typically social businesses with specialized interest in social programs. None of such firms in this study have VAS licenses; rather, they work with mobile aggregators to benefit from their existing commercial and technical integrations with the MNOs. Mobile operators serving niche markets benefit from the credibility and implementation experience that the social businesses bring to the relationship. In the relationship described above between CONT3 and MNO4, CONT3 brings implementation experience from many years of working with cross-sector partners and knowledge of how agriculture practices are transmitted to farmers in rural areas.

The third type of content providers' input observed in this study is technology, which is typically based on the software platform that the content provider has developed to offer a

certain service. For example, CONT7 was involved in a partnership with MTN Ghana (not part of this study) to manage services through a service delivery platform that provides a bridge between the internal MTN structures and subscribers. The Head of VAS in CONT7 explains this type of inter-firm relationship:

“There are times, they [the MNO] will call us to say, we have this, and we want you to do this for us. Recently, MTN was trying to launch a video streaming service and they needed an aggregator to take care of the video created, to manage it. So, we were invited to come in and submit our proposal” (INT44/PART).

Similarly, ‘Bronze Purple Account’ (not real name) is a financial inclusion service account targeting rural dwellers in Nigeria, which involves partnership between MNO5, CONT11, and a financial institution (not part of this study). The mobile operator, MNO5, provide the network upon which the service run, CONT11 provide the technology that talks to MNO5’s CRM and passes the information to the financial institution, while the financial institution provides banking services. The value of the content provider’s contribution in this inter-firm relationship, is that it allows the mobile operator and the financial situation to profitably deliver the service at low prices to the low-income customers, by bringing a system whose maintenance costs is considerably lower than it would have taken to manage the financial institution’s banking application. As the Vice President, Infrastructure Delivery of CONT11 claims during an interview: *“the annual maintenance fee per account has reduced from \$100 to 50 Cents”*. Thus, the presence of CONT11 made this venture worthwhile for the mobile operator and the financial institution by ensuring that each of the actors can capture a share of the value created.

The findings show that content providers that supplied technology to the MNOs had more influence in the MNO ← Content Provider linkages than those whose outputs to the MNO was only contents. This was the case with multi-divisional content providers (e.g., CONT9 and CONT11) that are both into technology services and VAS and provided services such as data centres and billing to the MNOs.

In most of the instances observed where content providers (notably CONT3, CONT7, CONT11, and CONT12) are input suppliers to the mobile operators, the inter-firm interrelationship involved other actors beyond the MNOs and content providers. While two of the relationships observed were simply outsourcing or buyer-supplier relationships (e.g., CONT3 and MNO4), others resemble the idea in external resource sharing relationship

(Ensign, 2001) e.g., the insurance service involving CONT12 in Ghana and the aforementioned CONT11's 'Bronze Purple Account' in Nigeria.

The MNO ← Content Provider linkages are typified by closer relationships than MNO → Content Provider relationships because, in the former, the MNOs are more willing to invest in the relationships since it is their own strategic initiative.

8.3. Factors influencing inter-organizational relationships in the SSA Telecom Value Chain

This section describes the factors that influence IORs among actors in the Ghanaian and Nigerian telecom value chain. These include factors that shape the nature of linkages, their dependencies, and the benefits derived in those interrelationships.

8.3.1 *Context-related factors*

Linked interests

Linked interest relates to organizational level factors such as motivation for engaging in the relationship. Linked interest was observed mainly in the interrelationship between TowerCos and MNOs. In such interrelationships, both actors have specific interests and incentives, for example, multiple tenancies by TowerCos and cost savings by MNOs. This is, however, balanced by their mutual dependencies and linked interests. For instance, a significant factor in the TowerCo-MNO interrelationship is that both actors are interested in forging trustworthy long-term relationships. Thus, it is in both the TowerCos' and MNOs' interest to abide by agreements. In the interrelationship between MNOs and Content Providers, particularly the forward linkages, linked interest was often missing as both actors had differing motivation i.e., pursuing own objectives (mobile operators) and preserving relationship quality (content providers).

Inter-relationships that have linked interests are characterized by a common currency to assess value (Austin & Seitinadi, 2012). In the TowerCo → MNO linkages, the common currency to assess value is network availability which implies limited downtime and, from the perspective of the TowerCo, is being delivered as an outcome. The Head of Operations in INF1 explains:

“If a customers’ uptime should go down, it affects them seriously. They have platinum and hub sites that are very important to them. So, when very important sites go down, it doesn’t matter the amount of time, it affects the subscribers – (INT20/MNO).

Based on the foregoing, it was observed that the linked interests between TowerCos and MNOs created accountability and customer responsiveness, especially on the side of the service provider. The TowerCo and MNO interrelationship can be described in terms of an outcome-based service, in which the customer pays for the performance delivered by a service provider (Vsnjic et al., 2017). Therefore, the provider is accountable for delivering the agreed outcome, in this case up to 99.9% network uptime. The TowerCos engage in activities to manage risks of failure, which include managing third-party dependencies (e.g., typically for maintenance) and how they may affect delivery of outcomes. Commenting further on the importance of linked interests, the Head of Operations in INF1 explains stated:

“As much as possible the things we do are to prevent such from happening...we try to manage the risks that the network will go down...we cannot stop fluctuations from happening. What we can do is to protect the sites” (INT20/MNO).

Findings from this study show that the TowerCo-MNO interrelationships also depend on high *responsiveness* – defined in this study as the readiness and ability to identify and deal with emerging customer problems. Responsiveness is one reason why all TowerCos in this study created a dedicated sales team managing relationships with each MNO. The Head of Marketing in INF2 shed light on the requirement for responsiveness:

“We try to follow up on issues immediately; that was why 10pm last night I was sending messages to the representative of one of our customers because I promised to give him feedback. I left office at 9.30pm” (INT23/MNO).

By being responsive, the TowerCo provider can better deal with information asymmetries and uncertainties arising from the interrelationship, which enhances accountability, outcome delivery and customer satisfaction. This helps to engender trust in the interrelationship.

Inter-firm dynamics of competition

The findings indicate that competition play a major role in the inter-organizational relationships in the SSA telecom value chain. In transaction cost economies, the risk of dependence arises from the cost of switching from a present supplier to another (Nooteboom, 2004). This

manifests in the TowerCo and MNO interrelationships in this study where TowerCos typically insert a right of first refusal when they enter agreements with MNOs. The Head of Sales in INF1 commented:

“We bought towers from Vodafone and Airtel, we have right of first refusal with both. We try to incorporate those things into the contract so that we can bind them to us. And when it comes to co-location when an operator decides that a site must be located here, they first look for an existing tower; whoever is there, they give an opportunity to manage that site (INT22/TOW).

This ‘right of first refusal’ clause has implications for the inter-firm relationship. Notably, anchor tenants find it difficult to move to another TowerCo that may have better terms than current supplier. MNOs in Ghana and Nigeria occasionally switch providers, as price competition was a common observed feature among the TowerCos. In Nigeria, MNO3 is the anchor tenants of INF3; however, INF3 did not include a ‘right of first refusal clause’ in its inter-firm relationship with MNO3. According to INF3’s regional manager of operations, this caused INF3 to lose its anchor tenant to a rival TowerCo that offered lower prices for new build-to-suit sites.

In the TowerCo ← MNO linkages, competition was a factor that brought to the fore issues around power imbalances and dependencies. This was observed particularly among multi-divisional TowerCos (INF4 and INF9) that offered many products and services beyond tower services, for example provision of internet services. As the group technical manager in INF9 stated:

“People who are our third-party providers are also competing with us. So, it’s a conflict of interest for them, and they don’t care. That is one kind of competition that we see which we think is unfair with the mobile operators. He’s looking for the same thing that we are looking for, and you need something from him to deliver your services, so it is a challenge” (INT32/TOW).

IOR scholars recognize the implications arising from such dependencies between direct competitors, particularly the risk of opportunism (Rindfleisch, 2000). The data indicates that this risk manifested in the inter-firm relationship between INF9 and Ghanaian MNOs (i.e., MNO4 and MNO7). The Technical Manager in INF9 stated further:

“They [the MNOs] are sometimes, not being forthright with the kind of transactions that go over the network; they will say let’s do revenue share or I’ll pay you a flat rate and then they end up doing something else. It’s like that because we don’t have any other means to process whatever minutes we have except to come to them” – (INT32/TOW).

In the interrelationship between MNOs and Content Providers, the findings show that existence of substitute services, especially from OTT players, influences the nature of VAS services on the MNO network and the way these offerings are segmented. Specifically, as the retail market for mobile services is exposed to stiff competition from non-MNO actors, MNOs are more selective with the kind of content provider services on their network. Thus, while traditionally SMS has been the most important channel for VAS services in Nigeria and Ghana, evidence from this study’s fieldwork shows that data and multimedia services are becoming MNOs’ preferred service. The VAS Operations Manager in CONT2 comments about the MNOs’ new mindset:

“The operators are bringing a new phase whereby no matter how innovative your SMS services are, they will not accept it. So, they are looking for data driven service so we the service providers must offer something that consume data”. – (INT38/PART)

The above findings are corroborated by questionnaire data, as 39.0% of those who indicated their firms will aim to “use more valuable resources to generate better products/services” were content providers, more than the selections by any other group in the sample. When a partner’s products are novel, the MNOs are particularly interested in the partnership, in which case they go beyond mere supply of inputs. It was observed that the MNOs, as the owner of a strong brand, may have interest in co-branding the content providers’ product.

In other interesting dynamics of competition, Nooteboom (2004) highlights that firms need to assess the risk that sensitive knowledge spills over indirectly, via partners to competitors. This is because those partners may have direct relations with one’s competitors. This scenario was observed in this study, as MNO7 contracted a licensed global VAS company to manage its VAS platform in Ghana. The Group Head of VAS in CONT13 explains the situation:

“CONTA (not part of this study) is a company operating in Africa and parts of the world. I know that MNO7 has now contracted CONTA to be their VAS platform manager. But CONTA has a VAS license; now, if I want to provide VAS in MNO7, I must go through CONTA for them to handle the connection. So, you have somebody who is managing the platform to which you

have to connect to provide your service and that same person is also providing similar services” (INT53/PART).

The scenario described above and the perceived advantages that CONTA enjoys in terms of its linkage with MNO7 brings about implications for the conduct of CONTA’s competitors in Ghana, such as CONT13, which is wary of “giving out too much”, for fear of information spill over that goes beyond its ongoing transaction with the mobile operator.

Regulation

Based on findings in this study, regulation mainly played a role in dictating choices or influencing the conduct of actors in an interrelationship. In the MNO → Content Providers linkages, regulation contributed to the nature and intensity of governance by the MNOs. A good example is the regulators’ policy on multiple acceptance, which requires users in Ghana and Nigeria to triple confirm their decision to enrol into a service. This directive forced MNOs to tighten their rules to ensure compliance with the industry regulation.

Another example of how regulation influences interrelationship in the SSA telecom value chain relates to the regulator’s introduction of an additional layer into the value chain in Nigeria. This policy requires all the content providers to pass through an aggregator, which effectively means that once they are plugged to the aggregator, the right to decline partnership is no longer with the MNOs. A likely effect is that the partners will expand exponentially, and the MNOs will be further less incentivized to focus on VAS. According to the Head of Digital Media in MNO1:

“I’ll probably just become an interface with minimum intervention for these guys, you know; I cannot afford to dedicate to so many providers at one time to try people that have very little margin. However, I’m mandated to do it by law, so I’m going to just do it with minimum effort and as little friction as possible” (INT1/MNO)

The local content policy was implemented in Ghana and Nigeria to encourage sourcing of indigenous resources and services across the entire telecom value chain. The findings in this study suggest that this regulation, although active in Nigeria and Ghana, have had clearer implementation in Ghana. This policy has implications for interrelationships between content provider and MNOs. The Head of Mobile VAS in CONT13 explains the policy:

“Initially, a lot of them [foreign players] were coming in; they go on their own, get a VAS license and they start to operate. These are companies that are big and have the financial power; you cannot compete with them. Now, the recent regulation says that they must partner with a local player. That is an enabler for us; we no longer have them coming into the market with big budgets, and just bully everybody away “(INT53/PART).

A related policy is the international regulations governing foreign organizations. This relates to code of conduct for operating in low- and middle-income countries, which prohibit the foreign-based companies from certain conducts perceived as corruption. A participant from INF2 mentioned how his company has been unable to do business with Espresso due to the US government’s blacklisting of Espresso’s sponsor, the Sudanese government.

8.3.2 Resource-related factors

Nature and size of resources

The ownership of resources, particularly size and nature of resources, is a major factor in interrelationships observed in this study. The impact of resource ownership differs depending on the type of actors involved. Although TowerCo and MNO respondents mentioned resources as influencing their pace of investments, this relates mostly to the cost of resources and locates more at the intra-firm level. In inter-firm relationships, however, control of resources had little impact on the linkages and the nature of the linkages. This is reflected in the fact that both actors are mostly large multinational enterprises with significant ability to raise funds locally and in international markets, established access to international support networks and technologies, and well-known brand. Moreover, the nature of the TowerCo and MNO interrelationship (forward and backward linkages) does not require the actors to contribute complementary resources. This was not the case in MNO and Content Provider relationships, where the Content Providers depend on the MNOs for much of the resources needed for their operation. The MNOs’ central position in the value chain gives them competitive advantage via control over key resources needed for content providers services, such as billing, customer relationships, and digital platforms. In the MNO ← CP linkage, the content providers’ ability to bring complementary resources to the relationship is one reason why MNOs enter the relationship in the first place. Hence, resource nature is also critical in MNO ← CP linkages.

For content providers, the nature of resources brought to the relationship has a major influence in terms of their bargaining power with the MNOs. The IOR literature specifies that value

creation is likely to be realized when partners assemble distinctive competencies. Except for MNO-owned products, mobile operators did not typically invest significantly in this interrelationship, although they controlled much of the critical resources for delivering the value activities. Therefore, the pressure is on the partners to make the necessary relationship-specific investments to deliver the service and appropriate a share of it.

Ownership of valuable resource influences the nature and type of services that content providers can provide. For example, IVR is not a common service in Nigeria and Ghana because of the cost of the infrastructure that must be deployed to provide such services. When a content provider provides the service, either through third-party partnership or acquisition of infrastructure, the content provider is able to negotiate for a higher share of the revenues with the mobile operator. According to the Group Head of VAS in CONT13:

“For purely SMS based content, the best we can get is 60-40%, and even that is very rare. But where your content is IVR driven like voice...voice infrastructure is expensive; they [the mobile operators] can even give you 50-50% because the infrastructure to deploy voice services is expensive and they acknowledge that” (INT53/PART).

The findings indicate that the MNOs are more eager to make relationship-specific investments under certain circumstances; when they did not see content providers as competition, and rather prefer to view the relationship as one in which they can leverage the partner’s complementary resources and knowledge to jointly provide comprehensive services to customers. This was the approach of MNO1, MNO3, and MNO5. Interestingly, the cooperation observed between MNOs and content providers mainly involved larger-sized OTT or multi-divisional players that have considerable finance, reputation, and technology resources, and not the much-smaller homegrown content providers. This sort of partnership with big OTT companies helps the MNOs to benefit from enhanced consumer brand and has the potential to alter traditional revenue sharing agreements. As the Head of Digital Media in MNO1 commented:

“There are some of our services where it’s about balance of power. If it is a service that I co-own with Google, for instance, Google Play brand supersedes the 9Pay brand; I can’t call the shots with Google. And so, it’s Google who dictates revenue share. But you have to be a Google or Facebook for you to call the shots. In this VAS space they are bigger” (INT2/MNO).

Recognizing the importance of a strong brand as a valuable resource in the MNO-Content provider interrelationships, the content providers can mobilize a strong brand to become part

of the interrelationship. Under this scenario, content providers can negotiate better share of revenues by positioning as a middleman between the mobile operator and another, more influential, content provider who owns the service. The Country Director in CONT1 explains:

“There is a different level to the relationship; for example, if I am a content provider, and the person providing me content is not just someone by the side of the road, it’s a company as big as SONY music. When Sony comes to the table, then I’ll tell the MNO and say I’m bringing SONY music, and they have 10,000 songs. That will bring the MNO into a tripartite discussion... By being the middleman and providing other services that helps SONY’s content to be usable on this platform, I am getting something out of it” (INT37/PART).

The beauty of the above scenario is that the content provider is not carrying the cost of the owner of the content. Typically, the owners of the content bear the bulk of the costs of providing the service, e.g., they pay a fee to the MNO to perform advertisement and recruitment into the service. Being a middleman removes the cost of providing the service from the smaller-sized content provider. However, content providers highlighted the difficulties in getting such deals as it requires alignment with two different organizations.

Another participant sheds light on the strategy of positioning as middleman between two influential parties. The Group Head of VAS in CONT13 stated:

“During elections, we deployed a platform that allowed the people of Ghana to be able to check the validity of their electoral commission registration...because of the nature of this service and because government is a partner, I can go to MTN and say, look, for this service, our commercial revenue share of 60-40 shouldn’t apply. The best I can do is 50-50% or 60-40% in our favour. This is the kind of negotiation we do, but if you don’t have the clout, then you can’t then go and negotiate for preferential revenue share” (INT53/PART).

A related scenario is when content providers get their contents or resources from reputable third parties. However, those third-party providers are themselves not seen by the mobile operators as part of the relationship, and thus must negotiate their own terms directly with the content providers. This further reduces the share of value a content provider appropriates from interrelationships with the mobile operators. This was the case when CONT2 attempted to introduce an IVR service through third-party relationships.

Asset specificity

This factor was seen in the TowerCo and MNO interrelationship, particularly TowerCo→MNO linkages. In this study, dependencies in TowerCo-MNO relationships were mainly between activities largely because of outsourcing. Five of the seven MNOs in this study have outsourced most of their infrastructure management activities to TowerCos. Telecom towers are essential to everyday communication and are a critical part of the mobile operators' business. The outsourcing of infrastructure to TowerCos creates a form of risk on the part of the MNOs, since effective delivery of MNO services depends on availability and quality of networks. Moreover, any additional cost accrued from inefficiency on the part of the TowerCo may be passed over to the MNO in the form of higher prices. One of the participants commented as follows:

“Often times, the major challenge we face is turnaround time. When we were managing these things, in less than 20 minutes it can be fixed. But now, we’ve had some sites down for 4 days, one week” (INT13/MNO).

On the other hand, TowerCos require higher tenancy ratios at their sites to drive profitability. Hence, not only do TowerCos seek to tie MNOs to long-term relationships through lock-in strategies, but they are also incentivized to keep the MNOs satisfied in order not to lose them. The Head of Operations in INF6 stated:

“If a network that is down is not fixed within a period, the customer moves quickly to another network, and you may not get them back. That’s the problem with this industry. If you lose a customer today that wants to be on your site, you have lost them forever; at no point will the person come back to you. So, you try not to lose any customers” (INT28/TOW)

The level of dependency in inter-firm relationships may also be driven by the degree of specificity, i.e., investments that are specific to a relationship, which, when they are made, locks the investing partner in and dependent ex-post (Hwang, 2006). In this study, TowerCo-MNO interrelationships exhibit some level of specificity. A number of mobile operators in Nigeria and Ghana, notably MNO3, MNO4, MNO5, and MNO7, originally invested in towers before divesting them to the TowerCos. These transactions bring specificity as they go beyond mere outsourcing to sales of critical assets. The Head of Marketing in INF2 explains as follows:

“The highest-pressure relationships are often with the anchor tenants – I mean they owned the towers before selling to you and have attachments to those towers. They expect them to remain in top conditions, they put a little more pressure on you than other customers” (INT23/TOW).

Thus, another implication of asset specificity is the anchor tenant’s attachment to the tower site they once owned. This has implications for value creation, as TowerCos continually seek to drive the highest levels of performance across their sites (see drivers of innovation for more discussion).

MNOs are also locked in to their Infracos suppliers because of the specific technical capabilities that infracos bring to manage the MNOs’ network. On the other hand, this inter-firm relationship brings about human capital specificities on the part of infracos, as it may require Infracos to invest in skills development or acquisition specific to the relationship. As a manager in INF12 explains:

“We deal with a lot of foreign expatriates, and even at that resource in some vendor specialty is quite scarce. Our solution to this is to have levels of operations. L1 for learners. L2 for experts and L3 for R&D of the Product manufacturer. These guys are brought in to provide expertise and provide training” (INT36/TOW).

This human capital specificity and investment in training creates a dependence by inducing both parties to cooperate ex post, because cooperation is a pre-requisite to reap the potential quasi-rent from the relationship (Hwang, 2006).

Resource Complementarities

While linked interests was particularly important in the TowerCo and MNO interrelationship, the findings indicate that having complementarities is more critical in the MNO and Content Provider relationships. Resource complementarities arises when a firm obtains access to relevant and compatible resources it did not possess (Austin & Seitinadi, 2012). In the MNO-Content Provider relationship, the MNOs are interested to know about the content provider’s proposed idea, its feasibility, and how it can best be integrated. The VAS Planning Manager in MNO1 explains the function of the VAS planning department in a mobile operator to include interfacing with prospective vendors, analysing their requirements to look at resource compatibility, determine the lifecycle of the product, before a final selection is made on the choice of a partner. The determines whether an operator can deliver the service on its network.

The Head of Marketing and Communications in MNO2 explains the importance of this function:

“Some of these content providers come here with the mindset that we are the same network as the Glo, MTN etc. They come here with services built for 2G, 3G etc...there is a VAS provider that came here, and they had application that is basically WAP services that uses EDGE technology...the question we asked them is: how do you intend to push WAP services to our customers knowing that we don't do 2G?” (INT8/MNO)

Questionnaire findings show that content providers were more likely to find it difficult to fit with the MNO's business priorities, with 47.8% selections compared to just 13% by MNOs. In the example presented above, the MNO is a pure play 4G LTE company, which means that its integration system is different from other networks. This relates to the idea of resource complementarity in inter-firm relationships (Soda & Furlotti, 2017). In this example, the firm resources presented by the two companies, even though valuable on their own, are unable to generate value due to incompatibility. Thus, as Soda & Furlotti (2017, p. 349) argued, “no two resources are complementary per se, or by nature, but only in their association for the execution of a specific task”.

There is also an important component of ongoing learning in MNO-content provider interrelationships, as observed in this study, which leads to adjustments or decisions to switch. This is particularly important for VAS services targeting niche markets, which typically are provided by non-telco VAS companies and involves partnership with cross-sector players. In this study, it was observed that to offer such services, the MNO embarks on a steep learning curve, since the sustainability models of those projects differ from traditional MNO business models. There was an example of such complexities in this study, as CONT5, MNO5, and other partners (including a VAS aggregator) came together to provide a mobile health insurance service to low-income customers in Nigeria. The actors failed to reach a workable revenue sharing agreement, which eventually led to the exit of CONT5 (a non-telco content provider) from the telecom value chain. A senior manager from CONT5 explained what happened with this interrelationship:

“We managed to negotiate to 21% with the MNO. Unfortunately, even the 21% still did not work because it's a network, they wanted parity at least with their other services. Currently, we (CONT5) pay about 750 Naira per end-user for primary care, but with mobile we came to

400 per enrollee. Now, look at the disparity even though the benefit packages are the same. It doesn't make good business sense. So, we were involved in a long torturous negotiation. We even piloted the scheme; we saw some of the problems and we tried to modify it as much as possible (INT41/PART)

The complexities surrounding the above stated mobile health service highlights how moving away from their core capabilities and business, which are based on traditional revenue-generation schemes, can be difficult for MNOs.

Partners' Capacity

This factor was also observed mainly in MNO and Content Provider interrelationships, but also in TowerCo and MNO relationships where MNOs put pressure on the TowerCos to deliver high levels of service. Beyond the ownership of resources is how they are used, which Austin & Seitanidi (2012) refers to as resource directionality. Resource usage can be influenced by the capacity of the people deploying those resources. This links directly with the firm's knowledge capital (Ferreira et al., 2020).

In the interrelationship between Content Providers and MNOs, the MNOs examine, ex-ante and on an ongoing basis, the capacity of the content providers to determine whether they can contribute value to the inter-firm relationship. Multiple participants in this study confirmed that MNOs consider factors such as the VAS license of the prospective service provider, their antecedents, and recommendations to determine the partners' capacity. Ongoing capacity assessment focuses attention of MNOs on governance and performance monitoring. The Head of Digital Media in MNO1 emphasizes the value of capacity on the part of the content providers:

“The biggest challenge I have with the local partners is “know-how”, exposure, and knowing what to do. It's one thing to have an idea, but it's another thing to have execution capacity. You come to me and expect me to do a thing for you, I expect you to know what you're doing. What happens is that time to market is slow etc. With the international partners, this is less of an issue and they get off the ground quickly” (INT1/MNO).

Although pressures are typically on the side of the content providers who are responsible for providing the service, the MNOs do not always have the required resources, but since they are not committed to relationship-specific investments, the MNOs do not have much to lose. An

interviewee from MNO1 confirmed that his company has turned back partners in the past because of technical limitations, even though the partners came with highly innovative products. This brings about the important issue of resource and strategic fit.

8.4 Chapter Summary and Implications

In this chapter, two main interrelationships (i.e., TowerCo & MNO and MNO & Content Provider) have been discussed in terms of four value chain linkages: (i) TowerCo \rightarrow MNO linkages, (ii) TowerCo \leftarrow MNO linkages, (iii) MNO \rightarrow Content Provider linkages, and (iv) MNO \leftarrow Content Provider linkages. The analysis further highlights the factors influencing these inter-organizational relationships.

The findings indicate that the one-sided dependencies characteristic of the MNO and content provider relationship, particularly the forward linkages, create complexity in terms of inter-organizational risks, incentives, and value appropriation. Although content providers contributed more to value creation in terms of the product and relationship-specific investment, the MNOs, leveraging on ownership of critical resources, control a large share of the value created. The MNOs are mainly interested in the value they can appropriate and have little incentives to invest in the relationship. However, the higher the resource fit, capacity, and value of the content provider's resource, the better the likelihood for content providers to negotiate a greater share of value. In the backward linkages, i.e., MNO \leftarrow Content Provider linkages, the dynamics are slightly different as the MNOs leverage on the credibility and implementation experience that a content provider brings to seek growth or invest in a new market. Therefore, the MNO \leftarrow Content Provider linkages are typified by closer relationships than MNO \rightarrow Content Provider relationships because, in the former, the MNOs are more willing to invest in the relationships since it is their strategic initiative. In both instances, however, the MNOs are responsible for governing and coordinating the relationships, with limited incentives for trust as a relational mechanism.

On the other hand, the TowerCo and MNO interrelationships exhibited mutual dependencies; hence, having linked interests was a main factor influencing these relationships. Because the value created by TowerCos is mainly in the form of outcomes for the MNOs, it was important for both the MNOs and TowerCos to align in terms of how they view value, which, in this case, was mainly about reconciling expectations regarding network availability. In addition to actors' linked interests, the asset specificities, switching costs, and oligopolistic nature of the industry

ensures that the major issue in this interrelationship is how to sustain value creation, rather than value capture since both actors depend on each other and have a common currency to assess value. Thus, TowerCos continually seek to drive the highest levels of performance across their sites. The mobile operators, on the other hand, emphasize close relationships. TowerCo and MNO interrelationships exhibited higher degree of trust than MNO and Content Provider relationships.

The results show the MNOs' cross-cutting influence across the SSA telecom value chain and indicates that occupying different value chains may result in a situation in which an influential actor's demands dominate with detrimental effects in the value chain. The findings further indicate that a leading or governing actor may not always be in sole influential position in an interrelationship. As Kaplinsky & Morris (2001) noted, an actor can derive influence by being in a position to ensure consequences along the value chain or actively coordinating the operations of the links within the value chain. In the TowerCo → MNO linkages, the MNOs set the standards and ensure consequences along the chain; however, the coordination roles are concentrated with the TowerCos, who actively manage the relationship through feedback, communication, and dedicated account managers.

These insights shed light on the dynamics of symmetrical and asymmetrical inter-organizational relationships and their implications for business model innovation, especially in a dynamic context characterized by complex drivers of change. The study contextualizes drivers such as complementarities and asset specificity to inter-organizational relationships, showing how differential access to resources and context-related factors shape the nature of interactions among actors within this complex industry. The study also identifies, through the MNO and Content provider interrelationship, ways in which smaller firms can appropriate higher share of value in asymmetric relationships based on the type of resources they own, the specialized capability to apply these resources, and by positioning as a middleman between two or more influential actors.

CHAPTER NINE

THEORETICAL CONTRIBUTIONS OF THE STUDY

9.1 Introduction to Chapter Nine

This chapter presents the significance of this study, highlighting the study’s contribution to the relevant academic body of knowledge. The contributions are discussed under four headings that relate to one or more of the research questions answered in this study. Before the theoretical contributions are discussed, a synthesis of the key research findings from chapters 6, 7, and 8 are highlighted in the chart below.

9.2. A Synthesis of Key Research Findings

In this section, a pictorial model that shows how the strands of findings are integrated is introduced (figure 40). This is followed by a summary of key findings of the study (figure 41)

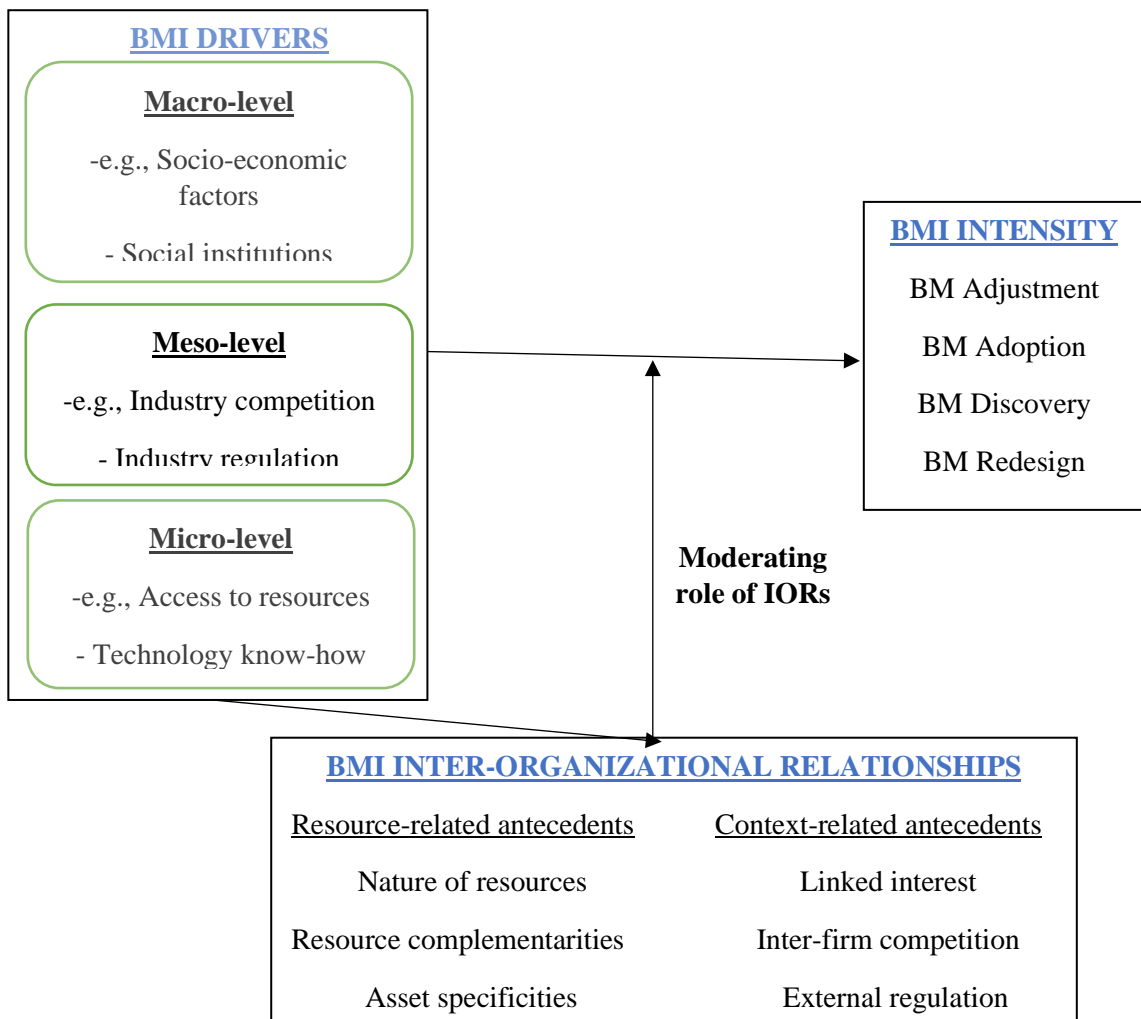


Figure 40: Integrating the strands of research findings

As shown in figure 40 above, this study identifies four possible forms of BMI based on the scope and novelty framework, showing the prevalence of incremental innovations (i.e., BMI adoption and BMI adjustment), which is consistent with understanding about innovation in emerging markets and low-income economies. There are several multi-level factors that induce or otherwise compel firms to make changes to their business models. These include the socio-economic conditions of consumers, availability or lack of resources, and changing competition. Figure 40 also suggests that inter-organizational interactions are shaped by drivers, for example, a firm's need for resources brings attention to the increased importance of unequal or differential control over key resources in shaping the direction of influence in an inter-organizational relationship. Thus, changes in drivers ensure that these relationships are dynamic and keep changing within the complex industry.

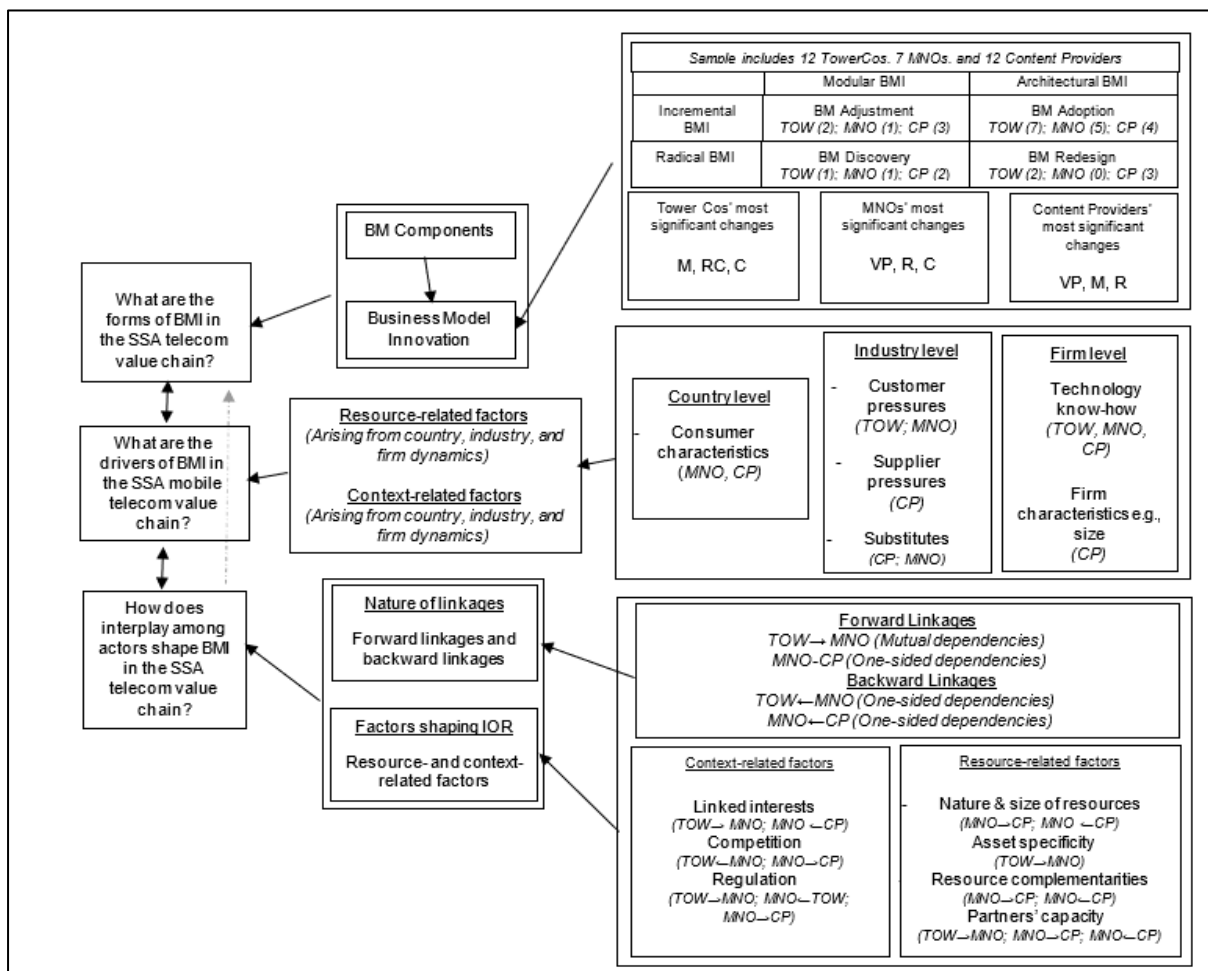


Figure 41: A synthesis of key research findings

For each of the forms of BMI (i.e., BM Adjustment, BM Adoption, BM Discovery, and BM Redesign), we can infer about the links between BMI forms and drivers that serve as initial or major triggers to BMI. Beginning with the discussion about strategic posture of firms,

companies that fell in the category of incremental innovations (BM Adjustment and BM Adoption) innovated largely as a ‘reactive strategy’ to external triggers. On the other hand, those firms (e.g., CONT1, CONT11, INF4, INF9) that were focused mostly on proactive, ‘Play-to-Win’ strategies (i.e., the prospectors) were more in tune with radical innovations. The findings also reveal important details about how changes that occur within or between a BM’s core components can trigger changes in other components. For example, some value propositions may create productive opportunities for further value propositions. A good example of this are firms serving underserved markets such as CONT3 and INF9, whose services or solutions brought about new opportunities for other services to be delivered.

These findings are in agreement with existing literature, which suggests that BM adjustment and BM adoption (both incremental innovations) are typically not new-to-the-industry (e.g., Schaltegger et al., 2012; Cavalcante et al., 2011; Demil & Lecocq, 2010). Hence, perceptions of threats or opportunities from *outside of the firm* (especially microenvironmental factors) trigger these forms of BMI. In particular, BM adoption are cases whereby firms react in response to changes in the nature of competition (Mitchell & Coles, 2003) or in response to competitors’ business model (Foss & Saebi, 2017) or as a result of changing market demands and need. The more radical innovations, on the other hand, appear to be closely linked to a combination of both market need and technological opportunities (e.g., CONT1, CONT3, INF9 and INF4).

Based on the findings synthesized in this section, this study attempts to inspire scholars to further investigate the subject of BMI and their drivers thereby enhancing the results of this study. In this study, the placing of actors and categorization of innovation in their business models occurred at the composite level, that is., based on the aggregate of changes occurring across and within the firm’s business model components. Furthermore, while it is possible to make some conclusions about the nature of BMI, for example, in this study the MNOs’ dominant industry position and consumers’ socio-economic conditions are conducive factors to basic innovations that do not incur significant risk (i.e., incremental innovations), there is need for more systematic linking of BM drivers to specific BM changes and/or studies that empirically test the effect of different drivers on firms’ predilection to engage in BMI and certain forms of BMI. As Foss & Saebi (2017, p.217) stated, given that BMI differs in terms of scope and novelty, the antecedents for incremental types of BMI might be different than for more radical forms of BMI. Moreover, the findings of this study indicate that some drivers

(e.g., socio-economic factors) came out more prominently than others. Future studies can examine the relative importance of the multi-level drivers identified in this study to different kinds of BMI across diverse contexts. Also, questions around how a weaker partner in the value chain can gain more power as well as outcome implications of different forms of BMI changes (which was not explored in this study) can be a subject of attention for future research.

Further details about suggested avenues for future research are presented in chapter 10 (section 10.6).

9.3 Contributions to Literature

Innovation within and between core business model elements

One of the key implications of this research is the identification of hitherto less explored ways in which firms innovate within elements in a business model. The cases in this study, particularly the mobile operators, highlight important insights about value proposition innovation, especially basic innovations that do not incur significant costs or require significant financial investments. These were mainly user-oriented innovations steered by the need and characteristics of the customers. In contrast to user-oriented innovations, supply-based innovations are resource and internal capabilities-oriented and driven by sector-specific factors such as dominant standard of technologies or new product possibilities (Keiningham et al., 2020).

User-oriented innovations in this study occurred through innovations that are related to the use of a given offering or how it is accessed. For example, established mobile operators emphasized customized digital solutions to benefit their customers, including sharing (e.g., airtime sharing), borrowing-to-use, and creating new value propositions through *joint* product and pricing innovations (e.g., airtime on credit) etc. This type of innovation can be referred to as “*access innovation*”, an incremental innovation that serves to ensure both the creation of new ways for firms to capture more value from their existing offerings (revenue structure), while also giving customers more opportunities to access these products and services (value proposition).

By highlighting the role of this type of innovation (access innovation) in maximizing opportunities from a given product, this study extends understanding of ways in which firms innovate their value proposition. Value proposition innovation isn't only about positioning the *right* product to the customer or having the *right* supply chain for the average customer. It also

involves identifying the challenges related to *delivering* the right value propositions to the customer, an area that need further understanding (Parida et al., 2019). The customized solutions by mobile operators in this study did not come in the form of a product, service, or product-service system; rather, they enhanced the possibility of delivering the right value proposition to customers. Such access and usage innovation can be related to firm's overall strategy of achieving success in developing countries' context. Because customers in these markets cannot afford high-tech offerings, firm's tailor their business model to fit the context through offering value propositions that are attractive for local customers.

Regarding elements associated with value capture (i.e., changes to cost and revenue structures), innovations such as operational efficiencies, outsourcing, and identifying new revenue streams are well known. This study highlights alternative forms of innovation that are linked with how firms can better capture value. For example, while payment and pricing innovations have been described mostly in relation to creative discounting and billing, individualized pricing, and payer innovation (Gassmann et al., 2014), this study highlights unique types of payment innovation that are popular in the study contexts, particularly third-party selling, which enables third-party products (e.g., health insurance and solar electricity), to be sold through the mobile operators' airtime, providing revenue share opportunities for the MNOs.

The low-risk innovation approach adopted by the MNOs has been particularly valuable and effective because in both Nigeria and Ghana, MNOs are seeing more opportunities just to plug gaps (demands-driven) and exploit commercial opportunity in a variety of areas such as financial inclusion and agriculture etc, where partnerships with third-party providers are crucial for growth. Shifting the locus of innovation to partnership has several important implications. For example, being a connectivity and content provider reinforces the MNOs' central role in the value chain. The mobile operators do not have to invest much to innovate; they exploit existing resources and competencies and use them in new ways without significant risks. Furthermore, the elements of value proposition innovation and payment innovation identified in this study are related to the link between BMI and inclusive value creation, which remains relatively less explored. Exploring various alternatives of core offerings is particularly important to meet unsatisfied needs in emerging economies context and articulate suitable value propositions for price-sensitive mass consumers.

Scope and Novelty of changes in BMI

The framework for BMI forms highlighted in this study contributes to the debate about the ‘dimensionalisation’ of the BMI construct in at least three ways. First, the analysis operationalizes the conception of business model innovation as complex systems that differ in terms of scope and novelty of changes. By distinguishing between four types of BMI, this study synthesizes a few related BMI frameworks (Bucherer et al., 2012; Foss & Saebi, 2017; Henderson & Clark, 1990), and tests their usefulness and practicality for analysis and understanding of BM changes in organizations. Examining BMI forms in terms of scope and novelty enhances BMI construct clarity, showing that BMI may entail radical or incremental changes to individual components or architecture of the business model. Moreover, by providing a defined means of classification, the BMI typology allows for comparison of the features of different business models, reducing variability and helping decision-makers in analysis.

Second, the synthesized framework differentiates between radical and incremental innovation, thereby accounting for specific changes and more general BMIs occurring within individual elements and across the business model. Although it is established knowledge that incremental innovations often reinforces the dominance of established firms and radical innovations are mostly linked to redefinitions of industry or entry of new firms (Hendersen & Clark, 1990), there can be instances of more radical BMIs in established firms (Bucherer et al., 2012), particularly when such companies seek to operate multiple business models simultaneously (Markides, 2013). Moreover, there can be radical changes across only a few components of the business model, for example, serving new markets while using largely same technologies and resources. This highlights the need to examine business model innovation in terms of the radicality of the innovation.

Third, exploring the novelty of innovation in terms of ‘radicalness’, as opposed to ‘disruptiveness’, also enables us to advance understanding about how firms innovate through the incorporation of dual business models, an area that remains largely unexplored. The study draws on the work of Winterhalter et al (2016) and the ambidexterity literature to shed light on how firms integrate or separate dual business models. Implementing different BMs required the firms to incorporate different integrating mechanisms to operate successfully. However, exploring these mechanisms is beyond the scope of the current study.

Specifically, while existing literature have mostly adopted the notion of organizational separation which argue that new business models should be established in new business units, much less research have looked at degree of separation at lower levels (e.g., at the BM element or activity level). Three firms incorporated dual BMs in this study, all of which entailed combination of inclusive BMs with traditional BMs. The findings hint that introducing a traditional BM to work alongside a pre-existing inclusive BM, as with CONT3, may require separation at the organizational level for both BMs to run sustainably, while operating an inclusive BM along with traditional BM, as with MNO4 and INF9, can be successful with separation at the activity level. Evidence from MNO4 presents an interesting scenario, in which the company kept its core business fully operational but created an additional BM aimed at serving a new market (low-income customers) in a sector new to the company (agriculture). This required the adoption of partnership-driven business models, which enable the MNO to create new value creation opportunities in addition to their traditional business model. This activity-level separation, as opposed to organizational-unit separation, addresses the challenge of running incompatible value chain activities, as we saw regarding MNO4s' exploitation of existing resources in new ways whilst adding little or no costs. The inclusive service ran on MNO4's network at minimal additional technology costs.

A multi-layer framework of BMI drivers in emerging markets

This study contributes to the literature on BMI drivers in several ways. First, as existing studies have tended to focus on rather narrow perspectives of the business model drivers, this current study brings together the disparate approaches into one framework of BMI drivers that consists of three levels: macro-, industry-, and firm-level. While existing studies have commonly highlighted new technological developments and industry-specific drivers such as intensity of competition and impact of regulation, the available data in this study points at the links between business model innovation and a few other less mentioned macro-level and firm-level factors. For instance, beyond the often-mentioned internal drivers such as shareholder/owner expectations, discovery of new ways to utilize existing resources, corporate social responsibility, and resource limitedness, this study finds evidence of business model innovation associated with firms' altruistic considerations/corporate culture, especially those driven by the firms' original/founding purpose. Furthermore, this study highlights how the social context (e.g., prevailing cultural norms and beliefs) and certain global-level factors (e.g., international codes of conduct) may impact on business model innovation, for instance, the conduct of

multinational firms operating in developing countries. In particular, the findings suggest that market need, rather than technological opportunity, was a major contributing factor to several innovations in the telecom value chain in Ghana and Nigeria.

Second, the study helps to provide added conceptual clarity about the specifics of commonly cited business model drivers, and their impact on business model changes. For instance, in terms of changes in the competitive environment, existing studies have tended to relate business model innovation by incumbent firms majorly to the arrival of aggressive new entrants. This study examines how the impact of other less examined competitive dynamics, particularly pressures from suppliers and partners (in IORs), influence the pace and intensity of business model innovation. For example, as mobile operators increasingly partner with content providers and position to become content aggregators, they advance and transform the nature of competition in the value chain, by coopting with less powerful players in the value chain. Moreover, academic research largely points to a positive relationship between competition and innovation. In the case of content providers, while the incentive to innovate is high due to competition and threat of new entrants, results from this study show that the extent of content providers' innovativeness is largely dependent on what the mobile operator wants on its platform. This implies that the competitive dynamics is fluid and the impact of industry rivalry on innovation can be moderated by factors such as power of suppliers.

Furthermore, little is known about specifics of firm-level drivers and how they impact on BMI. While scholars have often highlighted the relationship that exists between a firm's realized strategy and business model, this study presents data and analysis on the strategic context of business model and strategizing actions that are initiated to allow firms adapt their business models to external changes, thereby providing a fine-grained perspective on the linkages between BMI and strategy. Thus, since organizational success is dependent on the fit between organization and contingencies (Taran et al., 2015), this study suggests placing firm strategy not just as a related concept, but also a distinct driver of business model innovation.

The above points relate to wider discussions on the integration of both internal and external perspectives of BMI. Ramdani et al (2019) called for research to examine the external factors associated with internal BM changes to enhance understanding of the mechanisms of BMI. This study contributes to filling this gap. By providing a unified framework for assessing BMI drivers, the multi-level categorization of the drivers in this study induces a certain level of heterogeneity that future studies can draw on.

Dynamics of inter-organizational relationships in business model innovation

This study examines inter-firm relationships that involve both symmetric and asymmetric dependencies and sheds light on the underlying factors that shape business model innovation in such contexts. Specifically, the study connects the BMI and value creation literature with the broader IOR literature by contextualizing drivers of BMI to the IOR context, showing how differential access to resources and context-related factors shape the nature of interactions among actors within this complex industry. By highlighting the MNOs' cross-cutting influence across the SSA telecom value chain, the research shows how occupying different value chains by an influential player may result in domination and detrimental effects in the value chain.

Thus, this research finds that although larger firms in asymmetric relationships assume power position by their size and *volume* of resources (e.g., finance and technology resources), smaller firms can negotiate higher revenue shares, not just based on the volume or size of their resources, but based on the *type* of resources they own, the specialized capability to apply these resources, the complementarity of resource with the partner, and by positioning as a middleman between two or more influential actors.

By examining the nature of linkages between TowerCos and MNOs, this study has implications for our understanding of outcome business model (OBM), an inter-organizational relationship that remains relatively less explored in the literature. Findings in this study suggest that although the OBM literature associates a greater proportion of risk to the provider who faces a new form of uncertainty – delivery uncertainty (Visnjic et al., 2017), evidence from this study shows that the dynamics are fluid, especially when such performance-based contracts involve the transfer of resource ownership to the provider. Moreover, this relationship further indicate that a leading or governing actor may not always be in sole influential position in an interrelationship. As Kaplinsky & Morris (2001) noted, an actor can derive influence by being in a position to ensure consequences along the value chain or actively coordinating the operations of the links within the value chain. As the findings in this study suggest, these roles need not be played by the same actor. In the TowerCo → MNO linkages, the MNOs set the standards and ensure consequences along the chain; however, the coordination roles are concentrated with the TowerCos.

Insights from the MNO and Content provider interrelationship provide implications for current understanding of two important concepts that are associated with ambidexterity: exploration

and exploitation. Specifically, the study joins the research perspective that considers exploration and exploitation in terms of not just product/technological resources, but also market dimensions (e.g., Aspara et al., 2011). The partnership between MNOs and content providers demonstrates, on the one hand, market exploitation (for MNOs) and market exploration (for content providers) and, on the other hand, technological exploration (for both parties) and technological exploitation (also for both parties).

CHAPTER TEN

CONCLUSION, IMPLICATIONS, AND FUTURE RESEARCH

This chapter concludes the thesis. It highlights the study's practical and policy implications and sets the agenda for future research. The chapter closes with reflections on conducting the research and the limitations.

10.1 The Overall Conclusion of the Study

This PhD has examined business model innovation in the mobile telecoms industry in two emerging markets of Sub-Saharan Africa: Ghana and Nigeria. The research identified and evaluated the business models for delivering mobile services in the mobile telecom industry within these contexts. It also places particular attention to the role of inter-organizational relationships in business model innovation in the mobile telecom industry. The analysis and conclusions drawn in this study are informed by case studies of three critical actors that occupy different levels in the Sub-Saharan Africa mobile telecom value chain: Tower Companies, Mobile Network Operators, and Content Providers.

This study builds on academic understanding on the scope and novelty dimensions of BMI (Bucherer et al., 2012; Schaltegger et al., 2012; Foss & Saebi, 2017; Cavalcante et al., 2011) to identify forms of BMI within the SSA telecom value chain. Specifically, the study uses a typology that includes four types of business model innovation characterized by: (i) low radicality and low complexity, referred to as "BM Adjustment", (ii) low radicality and high complexity, known as "BM Adoption", (iii) high radicality and low complexity, referred to as "BM Discovery", and (iv) high radicality and high complexity, referred to as "BM redesign".

The scope and novelty framework is applied in a complex and dynamic environment and used to gain insights into the forms of BMI in the Ghanaian and Nigerian mobile telecom industries. Based on the analysis, the study finds multiple examples of incremental business model changes in the Ghanaian and Nigerian mobile telecom industries. These "more of the same" innovations keep firms largely fixed on the same type of offerings, aimed at the same target customers, based on the same, or largely similar technologies. The most significant changes occur as firms build on existing competencies and partnerships to alter their offerings, diversify revenue sources, and restructure cost structures. The study also finds some evidence of radical changes across a small number of BM components. These include radical restructuring of the

MNOs' value chain through new cost structures and partnerships, varying of content providers' core value creation paths away from MNO connectivity services through expansion into new enterprise markets and industries such as Media and TV, and expansion of TowerCos' markets through adoption of modular infrastructure and innovative backhaul technologies to reduce costs. There were also examples of radical business model innovations that involve pursuit of dual profit and social objectives, especially among content providers and TowerCo cases. A benefit of adopting the novelty and scope framework, therefore, is that it enabled the identification of both radical and incremental business model innovations in this study. Thus, while a change in a business model component may be radical, it may not have disruptive impacts on an industry.

The selection or choice of incremental vs radical forms of business model innovations points to the need for firms to identify the right type of strategy to solve the right problems. As Satell (2017) argues, to be successful in adapting to changes, firms should not be locked into a single approach. Thus, a firm's strategic posture, whether proactive or reactive, should not be based on a one-size-fits-all approach. Rather, firms should be prepared to vary their strategy and experiment with different types of BMI.

The findings regarding the prominence of market need as a BMI driver is consistent with the view that most innovations are stimulated by demand-pull, rather than technological push (Keiningham et al., 2020). In the current study, the difficulty in accessing existing services (e.g., financial services) and the lack of adequate alternative services were major drivers of market need and, as a result, business model innovation. Thus, firms emphasized not just utility mobile services, but also access-related innovations such as airtime sharing, airtime loan, and flexible billing mechanisms. This reflects the inherent challenges associated with tailoring business models to the unique characteristics of low-income environments. Also, industry-related drivers played important roles in this study, as perception of competitive threats, uncertain regulatory environment, and actors' bargaining power triggered BMI or influenced the nature of innovations in the value chain. The analysis of the inter-organizational relationships suggests that the mobile telecom value chain in SSA is governed by strong players at the expense of weaker ones, consistent with resource dependency arguments. Moreover, the findings indicate that, in the MNO-Content Provider interrelationship, MNOs are mostly interested in realizing their own strategic interests. On the other hand, Content Providers' aim is to preserve the quality of the relationship and, if any exists, the competitive advantages derived from it. For the MNO and TowerCo relationship, however, both parties' desire to

achieve own organizational objectives are counterbalanced by their linked interests, which contribute to relationship quality and continuity.

To sum up, this thesis contributes to the understanding of business model innovation forms in terms of scope and novelty and analyses the usefulness and practicality of accepted approaches in different contexts. Second, the research highlights how consumers' socio-economic realities shape BMI, prompting consumer-oriented innovations that are related to the use of an offering or how it is accessed by users. In addition, the study contextualizes known drivers of business model innovation to inter-organizational relationships, showing how differential access to resources and context-related factors shape the nature of interactions among actors within this complex industry. Third, by giving insights into the barriers and challenges that less influential actors encounter in the value chain as well as how inter-organizational actors negotiate for favourable outcomes, the study contributes to the literature on inter-organizational relationships.

10.2 Practical Implications of the Study

Enhancing accessibility of consumer offerings

Insights from this study suggest that market need and consumer preferences are major drivers of innovation in the SSA mobile telecom value chain. In the study contexts, there are a range of factors affecting consumers' access to products and services offered by mobile telecom companies. Consumers might be less educated or have limited disposable incomes, which influences the kind of services they can assess or desire (i.e., they are value searching). The already low incomes are further stretched across competing needs, as consumers endure a high cost of living (e.g., due to limited infrastructural development). For these reasons, this study provides possible insight to managers about how to develop their services to serve customers in emerging markets' contexts, through creating structures to ensure accessibility of offerings. Access innovation is important to ensure the delivery of value propositions that are attractive for local customers, increase affordability, and enhance opportunities for customers to derive benefits from high-tech offerings.

Partnerships as new sources of value in the mobile telecoms value chain

Evidence from this study indicates a growing importance of partnership as new sources of value creation both within and outside the telecoms value chain – in a range of sectors (e.g., fintech,

media, agriculture, health etc.). Mobile telecom managers can pursue opportunities for growth and create new value propositions by developing a model that enable them to operate flexibly in other sectors and meet demands for more integrated services. For example, MNOs and OTT providers could leverage on the proliferation of payment and tariff innovation in Nigeria and Ghana to collaborate (in a win-win situation) in the form of tariff bundling, whereby OTT subscriptions can be included as part of the customer's regular account charges. This will improve value creation and appropriation options and provide more opportunities to break into new markets. In such a scenario, collaborating parties could develop strategies to address potential challenges around brand competition. The growing importance of partnerships as a means to create new sources of value is further reflected by the case of two TowerCos in this study, which deployed innovative infrastructure solutions and unconventional partnership arrangements with MNOs to break into new markets without the need to add significant organizational complexity.

Overcoming resource constraints and associated challenges

Within the telecom value chain, mobile telecom actors engage in partnerships not just to create new value propositions, but also to overcome resource constraints. When a firm relies on the resources belonging to another or depends on another firm for critical aspects of its value creation, dependencies naturally arise that may increase relational risks. Such situations bring about the question of how firms can develop strategies to manage structural and relational issues and/or protect their assets from risk of expropriation. Hence, managers can devise strategies or 'defensive mechanisms' that can be used by smaller firms in an interrelationship to reduce the risk of knowledge expropriation. In this study, content providers packaged different services spread across many mobile operators. This strategy helps them to not be simultaneously weak in the same categories with all mobile operators and ensure the content providers could learn coping strategies that can later be transferred from one inter-organizational relationship to another. Managers can adopt similar strategies of spreading risks across multiple organizations.

For the dependent firms in particular, one of the key managerial considerations is the choice of partnership, which should be based on careful assessment of potential partners' motivation, mutual compatibility, resource complementarities and linked interests. Strategic selection of partners based on above criteria can help a firm to increase its value and influence in an inter-firm relationship. Managers therefore need to look beyond mere motivation to increase current

sales-level, and diligently analyze the competitive field before committing to a relationship or making partnership-specific investments that will lock them in and dependent ex-post. From the start, assessments of partnerships should be informed by a more context-specific and grounded understanding of what can realistically be achieved from the partnership.

Developing competencies for innovation

Findings in this study indicate a prevalence of incremental innovations in the mobile telecoms value chain in Ghana and Nigeria. Although most innovations occur as firms build on existing competencies or leverage partners' competencies to create value, the findings also suggest that those companies with technological know-how were more likely and better able to rapidly bring innovations to the market and deploy technologies in new ways. Developing competencies in new technological areas may be an important managerial imperative, especially for smaller firms and less influential players in the value chain, whose survival may depend on how effective they are in seeking value and diversifying into completely different parts of the market.

Developing business models that are sustainable and scalable

This study brings up a number of potential implications for managers on sustainability of business models. Because complexities of the external business environment may impact on BM sustainability, managers in the telecom industry should, alongside their business models, put in place adaptation strategies for dealing with volatility and changes that are characteristic of dynamic business environments. This is also true for services targeted to underserved markets where BM scaling challenges may arise from a host of factors such as slower adoption of new business models or partners' misaligned investment strategies. Managers in such situation could consider, ex ante, strategies to fit in long-term sustainability into their business model design. For example, they can explore strategies for developing alternative business models to enter adjacent markets and to determine appropriate degree of integration and/or separation necessary for such models to coexist successfully with their traditional models.

10.3 Policy Implications of the Study

Regulating value-added services and OTTs

Findings from this study have important implications for how the issue of regulation for value-added services should be approached. As confirmed by multiple participants in this study, the

regulators adopted a largely “wait-and-see” approach to regulating content providers at their emergence. While this may have been driven by the motivation to encourage innovation and competition, the resultant effect was that there was no immediate guideline for how the sector would operate, a situation that constrained a level-playing field for the content providers against the already powerful MNOs. Consequently, by default the value chain is governed by the MNOs at the expense of the content providers. As at the time of this study, operations of VAS providers in Nigeria had slowed down and many firms shut down after a promising start, a development several participants attribute to a lack of proper regulatory direction for the VAS sub-sector. Although the decline may be attributable to several factors, it is important for regulators to be nimble, i.e., combine a “wait-and-see” attitude to new service delivery models (e.g., emergence of content providers) to see the benefits they can offer while exhibiting readiness to adapt regimes to address new challenges.

A related point is about introduction of new regulatory policies. In this study, the regulators introduced certain policies such as requirement for “double or triple confirmations”, “Do-Not-Disturb (DnB)”, and “aggregator policy” in a bid to address consumer welfare challenges and position the sub-sector for growth. Evidence from this study indicate how such policies have hindered the emergence and take-up of VAS offerings designed by content providers. This suggests that regulations will be more effective if based on pure evidence about ‘what works’, rather than ‘fear of the unknown’.

Regulations regarding tower location

Similar to above points about VAS policies, evidence from this study points to the fact that an ‘unvarying’ approach to regulating towers will not work. The regulatory and licensing processes in the telecom industries in Nigeria and Ghana have yet to mature. Thus, while new technological developments are rapid, regulation sometimes struggles to keep pace. For example, rules about tower location were created in an era of only 2Gs and 3Gs. With the emergence of 4G, TowerCos need to be able to put up towers that meet certain height and distance requirements to provide the best levels of service and drive broadband penetration especially in high-density urban areas that needs to be served with latest technologies. As such, TowerCos need to apply, sometimes unsuccessfully, for special permits from the regulator to deploy certain services. To address this challenge, combining strict regulations regarding quality of towers with a more flexible approach to tower location may be an important way to drive innovation. After all, if the aim is to enhance coverage and sustain the growth of the

digital economy, achieving higher broadband capacity will be difficult without citing towers within certain radius of each other.

The need for synergy among regulatory agencies

This study reveals the need for more synergy among all regulatory agencies with footprints in the mobile ecosystem. As the mobile industry explore new opportunities spanning different sectors, it has become more important for regulatory bodies to identify options for cross-sector collaboration. In the study contexts, there is a separate regulator for different sectors active in the mobile ecosystem, including banking, insurance, and telecoms. As a result, there are issues specific to the sector they regulate, as well as common problems that must be tackled to realize the full benefits of cross-industry convergence. For example, mobile money has not thrived in Nigeria partly because of the lack of a common framework and understanding between the regulatory bodies in charge of telecoms and banking. While mobile money services in SSA can benefit from the telecom industry's advantages in terms of reach, especially because of low financial inclusion, there could be resistance from financial regulator for MNO-led regulations due to the sensitive nature of financial services.

Furthermore, the issue of multiple regulation at different institutional levels was a problem that confronted service providers in this study. For instance, the inconsistent application of rules, taxation, and permissions among regulatory bodies directly impact roll-out of networks. Thus, there are potential benefits that can be gained from more coordination and cooperation among regulators. Moreover, future approaches aimed at enhancing cooperation among institutional levels should explore avenues to harmonize taxes to reduce the burden on firms.

10.4 Reflections on the Research Process

In this section, the researcher reflects on the PhD journey and the entire research process. The reflection is written in the first-person style.

Thinking back on why I chose to embark on this research, I recall how I felt when I came across the project advertisement on jobs.ac.uk: "*this is exactly what I want*", I said to myself. Indeed, doing research in an area that relates to the social and economic impact of technologies has always been of great interest to me. Besides, as a Nigerian national, the opportunity to interact with telecommunications business managers and policy makers in Sub-Saharan Africa added to the excitement of doing research in the area.

I found the data collection and analysis process to be both interesting and challenging. More details about challenges encountered during data collection is provided in section 4.7. Part of the challenges relate to designing an appropriate research questionnaire and formulating interview questions. One important issue not mentioned in section 4.7 is the particularly low response rate to the online questionnaire versus face-to-face, as it was difficult to follow-up with online respondents. The lesson from this experience is to be persistent and patient in the face of challenges and polite in communicating relevance of the study with the targeted organizations. Furthermore, I found that the use of qualitative and quantitative data provided enrichment and valuable combination to understand the phenomenon of interest. However, the well documented challenges in integrating qualitative and quantitative findings in mixed-methods design came to the fore in this study. Although the initial analysis was done separately to allow for adequate individual consideration of data and integration was left to the discussion/interpretation stage, there was an initial struggle in the discussion chapters 6, 7, and 8 between the idea of data leading the discussion in qualitative research versus the more structured approach in quantitative research. In keeping with the social constructionism epistemology, the data collection, analysis, and discussion was closer to a middle position in the inductive-deductive continuum, combining the use of theory with data-driven reporting. Also, consistent with the epistemology of constructionism, the paper gives qualitative approach more priority and uses quantitative data for corroboration.

The findings of this study are relevant not just to academic researchers but also to business practitioners and policymakers. Accordingly, I have within the past few years brought the findings to the public domain through presentation in conferences such as the British Academy of Management (BAM), Academy of International Business (AIB), and the Pacific Telecommunications Council. Furthermore, a report on the study's findings was accepted at the European International Business Academy (EIBA) conference, December 2021. My short/medium-term objective is to further make these findings public by submitting papers for publication at relevant strategy and innovation journals.

10.5 Limitations of the Study

This study has provided several relevant findings and contributions to the literature. However, there are a few limitations that need to be highlighted.

First, an obvious limitation of this study relates to its small quantitative sample size. While the quantitative data provided relevant insights and enrichment to the analysis, the small sample size potentially increased margin of error from the results. Still, very rich insights were derived from 64 interviews, and these predominantly reflect the conclusions reached in this study.

Second, this study was conducted within the constraints of limited resources available for a PhD study. Specifically, there were limitations in terms of financial resources and time required to facilitate inclusion of multiple SSA contexts or to make repeated trips to organizations. These constraints also meant that the researcher could only spend limited time in the organizations. This may have implications for some of the findings of this study. Particularly, the study's conclusions regarding the nature and drivers of innovation prominent in the SSA telecom value chain as well as the managerial decision-making processes that might explain why innovation occurred in the manner they did (including the analysis of strategic posture of firms), may be slightly different if the researcher had located in the firms for a longer time than the current research permitted. Therefore, mild caution should be applied in transferring the results. Nevertheless, within the constraint of data available, prescriptions in the literature were followed to try to identify the nature of changes within and across components.

Third, the study focused on Nigeria and Ghana, two Sub-Saharan African emerging economies with highly competitive mobile telecom industries. While these countries made it possible to examine the contexts of BMI along both their similarities and differences, they do not reflect the entirety of SSA and emerging markets. Hence, future studies on BMI in emerging markets can build on insights from this study to enhance our understanding of BMI forms and drivers.

Fourth, related to above, the case study design and its focus on a single industry introduces potential limitations to generalizability. As Bouwman et al (2008) argued, there are differences across industries in the antecedents and forms of BMI. While this study only observed organizations in the telecom industries, other types of industries might demonstrate different characteristics, which have implications for the type of innovation that firms undertake. Consequently, future studies of BMI in emerging markets can examine the moderating effects of different industries on BMI.

10.6 Suggestions for Future Research

The findings of this study and the stated limitations open up avenues for future research outlined below:

This study examined different forms of business model innovation, each with varying degrees of radicality, using the scope and novelty framework of BMI. To enhance understanding of BMI forms and the strategic context in which business model innovation takes place, future research can examine the forms of BMI using a different type of framework, for example, one that combines novelty and scope dimensions with analysis of the strategic posture of firms. Such an approach will provide a valuable tool to support firms' analysis of business model options and strategic decision-making.

Given the complexities of identifying and categorizing BM changes in organizations, future research is necessary to examine BMI over extended periods. Longitudinal studies that take a process-view of BMI may be appropriate to detect any changes that might occur over periods of time.

This study brings up a number of potential implications for future research on sustainability of business models. The external business environment is characterized by complex drivers of change that interact with the business model and impacts on BM sustainability. This brings to the fore the importance of coupling business model design with strategy in order to understand firm adaptation mechanisms in different environments. This provides avenue for future research. In addition, a number of insights from the case studies could link to emerging research perspectives on inclusive business models in emerging markets contexts. The findings reveal that firms can create value in different ways for the purpose of BM sustainability, including, for example, integrating traditional business models and inclusive business models. The analysis of relevant cases helps to shed some light on the possible levels of business model separation effective for dual BM combinations, but this opens the question of how dual business models can be effectively combined to create value for different stakeholders. Future research can build on this current study to examine the integrating mechanisms required for both traditional and inclusive business models to operate successfully.

An obvious avenue for future research relates to the research context. To enhance understanding on how context shapes BMI, future research can consolidate on findings of this study by examining other Sub-Saharan African countries. This may take the form of comparative research design, where the experience of firms in the telecom value chain in Nigeria or Ghana are compared to those in a different geographical location. Similarly, future studies on BMI in emerging markets can be inspired by this study to examine BMI in other industries. This might reveal different patterns of BM configurations in emerging markets.

This study examines business model innovation from the provider perspective. Hence, it identified how the firms make changes to their business models. However, it does not give an account of the diffusion of innovation, for example, value proposition from the end-users' perspective. Future studies can look at the consumer perspective to try and understand how consumer preferences shape business model innovation.

Insights from inter-organizational relationships examined in this study highlight the implications arising from partnering with direct competitors, especially the risk of relational opportunism. The literature suggests that paradoxical tensions between creating and capturing value may increase this risk, as a firm who is focused mainly on committing resources and sharing knowledge in a relationship may be susceptible to opportunistic appropriation and unintended knowledge expropriation. Thus, while dependency can cause relational opportunism, an area that still needs further attention is the defensive mechanisms that can be used by smaller firms to reduce risks in inter-firm relationships.

Lastly, the notion of interorganizational relationships as an important lever of innovation is not new. Indeed, new forms of inter-organizational relations such as outcome-based services (OBS) have been considered as examples of business model innovation in and of themselves (Vsnjic et al., 2020). Although analysis of the TowerCo – MNO interrelationship provides preliminary insights about possible drivers of value in outcome business models particularly the firms' linked interests, future research can build on findings of this study to examine the impact of, as well as the interplay between, different value drivers.

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APPENDICES

Appendix 1: Research Information Sheet



RESEARCH PROJECT INFORMATION SHEET

Innovative Business Models for Delivering Mobile Services in Emerging Markets

You are invited to participate in the above research project about the provisioning of mobile infrastructure and services in emerging markets. It is being conducted by:

Joshua Omoju
PhD Suite, Room 417,
Newcastle Business School
Faculty of Business and Law,
City Campus East
Northumbria University
Email: joshua.omoju@northumbria.ac.uk

This project is part of a PhD research at the Faculty of Business and Law of Northumbria University, and is supervised by Dr. Roseline Wanjiru (roseline.wanjiru@northumbria.ac.uk) and Professor Jason Whalley (jason.whalley@northumbria.ac.uk)

What is this Study about?

The study looks at the growth of mobile technology as an important driver of socio-economic development in emerging markets and Africa in particular. The main purpose of the research is to identify and critically evaluate the business models that have been adopted by operators and others alike in African emerging markets. More specifically, it asks the questions; what are the forms and key drivers of business model innovation for African mobile network operators (MNOs) and their partners and how does the interplay between organizations shape innovation among these organizations?

Why are you invited to participate?

Your organization has been identified as a potential participant in this research project given its long-standing reputation in the innovative application of mobile technologies on the African continent.

What will you be asked to do?

If you agree to participate in this research, you will be asked to help provide response (*through interview or questionnaire*) to a number of pre-defined questions relevant to the research subject. The interview is

RESEARCH INFORMATION SHEET (PAGE 2)

expected to last not more than 90 minutes. You MAY be contacted at a later date for further insight on any information.

The information you will provide will be treated with strict confidentiality and no third party will have access to it. The data you will provide will be used for research purposes only.

What if I change my mind during or after the study?

Taking part in this research is completely voluntary and you can withdraw your participation at any time without explanation or prejudice. You may also withdraw any unprocessed data from the study by contacting the researcher, Joshua Omoju (*see contact details above*).

Results of this research

Results of this study will be used to produce a thesis that will be submitted to the Faculty of Business and Law, and may be published on the website of Northumbria University, academic Journals, or presented at academic conferences (international, national or local). A short summary of the findings will be made available to participating organizations upon request.

What if I have questions about this study?

This information sheet is for you to keep as a reference. If you have any questions about the study please contact Joshua Omoju.

If you have any complaints about the way the research project is being conducted you can raise them with the Principal Supervisor (Dr. Roseline Wanjiru: roseline.wanjiru@northumbria.ac.uk) or, if you prefer an independent person, contact the Chairperson of Northumbria Research Ethics Committee, email: ethicssupport@northumbria.ac.uk).

The Researchers and the University would like to thank you for your contribution to this project.

Appendix 2: Example Covering Email to Participants

Email Subject: Request for Participation

Dear <contact>,

I am writing this email to you to request your participation in an ongoing research project titled: “*Innovative Business Models for Delivering Mobile Services in Emerging Markets*”. The study is part of research activities for a PhD programme at Newcastle Business School, Northumbria University, supervised by Dr. Roseline Wanjiru and Prof Jason Whalley. More information about the project is provided in the research project information sheet (herewith attached).

I believe that you are well positioned to provide feedback on this research subject, given your long-standing reputation and experience in the mobile telecommunications industry on the African continent. I wish to request an interview with you at a time of your convenience to discuss your views on this project. The interview will last between 30-60 mins.

Please be assured that all information received will be held with strict confidentiality.

Please do not hesitate to contact me if you have any further questions. My email address is joshua.omoju@northumbria.ac.uk and my telephone number is <number>. Whilst I am thanking you in advance for your anticipated response, please accept the assurances of my highest consideration.

Yours faithfully,

Joshua Oluwadunsin Omoju,
PhD Researcher

Appendix 3: Individual Informed Consent



CONSENT TO PARTICIPATE IN RESEARCH

Innovative Business Models for Delivering Mobile Services in Emerging Markets

I have read and understood the purpose of this research as described in the Research Project Information Sheet.

1. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written Research Project Information Sheet to keep.
2. I understand that my participation MAY involve an interview and I agree that the researcher may use the results as described in the Research Project Information Sheet.
3. I acknowledge that:
 - a) Participation is voluntary and based on individual informed consent. I have been informed that I am free to withdraw from the project at any time;
 - b) Any information I give will be kept strictly confidential and that no names will be used to identify me with this study.

I consent to this interview being recorded yes no

(please tick)

Participant signature:

Date:

Appendix 4: Ethics Approval

20/11/2021

Email - joshua.omoju - Outlook

Research Ethics: Your submission has been approved

EthicsOnline@Northumbria <EthicsOnline@Northumbria>

Mon 04/12/2017 11:07 AM

To: joshua.omoju <joshua.omoju@northumbria.ac.uk>

Dear joshua.omoju,

Submission Ref: 994

Following independent peer review of the above proposal, I am pleased to inform you that **APPROVAL** has been granted on the basis of this proposal and subject to continued compliance with the University policies on ethics, informed consent, and any other policies applicable to your individual research. You should also have current Disclosure & Barring Service (DBS) clearance if your research involves working with children and/or vulnerable adults.

The University's Policies and Procedures are [here](#)

All researchers must also notify this office of the following:

- Any significant changes to the study design, by submitting an 'Ethics Amendment Form'
- Any incidents which have an adverse effect on participants, researchers or study outcomes, by submitting an 'Ethical incident Form'
- Any suspension or abandonment of the study.

Please check your approved proposal for any Approval Conditions upon which approval has been made.

Use this link to view the submission: [View Submission](#)

Research Ethics Home: [Research Ethics Home](#)

Please do not reply to this email. This is an unmonitored mailbox. Queries should be forwarded to ethicssupport@northumbria.ac.uk

Appendix 5: Exemplar of Template Analysis

The quotes displayed are not exhaustive

Top level a priori themes	Level one order	Level two order	Level three	Level four
Offering	Innovation in offering	Adding new offerings Redesigning	<p><i>We have recently introduced OTT video-on-demand platform which allows people to watch video. We saw the need for it.</i></p> <p><i>The more recent addition to a chunk of our offer has been the maternity cover, which we were the first to offer to the microinsurance space</i></p>	
			Adding new elements to existing offerings	<p><i>We added the voice SMS, which can go in local languages while the text SMS goes in English. So, when we profile farmers, we take their language preference and then once they call the call centres, they are directed to someone who speaks their language</i></p>
			Bundling offerings	<p><i>On the telco's regular network, we give additional value and say, "by virtue of you using x amount of airtime, you get x amount of insurance". Initially, the mind is sceptical but the very moments they begin to make the first claim, the 2nd claim, the 3rd claim, and you make noise about it...it is easy for them to move into premium</i></p>
			Product-service system	<p><i>ATC deployed site monitoring facilities and we are still improving on it and we also give customers right to view the network. You as the customer, you don't have to deploy your own telemetric, if you have your own monitoring centre, we give you right to it, so sitting on your laptop you can view your site</i></p>
Markets	Innovation in customer segments	Adding new customers	New to company (targeted with existing products)	<p><i>So, we started off with the inbuilding solutions infrastructure (DAS) – very similar model, shared model, So, we've changed our focus and now, we are doing a lot more of towers. This is because the kind of market space we have is pretty small, so if we wanted to continue to grow, we had to expand.</i></p>
			New to company (targeted with new products)	<p><i>Another thing is we are innovative. We are not stuck in the tower, power business; we are actually looking at other services in the telecom space where we are not currently an active player. Also, operating in new ways we normally do not operate: things like fibre, transmission networks, managed services that we have dabbled into</i></p>
			New to industry	<p><i>We have launched a data collection app...it's usually for organizations that have field agents collecting data on their behalf; trying to get people to switch from paper and digitizing their operations</i></p>
		Altering customer relationships	<p><i>We stopped the USSD. We realized that the drop-off rate was high, so we stopped that and started doing person to person interaction through the call centre as well as the voice SMS</i></p>	
			<p><i>When we started, there was no mobile app, there was no online self-care. As time went on, we introduced online self-care, web mobile app</i></p>	

Exemplar of Template Analysis (Cont'd)

Top level a priori themes	Level one order	Level two order	Level three
Resources	Innovation	Building new competencies	<p><i>What we've recently done is to create an academy whereby we train fresh graduates every 3 months. The good ones, we employ them, then we assign them to some of these experienced staff. So, if they now decide to leave, we usually have a backup</i></p> <p><i>Our solution to the resource challenge is having levels of operations: L1 for learners, L2 for experts and L3 for R&D of the Product manufacturer. A company cannot grow above the quality of its staff, people that require training are upscaled</i></p>
		Using less to do more	<p><i>So, our focus is anything-as-a-service because right now, emphasis on ownership is beginning to die down...it gives you the opportunity to serve several customers using the same resources rather than keeping the customers away from that service because it is too expensive</i></p>
		Leveraging technological resources in new ways	<p><i>Instead of waiting for NCC to do bidding, we are trying to kick-start something. I think it will be easier for these MNOs to switch to cheaper technology</i></p>
Key Activities	Innovation	Reorganization	<p><i>We are transferring all of our technologies from being managed outside of the country so they can be managed by a local organization</i></p> <p><i>We are taking over these responsibilities from partners. So, we will be managing the user journey from beginning to the end; when he subscribes to when he un-subscribes; ensuring that he doesn't get multiple billing, ensuring that he gets the best experience</i></p>
		Operational innovation	<p><i>Part of what we are doing to reduce downtime is to deploy OPEX to sites: something that will reduce the number of hours that the generators will be running, be it solar, be it grid (the cheapest), be it back-up batteries to cycle on hybrid, and ATC is presently deploying Lithium Ion batteries</i></p>

Exemplar of Template Analysis (Cont'd)

Top level a priori themes	Level one order	Level two order	Level three	Level four
Partnership	Factors shaping partnership	High bargaining power	Brand / service type	<i>Google Play brand supersedes 9Pay brand because Google are more powerful than I am, right; I can't call the shots with Google. And so, it's Google who is able to dictate revenue share. But you have to be a Google or Facebook for you to call the shots. In this space they are bigger.</i>
			Degree of investment	<i>In gaming, for instance, we do not take lion bulk of revenues. Because the gaming people invest a lot: they go a step higher beyond NCC to the CPC and national gaming etc and they incur certain costs etc You can't just come, bring a computer, whereas somebody has spent billions to set up the infrastructure, and then you say because you now have the content; therefore....it should be this way.</i>
			Ownership of key resources	<i>It's just as sustainable as the factors that are determined by the telcos...a lot of the things that affect the business is from the MNO side. That is not within our reach. We talk to the customers through them, we can't go any other way</i>
		Strategic / operational fit	<i>When you want to collocate with other people, you have to do so with companies that have technologies that will aid your integration; our technologies are different, we are building our own network</i>	
		Trust	Unclear expectations	<i>Sometimes you will bring something to them, and they say that, no, this is not what we wanted</i>
			Lack of openness	<i>The operators sometimes are not forthright with the kind of transactions that go over the network. What I mean is that they normally would say let's do revenue share; take this, I'll take this or let me pay you a flat rate at the end of the month. They will say that and then do something else</i>
			Non-compliance with rules	<i>Over the years, because of customer complaints, because of other VAS companies not playing by the rules, a lot of customer complaints have come out, and because of that, a lot of our recruitment channels have been halted</i>
			Long-existing relationships	<i>We've been around for 25 years and we've worked with them over the years. when they wanted to do mobile money and they needed to do integration...they wanted to go and bring some Lebanese to come do it...It was because of referrals and the fact that we've worked with MTN in the past that got us into this partnership</i>
		Technical capacity	<i>We also have limitations on our side. So, some of them have brought some highly innovative products that I had some technical limitations in supporting. Some of them have come where I need to invest in a particular platform to achieve it Our challenge is managing our third-party contractors because if we give you a timeline and you're not able to deliver, it ends up affecting us because we also have a timeline in delivering our services to our customers</i>	

Exemplar of Template Analysis (Cont'd)

Top level a priori themes	Level one order	Level two order	Level three	Level four	
Revenues	Revenue model Innovation	New ways to claim customer value	Mobile money wallet	<p><i>When we bill over airtime using a short code, the operator will take 60%. Currently, we are all going towards the route of mobile money where I only pay mobile money charges</i></p> <p><i>when it comes to data, the challenge is how to monetize it. So, we are looking around mobile money; how do we use that to monetize our data services?</i></p>	
		New ways for customer to access product	<p><i>For those who care about voice than data, we have what we call bundles. We say ok, bring 1000 Naira and have 400 minutes of voice call, 2GB data, 100 SMS. So, we bundle the whole thing together, but you still have your airtime.</i></p> <p><i>Rather than get customers that can buy a particular thing for so much and they will not utilize it 100%, we want to get customers to subscribe on pay-as-you-use basis.</i></p>		
		New revenue streams	Payer innovation	<p><i>The Vodafone farmers club is just our sustainability project because with the B2B the farmers don't pay anything, the NGOs and agencies pay on their behalf</i></p>	
			Leasing of scarce assets	<p><i>If you don't want to break the ground to put fibre, you can rent our manholes through which you pass all your fibres.</i></p>	
		New pricing mechanisms	<p><i>Recently, we used to dash equipment for free, just for you to try and see that it's good for you contrary to impression about Chinese products. So, if you need 10, I give you about 2 for free and you can then come back if you are impressed.</i></p>		
Costs	Innovation in costs structure	Costs transfer	<p><i>We prefer the landlord to power because from experience, we know that it is cheaper. It is cheaper because the cost itself that we pay to the landlord is cheaper compared to the cost of diesel</i></p>		
			<p><i>We are saying that "ok, if you have power to supply, let's pay per period, combine our consumptions, what is your rate. We are on that now with the ESCOs. They say; take it and pay us 300k per month. We are saying give us a metre; whatever we are consuming for the month</i></p>		
		Economies of scale and scope	<p><i>If you go to the Northern side [of Ghana], you'll see more of co-location but if you come Southern, you'll see more of singular telco towers. The main reason that telcos establish more co-location towers in the North seems more of cost thing.</i></p>		
		Improved technologies	<p><i>There were call drops and sometimes, it costs so much to process a call. We've gotten improved systems that does not require a lot of satellite bandwidth to deliver the service</i></p>		
		Frugality	<p><i>We ask ourselves is there a way we can save costs?</i></p> <p><i>We promote paperless work as much as possible, we use fuel efficient cars.</i></p> <p><i>There is a clear cost focus within the organization</i></p>		

Exemplar of Template Analysis (Cont'd)

Top level a priori themes	Level one order	Level two order	Level three
Existing competition	Market structure	Price competition	<p><i>Every operator will always want to go with lower prices...it's a market thing; so, we had to renegotiate with Airtel</i></p> <p><i>MTN has reduced the prices of same amount of data for all their products</i></p> <p><i>They always go a little lower than us</i></p>
		Acquisition	<p><i>They bought some of the Airtel's sites, they bought off Helios Towers, and coupled with their own towers that they had. There is no place you go to that you will not find their site. For example, MTN already built their sites all though the federation, built on their own RF plans. How will MTN want to leave that site and come to you</i></p>
	Market saturation	<p><i>When the industry was booming, the highest revenue generating stream was SMS. But now, the SMS based service is being fading out because the industry is saturated and everybody is feeling it</i></p>	
Competition from entrants	<p><i>Do I call that competition? It is questionable. For me, the real competitors are OTT players who effectively come from nowhere, no regulation etc. They just fly in from nowhere and tomorrow they have 2 million customers, 3 million customers.</i></p>		
Substitute products	<p><i>What we have the capability of developing in that area, especially rich media, it cannot compete with what is available out there. If we develop a music streaming service internally, we will never be able to do it to the level of a Spotify, because it isn't our core business</i></p>		
Buyer influences	<p><i>The highest-pressure relationships are often with the anchor tenants – they owned the towers before selling to you and have attachments to them. They put a little more pressure on you than other customers.</i></p>		
Supplier influences	<p><i>We realized that MTN wants to go in that direction of digital services, so at a point, part of their regulations required that to come up as a new VAS service, your service should be more data service. They didn't want just the basic SMS service anymore</i></p>		

Exemplar of Template Analysis (Cont'd)

Top level a priori themes	Level one order	Level two order	Level three
Institutional context	Types of regulation	VAS licensing policies	<i>You have to be paying 1% of your revenues... unfortunately, the first four years of your business for VAS, you may not have recouped your investment.</i>
		Environmental laws	<i>Things like you can't build towers near hospitals and schools, but these are the places that need as good connectivity as they can get.</i>
		International codes of conduct	<i>You could say we are contravening FCPA, but you know, it is a cultural law that applies in Nigeria</i>
		Consumer protection	<i>NCC has put out a directive to operators to stop auto-renewal of subscription services and this has annihilated the VAS industry. This was done due to some service providers who were force subscribing customers without their consent</i>
	Pace of regulation	Degree of proactivity / reactivity	<p><i>the world has moved forward significantly. Some of those rules need to be revised and modernized</i></p> <p><i>The regulator is too laid back in policing the industry</i></p> <p><i>We didn't get support from NCA. You see, they don't want to commit to something they don't understand</i></p> <p><i>When the licenses were given, no mention was made about value added services in clear terms. So, the operators when they got their licenses, rolled out voice, data services, VAS; they created the rules for VAS before the regulators said anything</i></p>
		Bureaucracy	<p><i>Getting NCC approval for services (codes) is sometimes very difficult. It is only after NCC approves the code that we can approach the telcos</i></p> <p><i>sometimes when they need to renew your license or your short code or even your VAS license itself, you know Africa and delays, so there are lots of delays, lots of bureaucracy</i></p>
	Regulatory entry barriers	High licensing requirement	<p><i>the regulator has made it more stringent. If you want to come for license, you need to pay licensing fees, you need to pay short code fees</i></p> <p><i>There are some things that we want to do, we have the capability to do, we even have the infrastructure to do them, but because of licensing, we can't venture into those things...So, regulation has been a major barrier to entry for some things</i></p>
		Local partnership policy	<i>The new regulation says that they have to partner with a local player. That is an enabler; so that you don't have them coming into the market with big budgets, and just bully everybody away</i>
	Multiple regulation	<p><i>We suffer a lot of double taxation by local government, by state government. We pay to environmental, to the council; we have over six taxations, which I know, Unilever don't pay</i></p> <p><i>There is an interplay between the regulator and government; you may be permitted to do something by the regulator and not by government</i></p> <p><i>Sometimes, the bottleneck we have with NCC is that you have to get approvals that sometimes stretch back and forth and takes a while, beyond the date of your campaign launch</i></p>	
	Perceptions about regulation	<p><i>The regulator has friends in the business. So, they are not coming to solve our problems</i></p> <p><i>You cannot be a doctor and a patient at the same time</i></p> <p><i>They are supposed to protect everyone. But there is a lot of favour from them swinging to the side of the users, and that can be for political reasons</i></p>	
Security and safety	<i>Nobody wants to set up something that somebody will blow up in 2 or 3 days</i>		

Exemplar of Template Analysis (Cont'd)

Top level a priori themes	Level one order	Level two order	Level three
Technology	Technology advancements	<p><i>We thought, 3G has been there for a while, and 2G is practically phasing out already. So, the next level for us is 4G, in fact 5G is already coming out. So, we said let's start where nobody wants to be</i></p> <p><i>The platforms for 2G are not the same for 4G, they are different platforms, your SMS are different, your integration will be different because the phones you have are not 4G phones. And then the band we are using, the frequency is 1800 and 1900</i></p>	
	Technology access / adoption patterns	<p><i>You know Kenya is more technologically advanced than Ghana, so, that market was difficult for us to penetrate. These services are more readily and cheaply available in Kenya than Ghana</i></p> <p><i>In the past, services push information to you on weekly basis via SMS. Today, I don't have to pay for that information because I can easily search on my smartphone. So, traditional VAS is dying. What's going to fill that gap is rich media services</i></p>	
Social and Economic	Customer demographics	Income	<p><i>For low-value customers, even if it's 1 Cedi or 20 Pesewas we break it down. If you look at insurance service, for example, it is 1 Cedi 50 Pesewas. We break it down to 15 days payment, which makes it 10 Pesewas per day. We make it very insignificant for the customers to pay so they don't really feel it</i></p> <p><i>Well, a lot of the people that open this account is at the BoP, they are not usually very rich</i></p> <p><i>Well, the farmers that we deal with are very poor. So, compared to what we offer outside of this service, 2 Cedis monthly is very cheap.</i></p>
		Education and illiteracy	<p><i>The non-educated people, they have a belief that we telecom companies steal their airtime. When they complain about such things and you speak one-on-one with them, you realize that the customer has unknowingly subscribed to VAS services: they are receiving text messages every day for 15 Pesewas, the person sees it, and accepts it, then the messages come and they deduct their credit.</i></p>
	Cultural norms / beliefs	<p><i>We have a site which is an SDA. We don't work on Saturday. So, if a site goes down on Saturday, we can't do anything on that site. We must wait until the next day. It is a religious hindrance.</i></p>	
	Economic Infrastructure	Capital and money markets	<p><i>Well, access to cheap finance is not available. Interest rate of loans are like twenty-something percent. That's a major challenge</i></p> <p><i>it's very difficult to get money from banks, except big projects which probably is governmental, you can get some banks to show interest. But if it's for expansion, we have to do that from our own internally generated resources.</i></p>
State of national infrastructure		<p><i>Infrastructure is deficient outside Lagos. So, you will find there are states with no fibre at all</i></p> <p><i>One of the tricky parts about operating in Africa is that we have to create all our own power for the towers</i></p>	

Appendix 6: Questionnaire Guide

Category of questions	Questions	RQ linked with
Customer segments	Main customers	General
	Changes in market segments	BMI Forms
Value proposition	Company's value proposition	BMI Forms
	Innovation in offerings	BMI Forms
	Changes in price	BMI Forms, drivers
	Why firms made changes to their products, markets, and prices	BMI drivers
Core resources	Ranking resources in order of importance	General
	Innovation	BMI Forms
Core activities	Ranking activities in order of importance	General
	Innovation	BMI Forms
Partnerships	Types of partnerships	BMI Forms, Inter-organizational relationships
	Motivation for partnerships	BMI drivers
Operational challenges	Retaining existing customers	BMI forms, drivers
	Acquiring new customers	BMI forms, drivers
	Organizational dependence	BMI drivers, inter-organizational relationships
	Partnership alignment	Inter-organizational relationships
	Unpredictability of costs	BMI drivers
	Profitability	General
	Costs of resources	BMI drivers
	Revenue shortfall	BMI drivers
Competitive priorities	Approach to customer acquisition	BMI Forms, drivers
	Approach to relating with customers / suppliers	Inter-organizational relationships
	Focus between efficiency or effectiveness of resources	BMI Forms
	Approach to price determination	BMI drivers
Revenue structures	Pricing strategy	BMI drivers
	Customer mode of payment	BMI drivers; BMI forms
	Pricing mechanisms	BMI drivers
	Revenue sources	Inter-organizational relationships
Cost structures	Ranking costliest resources/activities	BMI drivers, forms