Gordon Institute of Business Science
University of Pretoria

Exploring the role of hyperscalers in South African MNOs' business model innovation

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Philosophy in International Business.

November 2025

Abstract

The rapid rise of hyperscalers has transformed the competitive landscape in the global telecommunications sector, challenging the traditional connectivity-focused business models of mobile network operators (MNOs). This study investigates how South African MNOs are navigating this disruption through business model innovation (BMI) spurred by the urgency to transform routine dynamic capabilities. Using Teece's dynamic capabilities framework and the modern business model innovation framework, the research explores how sensing, seizing, and transforming capabilities enable incumbents to respond strategically to hyperscaler competition.

An interpretive qualitative research approach is employed to understand how the industry defines dynamic capabilities for business model innovation amidst hyperscaler disruption.

The study enriches theory by providing an African perspective on MNO digital transformation and extending dynamic capabilities research into the context of hyperscaler disruption.

Practically, it offers strategic insights for MNOs aiming to reposition themselves as digital service providers in an increasingly platform-driven environment. Findings are intended to inform industry leaders about strategies to address disruptive challenges.

The results reveal that partnerships with hyperscalers, integration into cloud ecosystems, and experimenting with platform-based business models are becoming important strategic responses. MNOs demonstrate strong sensing abilities in recognising shifting value pools towards the cloud and digital services; however, capabilities related to seizing and transforming opportunities remain inconsistent, hindered by legacy systems, regulatory uncertainties, and organisational inertia.

Key Words: Business model innovation, dynamic capabilities, mobile network operators, hyperscalers

Declaration

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

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Name & Surname Signature

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CHAPTER 1 INTRODUCTION TO THE RESEARCH

1.0 Introduction

Business model innovation (Majola, 2023; Teece, 2018; Tripathi, Bachmann, Brunner & Jodlbauer, 2025) in the telecommunications industry has become crucial for addressing affordability, accessibility, and sustainability while fostering digital inclusion and competitiveness in rapidly evolving conditions (Duong, Falch,Xuan & Thu, 2022). However, new capabilities are required to sense evolving conditions, seize opportunities, and transform internal routines, solutions, and strategies (Malagihal & Momaya, 2024; Teece, 2007). Evidently, by collaborating with emerging actors and forming prudent partnerships, South African mobile network operators (MNOs) can make strides against the rivalry that has begun to threaten revenues and the survival of firms (Banda, Feukeu & Mzyece, 2025; Hajar, Al-Sharafi, Ibrahim, Al-Haimi & Al-Tahitah, 2024).

New contenders utilise global connections, data tools, and cloud capabilities (Banda, 2022b; Florecke, Ertl & Herzfeldt, 2023). Without fresh ideas, new capabilities, and responsive business models, local firms may remain reliant on basic connectivity revenue streams. This would limit avenues for value creation, fall short of advancing customer expectations, and hinder competitiveness (Qasim, Bataineh & Alhur, 2025).

Globalisation compels telecommunication firms to strategically utilise the cloud era to enhance competitiveness and shape business models that integrate effectively into the global digital economy (Hanafizadeh et al., 2021; Oluwi et al., 2021; Zare & Persaud, 2024). However, African telecommunications companies face challenges due to the rise of hyperscaler-enabled services, which adversely affect revenue and future growth prospects compared to counterparts in the Global North (Faccia et al., 2023; Floerecke et al., 2021; Lewis, 2022).

In South Africa, studies indicate that telecommunications companies lag in fully adopting and strategically integrating hyperscale cloud services into core business models (Banda, 2022a; Floerecke & Lehner, 2019). By managing both infrastructure and service delivery, South African mobile network operators (MNOs) have traditionally maintained control over the digital value chain (Howell & Potgieter, 2022). However, hyperscalers, international cloud and digital platform providers are increasingly gaining dominance in the market through value-added digital services that rely on telecommunications infrastructure (Chivunga & Tempest, 2022). Hyperscalers, particularly Amazon, Google, and Microsoft, are significant external forces that reshape MNOs' operating environment, influencing business models and altering the overall competitive dynamics of the telecommunications industry (Feil, Bogelsack, Schulz & Abrantes., 2024).

Regulatory challenges, growing competition, changing consumer needs, and technology breakthroughs are all contributing to the rapid evolution of South Africa's telecommunications sector. So too are the effects, accelerating rates of mobile penetration, high data costs, unequal access to connectivity, slow adoption of 5G infrastructure, and persistent digital divides between urban and rural areas . The decline of traditional revenue streams, particularly voice services, is driving MNOs to look for new business models to remain sustainable and grow (van Tonder, Bossink, Schachtebeck & Nieuwenhuizen, 2024).

In a study by Hagar et al. (2024) on the adoption of innovation practices amongst MNOs in Yemen, it emerged that a highly regulated environment is both a threat and an obstacle to innovation, limiting the extent to which business plans and strategies can be implemented.

Firms that focus more on networks than on digital services may fail to meet the expectations of digitally savvy customers. Users seek apps that work together, easy connectivity, and tailored services. MTN South Africa and Vodacom have begun addressing these gaps with tools such as MTN's Ayoba. Vodacom builds digital spaces for phone payments and fun content. But smaller firms fall short.

While local MNO incumbents continue to rely on established customer bases, regulatory knowledge, and infrastructure assets, new entrants leverage agility, advanced technologies, and global networks to capture emerging value pools (Narayan, 2022). This misalignment of capability creates a strategic tension between defensive and adaptive strategies, compelling local firms to pursue innovation-driven competitiveness.

Competitive strategy must be underpinned by fostering new dynamic capabilities to reconfigure resources, establish strategic alliances, and create differentiated offerings (Tripathi et al., 2025). Incumbents need to overhaul their models to remain competitive against digital disruptors (Malagihal & Momaya, 2024).

1.0.1 Definition of Key Terms

Term	Definition
Mobile network operator (MNO)	A telecommunications operator "provides customers fixed, mobile, and data services (Banda et al., 2024)." For this research, MNO refer to companies such as MTN, Vodacom and Telkom in South Africa
Hyperscaler	"large-scale cloud service provider (CSP) that offers massive computing resources, typically in the form of an elastic cloud platform" . Hyperscalers provide large-scale cloud service and core infrastructure (IaaS), platforms for application development (PaaS), and software-as-a-service (SaaS). They also offer specialised services like AI, machine learning, big data analytics, database management, and networking, all delivered through massive, highly scalable data centres." (Sangfor, 2023). In this study the term broadly refers to services offered by companies such as Google, Microsoft, Amazon, etc that directly compete with MNOs and not only the cloud aspect of their offerings
Business model	how an organisation creates, captures, and delivers value for its customers (Osterwalder & Pigneur, 2010),

Business model innovation	Changes of specific business model elements or a new approach to value creation and capture (Massa et al., 2017; Sniukas, 2012).
Dynamic capabilities	Dynamic capabilities are organisational skills used to reconfigure internal and external resources to adapt to changing business environments (Teece et al., 2016). They rely on innovation, helping firms create, remove, or modify resources based on market realities (Helfat & Peteraf, 2015). The theory stresses that firms must not only own resources but also orchestrate and recombine them over time (Teece, 2007; Teece et al., 1997).
OTT	The delivery of audio, video, and other media services over the Internet without the MNO operator controlling or managing the distribution infrastructure, quality of service, or monetisation models (Lotz, A. D., 2017). In platform-economy scholarship, OTT is defined as "Internet-based platforms that provide communications, media, or application services independently of the telecom operators whose networks they rely upon." These services compete directly with MNO offerings such as SMS, voice, and pay-TV (Van Dijck, J., Poell, T., & De Waal, M., 2018).

1.1 **The telecommunications industry in South Africa**

South African telecommunications operators play a crucial role in the digital economy. Generating over ZAR 200 billion in revenue annually and accounting for 4-5% of the country's GDP (GSMA, 2024). These firms support approximately 30,000 jobs and contribute 3–4% of government tax revenue. Telecommunications services account for approximately one-third of the digital economy and comprise 10-15% of global GDP.

The South African government acknowledges that ICT and the broader digital economy are crucial to future growth. The digital economy offers a critical national and firm-level competitive advantage, as greater adoption of digital technologies can help achieve fiscal objectives, such as economic growth and job creation, while addressing severe inequality issues (GSMA, 2024).

Alongside its economic influence, South Africa's telecommunications sector is vital for promoting social inclusion and expanding digital access and transformation. As one of the more developed ICT environments on the African continent, South Africa has seen rapid deployment of mobile, fixed broadband, fibre, and 5G-enabled networks. However, this progress coexists with structural inequalities: disparities in affordability, access, coverage, competition, and regulatory effectiveness.

A limited number of large firms dominate South Africa's telecommunications sector. Vodacom, MTN, and Telkom lead in market share. Smaller operations, such as Cell C and Rain, fulfil niche roles (ITWEB, 2024; TechInAfrica, 2025). Together, these companies account for most users, income, and network spending (Ndlovu, 2025).

Launching a mobile network requires substantial upfront capital investment, and this expenditure continues indefinitely to improve network quality and deliver superior service. In 2024–25, Vodacom, MTN, and Telkom collectively spent an estimated R27 billion on network infrastructure. Vodacom invested R11.5 billion, MTN added R9.8 billion. Telkom contributed R5.8 billion (Ndlovu, 2025). This activity targeted increased demand for higher broadband speeds, fixed fibre lines, and the rollout of 5G. However, firm capacities differ. Disparities become apparent through the access, investment capacities, and legacy system costs (Ndlovu, 2025).

Mobile networks in South Africa have experienced significant growth in recent years. Operators focused on adding more 4G sites and launching 5G services. Through these initiatives, South Africans experienced rapid growth in fibre-to-the-home and fibre-to-the-building services. This progress mirrors advances in mobile networks. Fixed broadband subscriptions almost doubled from 2023 to 2024. They climbed from 1.4 million to 2.7 million (Engineering News, 2025). The rise reflects strong consumer interest and private-sector funding. Fibre setups cluster mainly in cities and wealthy locations. Rural areas and townships rely on mobile broadband, while using outdated fixed links.

Revenue trends indicate a clear shift from traditional voice services to data and digital services. The ICASA State of the ICT Sector Report for 2024 notes that telecom revenue reached about R272 billion that year. This marks a rise from R232 billion in 2023. Mobile and fixed data services led the growth. Voice and old services continue to decline, but data usage keeps rising. Vodacom's yearly results point to this change. "Beyond mobile" services, such as fintech, IoT, and business solutions, brought in R11.2 billion. That made up almost 18 percent of their South African service revenue in one year (IT-Online, 2025). This spread of services demonstrates smart steps to handle full-voice markets and shifts in how people use technology.

Even with better infrastructure and more service options, cost remains a key issue. Mobile data rates in South Africa run high compared to what people earn, especially in poor homes. Research ICT Africa data shows past prices for 1 GB from big firms like Vodacom and MTN sat near R150. In contrast, Telkom and Rain charged less (Chinembiri, 2020). Rules from the Competition Commission’s data services market inquiry cut some costs. However, high prices still prevent many from accessing them.

Social and economic divides, along with location differences, exacerbate conditions. In 2022, roughly 75 percent of homes had some internet access. Yet, just 13 percent could use it at home (ICASA, 2024). Rural areas, informal spaces, and low-income regions often fall far behind in

both reach and stability. Phone companies began rural rollout plans, such as Vodacom's initiative in KwaZulu-Natal. But high costs, supply hurdles, and setup problems—such as power cuts—hold them back (Engineering News, 2025). Power outages prompt companies to invest in costly backup generators and batteries. This increases running costs (ICASA, 2024).

South Africa's telecom sector relies on its rules and policies to grow. Yet these have drawn complaints about slowness and red tape. Delays in handing out spectrum for 4G and 5G bands often limit what carriers can do. This holds back the push for new technology and hurts rivalry among firms (ICASA, 2024). There are discrepancies in the enforcement of rules on larger players, while contention over wholesale lines and shared setups affects small carriers and virtual networks, limiting competition.

Smaller firms like Rain and Liquid Telecom offer cheap data plans and fibre options. Yet they struggle to grow. Key capability barriers include scarce spectrum, weakness in structuring wholesale deals, and funding shortages. Meanwhile, consumer efforts such as the #DataMustFall campaign reflect public demand for lower costs. Users also advocate for stricter regulatory oversight (Moyoa & Munoriyarwa, 2021).

1.2 Hyperscaler and Telco relationships

The hyperscale data centre market in South Africa is rapidly growing. Valued at about USD 1.34 billion in 2025, it’s expected to reach USD 3.66 billion by 2031, with an 18.27% CAGR. This growth is fuelled by rising demand for cloud computing, AI, and local data storage to meet data sovereignty rules (Mordor Intelligence, 2025).

Leading players are adopting innovative business models that prioritise modular facility design, energy efficiency, and enhanced security protocols. For instance, Teraco’s JB7 data centre in Johannesburg, with a 40-megawatt capacity, exemplifies the trend of self-built, client-specific hyperscale

facilities that emphasise operational control and scalability (Mordor Intelligence, 2025). Additionally, operators are integrating renewable energy solutions into infrastructure to address South Africa's energy challenges while aligning with global sustainability standards (Inospace, 2025).

The bond between MNOs and hyperscalers mixes teamwork and rivalry. Hyperscalers offer platforms, tools, and vast reach that MNOs struggle to match on their own. Use public cloud services from hyperscalers: they let MNOs tap into robust capabilities such as automation, AI and machine learning, as well as container-based designs. This shifts the load of old systems away from telcos (BCG, 2025). Such links help MNOs roll out fresh options, like cloud-based network parts and edge computing.

However, the shared aims also foster rivalry. Hyperscalers are invading propositions that MNOs once dominated, such as edge networks and content sharing. Some MNO leaders worry about handing over key network tasks. This could tie them too tightly to cloud firms and weaken their unique strengths. Meanwhile, these partnerships speed up new service launches, raising a dilemma over how to navigate the synergies with hyperscalers (Cameroon, 2022)

The migration to the cloud and tighter relationships with hyperscalers also pose risks to long-term strategic independence. Vendor lock-in remains a significant concern because, once MNOs migrate critical workloads to a hyperscaler's public cloud infrastructure, switching becomes costly due to technical, commercial, and contractual complexities. BCG (2025) cautions that while cloud-agnostic IMS solutions exist, operators need to be mindful of platform dependencies and architectural choices.

A related challenge is the erosion of differentiation. As hyperscalers improve compliance frameworks, edge deployment tools, and network integration features, MNOs risk loss of competitive advantage in connectivity and reliability. The distinction between connectivity providers and cloud service providers has blurred, potentially relegating MNOs to commodity segments. Investing in unique value propositions is an urgent imperative (Cameroon, 2022)

Hyperscalers bring immense capital, research skills, and capacity, often shaping the direction of industry innovation. This creates a dependency where MNOs not only rely on hyperscalers for infrastructure but also risk depending on them for innovation and product roadmaps (Cameroon, 2022)

There are also operational and regulatory challenges. Utilising hyperscalers for critical workloads complicates adherence to data residency and sovereignty standards. Issues such as outages, security incidents, or regulatory conflicts can complicate compliance by telecommunications companies, especially in regions like South Africa, where regulatory requirements are stringent. According to McKinsey (2024), legal and regulatory obstacles remain among the most frequently cited challenges in African markets. Consequently, telcos must carefully manage these partnerships to maintain resilience, redundancy, and regulatory compliance while managing reliance on global entities.

1.3 **Business Model Innovation**

In academic studies, business model innovation is associated with significant organisational success or failure. The Big Five- Apple, Alphabet, Meta, Microsoft, Amazon are seen as key examples, transforming tech by challenging norms and creating new value (Qudrat-Ullah, 2025). In contrast, firms such as Nokia, Yahoo, and BlackBerry illustrate the risks and shortcomings associated with failing to effectively innovate their business models (Tikkanen, 2019; Qudrat-Ullah, 2025).

Business Model Innovation theory stresses that companies must adjust or overhaul their business models to produce, provide, and gain value amid shifting conditions (Bachmann & Jodlbauer, 2023). This study uses the theory to explore ways South African MNOs can move past old infrastructure-focused models. Relatedly, the rise of hyperscalers as major cloud providers offers flexible digital tools and setups (Floerecke et al., 2023). Such changes require reshaping offers for customers, creating new ways to add value, and devising new methods to generate revenue. The goal is to shift to models centred on customers, platforms, and networks that align with the global outlook on digital solutions.

Business model innovation is crucial for South Africa's telecommunications sector to grow and stay competitive (Banda, 2022a). By leveraging technological advances, forming strategic alliances, and addressing infrastructure and regulatory challenges, industry players are well-positioned to lead Africa's digital transformation. Ongoing investment and innovation in business models are vital to maintain a competitive advantage and meet the evolving needs of the digital economy.

In the past, MNOs benefited from models that prioritised a capital investment focus to improve coverage, efficiency, and service quality. The focus is changing. Investment now supports the deployment of 5G infrastructure and the enhancement of rural connectivity. Arizton (2025) reports that telecommunications investment reached approximately USD 2.16 billion in 2024, with projections increasing to USD 3.40 billion by 2030.

The exponential increase in global mobile data traffic is forecasted to reach 325 exabytes per month by 2028 (Ericsson, 2023). While this surge in demand underscores the critical role of MNOs, it does not directly translate into proportional revenue growth. Instead, over-the-top (OTT) service providers and hyperscalers, such as Google, Amazon, and Microsoft, increasingly capture value by monetising data and offering cloud-enabled services (Shivakumar & Kirankumar, 2024). This dynamic has fundamentally shifted the MNO position within the digital ecosystem from being at the centre of value creation to often being relegated to the role of infrastructure enablers

Companies such as MTN are implementing business model innovations, including infrastructure sharing and public-private partnerships, to optimise capital expenditure and expand service reach. For example, MTN's USD 12 million investment in the Eastern Cape focuses on improving battery backup, site security, and energy facilities, ensuring uninterrupted service delivery in underserved areas (Broadcast Media Africa, 2025). These models also involve offering value-added digital services and platforms that increase customer engagement while diversifying revenue

streams (Arizton, 2025). Hyperscalers have introduced new business models, faster innovation cycles, and greater operational efficiency, displacing traditional MNO roles (Cozzolino et al., 2022).

1.4 **Dynamic capabilities**

Dynamic capabilities (DC) theory provides a valuable lens for understanding a firm's critical competencies within its context (Teece, 2007; Tripathi et al., 2024). The concept suggests that a firm's ability to integrate and reconfigure competencies quickly in response to changing environments is key to maintaining competitive advantage (Teece, 2018). This view emphasises that successful business model innovation involves more than just new ideas; it requires a firm's ability to identify opportunities, seize options, and continually transform resources to stay relevant in volatile markets.

The theory examines how firms blend, develop, and adjust their skills both internally and externally to respond to rapid changes (Teece, 2018). The study investigates how South African telecoms develop new competencies through partnerships with hyperscalers. Identifying options, testing new pathways to unlock value and altering workflow and services. This highlights the importance of quick resource deployment and of learning and unlearning as critical skills. These must drive significant business model changes in the challenging telecom industry.

A challenge faced by both South African and international telecommunications companies is the internal competence to leverage these advantages while addressing the risks associated with hyperscaler dominance (Földes, 2022). As the sector progresses, it will be vital to conduct empirical research, primarily peer-reviewed studies focused on African markets, to enhance industry reports with robust evidence on long-term effects (Banda, 2022a).

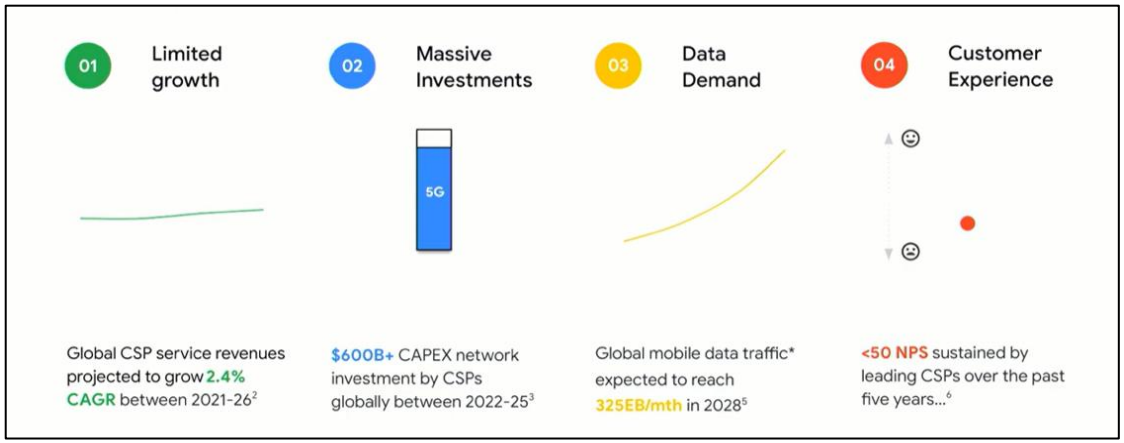

Figure 1: MNO revenue disruption

Source: Cloud & Ericson & Bain (2022)

Customer experience further exacerbates conditions. Despite heavy investments, customer satisfaction levels remain low, with leading CSPs sustaining net promoter scores (NPS) below 50 over the past five years (TM Forum, 2022).

1.5 **Research Problem**

MNOs are at a critical juncture. Limited revenue growth, increased capital expenditures, rising data consumption, and challenges in delivering outstanding customer experiences define the industry (Banda et al., 2024). Working with hyperscalers offers chances for creativity and agility, but it also carries the risk of dependency and a loss of control (Floerecke et al., 2023). MNOs must navigate opportunities to reinterpret their responsibilities in the digital ecosystem.

Despite these obstacles, business model innovation remains limited among South African MNOs (Banda et al., 2024). These firms are reactive, focusing on short-term survival over long-term value creation (van Tonder et al., 2023). Outdated strategies still dominate, prioritising infrastructure and service delivery over digital services, customer experience, and ecosystem collaborations. Meanwhile, in leading global markets, there is a progressive shift towards digital ecosystems, platform-based models, and customer-centric solutions, which makes South African MNOs less competitive (van Tonder et al., 2023).

The telecommunications industry is rapidly transforming due to hyperscale cloud providers such as Amazon, Microsoft, and Google. They provide scalable infrastructure and expand into 5G, edge computing, and network virtualisation, reshaping value chains and competition (Banda et al., 2024; RCR Wireless, 2023).

In global contexts, this has compelled telecommunications operators to reassess traditional business models, particularly in terms of revenue diversification, cost structures, network investment strategies, and strategic partnerships (STL Partners, 2022). The rise of hyperscalers creates a need to understand how their dominance affects business model innovation in telecommunications (Földes, 2022).

Despite growing attention to the phenomenon in the literature, research within the South African context remains limited (Banda et al., 2024). Recent studies on business model innovation and digital transformation in South African MNO companies emphasise the influence of new

technology and digital strategies on business models (Majola, 2023). However, most studies do not explicitly address the role of dynamic capabilities in driving transformation (Tripathi et al., 2025).

South Africa's unique infrastructure, regulations, and socioeconomic conditions warrant further research. Significant economic disparity, a lack of data centre capacity, difficulties in allocating spectrum, and infrastructure flaws such as energy instability are among the fundamental limitations the telecoms industry must contend with (Masigo, 2021). These hurdles limit the market potential of affected firms. Income gaps limit the number of customers for premium digital services. Price-dominated rivalry erodes profits and reduces funding for advanced technologies such as 5G and cloud systems (Banda, Feukeu & Mzyece, 2025; Gillwald & Moyo, 2022).

Local firms struggle to build internal capabilities to offer scalable cloud and edge computing services. Strategic drivers, such as spectrum allocation, often face delays or political disputes. These issues slow the deployment of advanced mobile networks (Gupta, 2022). As a result, operators struggle to deliver fast data speeds and wide coverage.

Power outages and frequent blackouts increase running costs and lead to network failures. Such problems cut service reliability and lower customer trust. These barriers hinder new ideas, discourage investment, and prevent South African MNOs from achieving the speed and quality needed to thrive in the domestic market (Majola, 2023).

These elements affect not only the rate and extent of technology adoption but also MNOs' ability to interact strategically with hyperscalers. Although business model innovation theory explains the ‘what’ of business model transformation, the ‘how’ and ‘why’ of decisions in the South African context are underattended (Gaorekwe & Bwalya, 2024). Understanding the mechanisms underlying these gaps and the reasons why local MNOs may lag in hyperscaler-driven change is therefore crucial.

While a growing number of studies focus on digital transformation and business model innovation (Bachmann & Jodlbauer, 2023) within telecommunications, most of this research concentrates on developed economies in Europe, North America, and Asia (Zander, 2024). Studies highlight that MNOs in these regions are engaging hyperscalers through partnerships, joint ventures, and platform-based collaborations, while also facing competitive risks from disintermediation and reliance on external infrastructure (Gaorekwe & Bwalya, 2024).

The South African context, with its unique socio-economic disparities, high network deployment costs, regulatory complexities around spectrum allocation, and persistent infrastructure challenges such as energy insecurity (Majola, 2023), shapes how hyperscaler adoption can occur and the benefits it may yield. Understanding this dynamic is critical, as it determines not only MNOs' strategic responses to digital transformation but also their ability to compete effectively in a market increasingly influenced by global cloud service providers (Banda et al, 2025).

The absence of research in this area has several implications. First, it limits academic understanding of how business model innovation unfolds in telecommunications industries operating in developing contexts, where structural and institutional constraints may alter established global patterns (Duong et al, 2022).

Second, it restricts the ability of industry stakeholders and policymakers to evaluate hyperscaler adoption in relation to revenue diversification, investment in 5G and edge computing, and long-term competitiveness (Gupta, 2022). Finally, it creates a theoretical gap, as while business model innovation theory explains the ‘how’ and ‘what’ of business model change (Foss & Saebi), it does not adequately address ‘why’ South African MNOs lag behind global peers in hyperscaler-driven transformation, and what underlying mechanisms such as institutional, regulatory, or infrastructural contribute to this (Bachmann & Jodlbauer, 2023; Gupta, 2022).

Such conflicts prompt South African MNOs to review core offerings, alliance plans, and focus areas for new ideas. Critically, firms must develop the capability to think and operate in new ways.

1.6 **Research Purpose**

This study investigates how MNOs modify routine capabilities and long-term strategies when adapting business models through partnering with hyperscalers (Tripathi et al, 2024). It examines phenomena through the lens of business model innovation. The work explores how companies adapt core offerings to customers, the methods employed to provide services, and reframe sources of revenue. Such changes lead to significant shifts in operating models (Foss & Saebi, 2017; Teece, 2007).

A further aim is to assess how dynamic capabilities help guide and support these changes. In particular, the study examines how MNOs identify new opportunities in the digital space and how these inform changes to work routines and resources to enhance competitiveness (Helfat & Winter, 2019). These skills enable firms to handle technological changes and market shifts that arise from working with hyperscalers.

Through these goals, the research offers valuable insights for MNOs in emerging market economies that are under pressure to adopt digital solutions. It also builds knowledge on how dynamic capabilities support business model innovation. The arguments illustrate the connections between business model innovation and dynamic capabilities. It emphasises how MNOs can leverage external digital partners to reframe value propositions and supporting ecosystems.

1.6.1 **Significance To Business**

This research aims to deepen our understanding of how hyperscalers influence business model innovation among MNOs within developing countries.

1.6.2 Significance To Theory

This study's importance to theory stems from its contribution to enhancing understanding of the interplay between business model innovation (BMI) and dynamic capabilities (DC) in complex, digitally disrupted settings such as the South African telecommunications industry. By examining the role of hyperscalers in *instigating* and *enabling* MNOs to innovate their business models, this study enriches theoretical knowledge of ecosystem-driven innovation. It contributes to theorising about business model innovation by integrating dynamic capabilities as the underlying mechanisms that facilitate sensing, seizing, and transforming opportunities into sustained competitive advantage (Foss & Saebi, 2017; Teece, 2007).

Moreover, this research addresses existing business model innovation challenges by examining perspectives arising when seeking alliances with hyperscalers. The data offers a nuanced insight into how firms manage and orchestrate internal competencies and external resources in dynamic contexts. It demonstrates how internal capabilities evolve and operate under constrained conditions typical of emerging markets, contributing to theoretical frameworks with empirical insights on business model adaptability and resilience (Helfat & Winter, 2019).

1.7 Research Questions

In order to achieve the goals outlined above, the following research question guides the study

Research Question*: How do MNOs define dynamic capabilities for business model innovation amid disruption from hyperscalers?*

The question contains two core elements:

1. Framing dynamic capabilities to steer business model innovation
2. Business model innovation : the strategic adaptations or changes to value creation/delivery/capture

Sub-question 1: How do MNOs make use of sensing capabilities when responding to hyperscaler disruption?

Sub-question 2: How do MNOs make use of seizing capabilities when responding to hyperscaler disruption?

Sub-question 3: What transforming dynamic capabilities emerge when MNOs respond to hyperscaler disruption through BMI?

1.8 **Research Aims**

The research aims are as follows

I. To explore how MNOs make use of sensing capabilities when responding to hyperscaler disruption
II. To explore how MNOs make use of seizing capabilities when responding to hyperscaler disruption
III. To explore how MNOs make use of transforming capabilities when responding to hyperscaler disruption through BMI

1.9 **Significance of the study**

This study will enhance understanding of how hyperscalers impact dynamic capabilities and business model innovation among MNOs in developing countries.

The research is important because it improves our understanding of how institutional forces shape business model changes in South Africa's telecom sector, especially with challenges from major cloud providers (Do Manh, Dang, Falch, Tran Minh & Vu Phi, 2023; Gupta, 2022). It combines dynamic capabilities with business model concepts to show how experienced practitioners interpret the differences between old company routines, regulatory rules, and emerging market needs.

Practically, the work provides insights for telecom leaders and policymakers to evaluate new ideas within current regulations. This aims to help local firms adapt more effectively to competitors. For society, the study illustrates how these forces can either hinder or support telecom advancements. It influences digital access and resilience in developing economies.

1.10 **Scope of the Study**

This study aims to investigate the impact of global hyperscalers on business model innovation in the South African telecommunications sector. It focuses on the role of dynamic capability in sensing, seizing, and transforming strategic, organisational, and technological collaborations between

hyperscalers and major South African mobile operators. Specifically, the research analyses partnerships, cloud adoption strategies, infrastructure developments, and the progression of digital services that are shaping new business models.

Leveraging dynamic capabilities theory, the study explores how firms develop and reconfigure internal competencies to adapt to the disruptive influence of hyperscalers. This theoretical lens offers a framework for understanding how telecommunications operators navigate emerging opportunities and adapt their operational models to sustain competitiveness in rapidly evolving market conditions.

The study defines its boundaries in terms of three key factors. It focuses first on decision-makers in established MNO firms. The views, actions, and plans reveal how deeply rooted rules guide changes to business models. Second, it examines how internal elements, such as company habits, beliefs, and traditional working practices, interact with external forces from regulators, markets, and foreign competitors. This mix affects how well these firms can update their business models. Third, the work notes broader trends in Africa's telecom sector. It draws from South Africa as an example to offer valuable lessons for other growing nations.

The study limits its scope and does not attend to technical details of network setup, such as spectrum control and hardware placement. Instead, it highlights strategic and institutional aspects of new business models. Hyperscaler threats form a key external factor. Yet the work does not cover all their tactics in full. It examines how South African telecom firms shape internal capability choices.

1.11 **Conclusion**

This chapter provides an overview of the study, situating it within the broader context of the rapidly evolving South African telecommunications sector. The chapter's description of the institutional and historical context of South African telecommunications has highlighted the extent to which

disruptive forces, particularly global hyperscalers such as cloud service providers and digital platform companies, are exerting pressure on established operators.

By providing alternative infrastructure, services, and business models that put major telecom operators' conventional revenue streams and market dominance in jeopardy, hyperscalers are rapidly changing the competitive landscape. To stay competitive and relevant in the evolving digital ecosystem, incumbent MNOs must adapt and reframe business models.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

Chapter 1 outlined the research problem, aims and objectives for this study. This chapter explains the phenomena and theoretical frameworks that underpin the enquiry. The literature reviewed examines business model innovation and dynamic capabilities theory (Tripathi et al, 2025; Teece, 2018) and provides an overview of the scope for impact in technology firms (Omungu & Kavale, 2025). Relatedly, it describes the disruptive effects of hyperscalers on mobile network operators (MNOs) in the telecommunications sector. (Depner & Richter, 2025)yes

With the rapid evolution of technology, incumbent organisations must remain vigilant about the potential dangers posed by new entrants (Christensen et al., 2015). Notably, MNOs are confronted with disruptive influences from hyperscalers in the ICT value chain (Depner & Richter, 2025). Other studies have focused on how new business models disrupt incumbents (Foss & Saebi, 2016). This study examines the experiences and strategies that frame new business models designed to support the embedding of new capabilities.

Technology, regulatory changes, and organisational practices influence institutional disruption in micro and macro value chains (Flå, Klemets, & Jaatun, 2025). Such disruptions can significantly alter the operational landscape, impacting both companies and consumers. As technologies such as cloud, blockchain, and AI become more accessible, traditional firms risk losing competitiveness (Hajar et al, 2024; Wong & Ngai, 2025).

2.2 Mobile telecommunications

The mobile telecommunications industry is under threat. New players have emerged with innovative technologies, offering competitive services to customers. However, as revenues stall, future connectivity growth remains unclear, and profit margins shrink, MNOs are increasingly challenged to fulfil substantial investment needs and protect market share (Challa, Challa, Lakkarasu, Sriram, Adusupalli, 2024). For these firms, disruption extends beyond technology and encompasses innovations in business models, as hyperscalers invade sectors once dominated by traditional telecom operations. A primary challenge for MNOs is transitioning from conventional capital expenditure models to strategies that emphasise continuous solutions for clients (Ghezzi, Cortimiglia & Frank, 2015).

Existing literature primarily examines disruptive innovation at the technological level; however, entire industries can also be disrupted (Heikki & Ailisto, 2018). Past leaders may vanish, new entrants emerge, sector boundaries blur, and market conditions require societal adaptations, including new institutions and regulations (Kilkki & Ailisto, 2018).

Christensen (1997) suggested that relying too heavily on existing customer needs can be detrimental during periods of technological disruption. This conflict may cause incumbents to serve old needs while new players capture market share by meeting emerging demands.

Danneels (2004, p. 249) defines "a disruptive technology as one that changes the basis of competition by changing the performance metrics along which firms compete." This study uses the definition provided by Kilkki et al. (2018), viewing disruption as a process that drives an organisation to reinvent itself in response to major environmental shifts.

Disruption in telecommunications involves regulatory shifts, digital changes, and the rise of new business models, forcing traditional companies to adapt or face obsolescence. Although these challenges present difficulties, they also open avenues for innovative growth (Hinterhuber, Vescovi, & Checchinato, 2021).

Digital technologies are widely understood as essential for future competitiveness. Kohtamäki et al. (2019) argue that digital servitisation, which integrates products, services, and digital technologies, is a vital pathway for product-centric firms to enhance performance and gain a competitive advantage. In their empirical work, they demonstrate that firms that engage in digital servitisation outperform their peers who only incrementally adopt digital tools without integrating them into their service and value-creation logic. Relatedly, Amit and Zott (2020) suggest that product innovation improves value propositions.

Similarly, Tripathi et al. (2025) contend that digitalisation in traditional industries involves not only the adoption of technologies such as AI, IoT, cloud, and edge computing, but also the reconfiguration of organisational cognitive frames, routines, and structures to adapt to the new competitive logic. They warn that without psychological, structural, and routine-level change, many digitalisation efforts fall short of their promised outcomes.

The competitive pressures and disruptive forces outlined here influence the sensing challenges MNOs face as hyperscalers' entry blurs the lines across formally segregated value propositions (Narayan, 2022).

2.3 Conceptualising Business Model Innovation

Business Model Innovation is the deliberate process of transforming how a company creates, delivers, and captures value (Ahokangas, Atkova, Yrjölä, & Matinmikko-Blue, 2024). Unlike product or service innovation, which improves offerings, business model innovation transforms the overall framework to gain competitive advantage, adapt to disruption, or explore new markets. (Teece, 2010; Chesbrough, 2010)

An ongoing debate exists in the academic literature regarding what constitutes a business model. “Value creation, value proposition, value capture, value delivery, and value communication emerge” as key themes across various texts (Rayna & Striukova, 2016, p. 22). Teece (2010) defines a Business Model as “the design or architecture of the mechanisms for value creation, delivery, and capture" of an organisation.

Research over the past twenty years shows that to stay competitive in a constantly changing environment, companies need to pursue operating model transformation as ‘designed, novel, nontrivial changes to the key elements of a firm’s business model and/or the architecture linking these elements’ (Foss & Saebi, 2017).

Scholars suggest a positive link between business model innovation and performance, but firms vary in their ability to generate economic value from new formats (Kim & Min, 2015; Lanzolla & Markides, 2021).

Prior research emphasises that business model innovation enhances performance by improving organisational learning and contributing to firms' knowledge (Foss & Saebi, 2017). Firms engaged in business model innovation typically use three main learning modes: "cognitive search, experiential learning, and vicarious learning” (Berends et al., 2016; Martins et al., 2015).

Engagement in business model innovation helps firms develop efficient operational practices for sourcing, production, and distribution (Amit & Zott, 2001), enhancing performance (Foss & Saebi, 2017). Business model innovation provides companies with insights into markets, competitors, and emerging technologies, enabling them to develop and refine product offerings for market entry or enhanced positioning.

Businesses practising business model innovation use experiential learning methods, such as hands-on and vicarious experiences, to acquire knowledge about markets and products/technologies. They use experimentation and trial-and-error to validate business model ideas and assumptions (Garud et al., 2022; McDonald & Eisenhardt, 2020; McGrath, 2010; Sosna et al., 2010).

This study aligns with Foss & Saebi (2017), who use the term "nontrivial" to imply that business model innovation involves significant changes rather than minor adjustments.

Research indicates that the tension between existing business models and market responses prevents established companies from pursuing business model innovation (Chesbrough, 2010). Furthermore, the disparity between a company's resources and emerging business models further hampers innovation initiatives for these firms (Chesbrough, 2010). This apprehension often causes organisations to either maintain their current models or pursue only minor product innovations, rather than fully embracing a comprehensive business model transformation.

2.4 Approach to business model innovation

Tripathi et al. (2024) conceive of business model innovation as occurring in three phases as outlined in Figure 2. This framing provides a theoretical foundation for analysing the capabilities required for MNOs to reconfigure value creation, delivery, and capture mechanisms in response to Hyperscaler disruption.

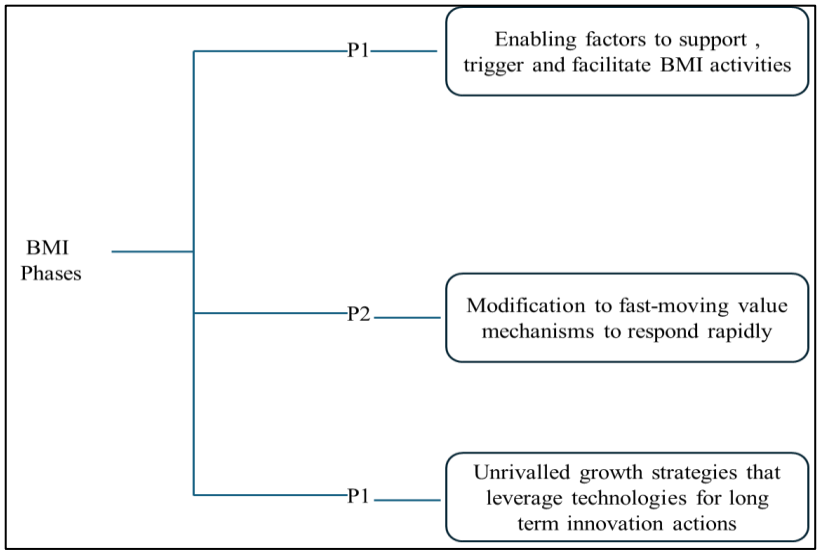

Figure 2: Phases of Business Model Innovation

Source: Adapted from Tripathi et al. (2025)

The first and second phases highlight the opportunity to explore alternative models through gradual changes (Landau et al., 2016). In contrast, a third and more extensive approach promotes the creation of innovative models through a transformative process that supplants existing frames (Lansiti & Lakhani, 2014). This fragmentation stems from diverse disciplinary backgrounds analysing business model innovation, as strategy (Demil & Lecocq, 2010), innovation management (Dmitriev et al., 2014), marketing (Sorescu et al., 2011), information systems (Al-debei and Avison, 2010), and entrepreneurship (George & Bock, 2011),.

Reviewing innovation formats is crucial for understanding business model innovation and how modifications to products, processes, or technologies can reshape formats. For instance, process innovation involves changes to an organisation's delivery methods (Amit & Zott, 2020). It often stems from internal improvements aimed at enhancing delivery.

In contrast, product innovation shifts the value proposition or enhances product functionality (Amit & Zott, 2020) by focusing on premium offerings or creating commonalities across products

Technological innovation disrupts current norms through new platforms and capabilities, often requiring considerable time and resources. (Amit & Zott, 2020) This study examines how established firms respond to digital competitors through technological product innovation.

The literature on business model innovation provides a framework for understanding how firms pursue new opportunities enabled by these technologies. Foss and Saebi (2017, p. 216) define BMI as "designed, novel, and non-trivial changes to the key elements of a firm's business model and/or the architecture linking these elements". The typology distinguishes between incremental and radical business model change versus modular and architectural innovation, both of which are especially relevant when digital technologies disrupt core business logic (Foss & Saebi, 2017).

Scholars contend that innovation in business models involves more than just adopting technology; it demands novel value-proposition design, value capture mechanisms, and rethinking organisational boundaries and revenue models (Giesen, Riddleberger, Christner, & Bell, 2007; Geissdoerfer, Vladimirova, & Evans, 2018)

Although digital transformation and business model innovation are widely acknowledged as crucial, studies often yield inconsistent findings, and many digitalisation efforts fail to deliver expected results. Volberda et al (2021) note that organisations face a dilemma: sizable investment in digital technologies often does not yield transformation of business logic or improved competitiveness because of insufficient changes in underlying cognition, routines, or structures. In a similar vein, studies of digital servitisation in manufacturing have found firms struggle with internal and external complexity, particularly with transforming firm routines, capabilities, and interorganisational relationships to truly reap the benefits of new technologies (Kohtamäki et al., 2019 & Han, 2022).

Furthermore, empirical reviews indicate that although many firms have begun transformation trajectories, fully achieving business model innovation enabled by digital technologies remains rare. A systematic literature review by Foss and Saebi (2018) shows that while there is a proliferation of conceptual case studies, few demonstrate long-term, radical transformation in business model architecture. Business model innovation, as a deliberate and deeply embedded process, is still infrequently observed (Foss & Saebi, 2018).

Finally, critics also point out that digitalisation alone does not guarantee strategic renewal. Leinwand and Mani (2021), for example, illustrate how large organisations that expand digital initiatives while failing to reshape culture or decision-making practices have undermined the intended transformation. Firms often delay decisions or fail to commit sufficient resources to align legacy structures with their digital strategy. Scholars in the field caution that the nexus between digitalisation and business model innovation is complex and fraught with organisational inertia. Success depends heavily on the ability to reconfigure strategy, structure, and culture, rather than just adopting new technologies (Volberda et al., 2021; Kohtamäki et al., 2019).

The contrast between incremental and transformative approaches to BMI aligns with the study's focus on how MNOs seize new opportunities and then transform their structures and routines to sustain business model innovation (Tripathi et al., 2025).

2.5 Navigating Changing Conditions

The rapid integration of information technology necessitates innovative business models that align with current economic conditions, particularly in response to increased demand for online services (Shaislamova, 2021). Progress in telecommunications technology requires new business models. These models must fit changing economic conditions.

This is especially true with the rising need for online services (Shaislamova, 2021). Aspects such as AI adoption, 5G networks, automation, and cloud computing enable traditional telecom firms to become tech-focused companies (Hajar et al., 2024). These changes open up new revenue streams such as AI-based services, network slicing, and growth in digital systems. At the same time, telecom firms need to review operational processes and customer engagement strategies. Critically, there must be a balance between exploiting existing resources and exploring new opportunities, fostering an environment conducive to continuous innovation (Parmentier & Gandia, 2025).

Optimising current assets while pursuing new avenues drives steady innovation and maintains a competitive edge over rivals (Parmentier & Gandia, 2025). Such a two-part strategy requires building on strong networks and maintaining steady customers. Firms also invest in emerging technologies like AI, 5G, and cloud services. These steps help shape new offerings and business paths.

Substantial change comes from a nimble setup within the firm. It aids in repeated lessons and tests in a complex web of rules and economics (Carvalho, Karthikeyan, Sudhahar & Jesiah, 2024). Partnerships are pivotal. When firms join forces, these alliances also extend into online networks. This way, it is possible to maximise the value of existing holdings. At the same time, new paths emerge to meet the rising needs of users and market shifts (Gupta, 2022). This active balance keeps firms stable and functional amid swift technological and competitive changes.

2.5 Dynamic Capability Theory

In the rapidly evolving telecommunications industry, business model innovation is a strategic imperative for firms to achieve and sustain a competitive advantage. This is particularly salient in telecommunications, where firms face intense technological disruption, competitive pressures from global hyperscalers, and unique regulatory landscapes. Dynamic capability theory (DCT) provides a comprehensive framework for examining how firms develop, adapt, and reconfigure resources to navigate these challenges and innovate effectively (Teece, 2007).

Dynamic Capability Theory (DCT) posits that firms gain and sustain competitive advantage through the ability to reconfigure resources in rapidly changing environments (Teece, 2007; 2018; Tripathi, 2024; Wong & Ngai, 2025). The theory's dimensions offer a useful framework for analysing how South African MNOs can innovate business models amid digital disruption and the entry of hyperscaler ecosystems.

As depicted in Figure 3, dynamic capabilities help firms develop new resource configurations in changing environments. Scholars propose a tiered perspective that begins with foundational activities and extends to higher-order functions that orchestrate resources efficiently (Teece, 2014; Tripathi et al., 2025).

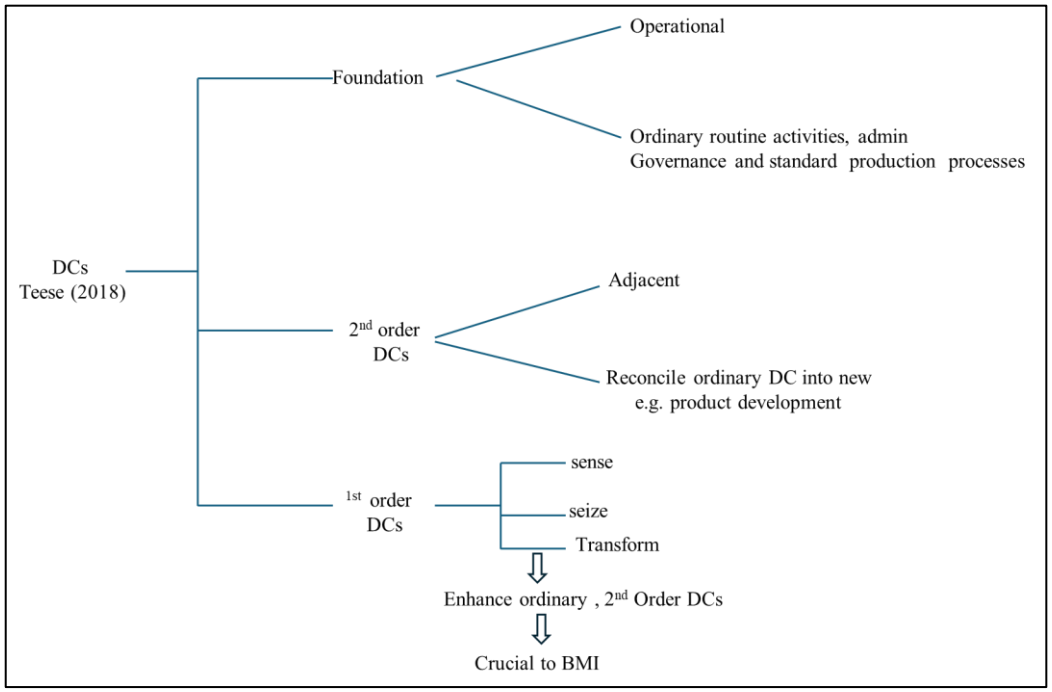

Figure 3: Dynamic capability theory

Source: Adapted from Tripathi (2024)

As strategy process, the theory explains how organisations sustain competitive advantage in dynamic environments by developing three core capabilities: sensing, seizing, and transforming (Teece, 2007). Sensing involves detecting opportunities and threats through environmental scanning and learning; seizing entails mobilising resources and making strategic investments; transforming covers reconfiguring organisational assets to maintain fit with external changes (Yeow et al., 2018). This cyclical process equips firms to innovate business models by integrating new technologies, processes, and partnerships.

Firms are viewed as collections of resources at a moment, guiding strategic decisions (Barney et al., 2011; Wernerfelt, 1984). Possessing scarce resources (Barney, 1991; Wernerfelt, 1984) is not enough; firms must respond quickly and effectively coordinate resources (Teece et al., 1997, 2018). Capabilities refer to a firm's ability to combine resources to achieve goals (Amit & Schoemaker, 1993). The dynamic capabilities framework integrates internal and external resources, processes, and paths for advantage (Teece et al., 1997).

External resources also impact how firms reconfigure and adapt their business models. Large firms that coordinate and adapt quickly possess vital dynamic capabilities, influenced by advantages in resource positions (Kleinbaum & Stuart, 2014; Pisano, 2017). Rapidly changing environments require firms to develop these capabilities; while constant agility is costly, knowing when to adapt yields rewards (Teece et al., 2016). Dynamic capabilities enable firms to reconfigure internal and external resources efficiently in response to change (Teece et al., 1997, 2016).

Woerner, Owens, and Beath (2021) identify eight dynamic capabilities essential for digital business, including sensing technology trends, seizing new market opportunities, and evolving organisational culture. Such capabilities underpin MNOs' ability to innovate beyond traditional telecom services, advancing into fintech, healthtech, and smart city solutions.

In the context of telecommunications, DCT emphasises the need to continuously recalibrate both technological and organisational capabilities to leverage emerging technologies such as 5G, cloud computing, and hyperscale infrastructure (Omungu & Kavale, 2025). Several reviews and

empirical works note that DCT's emphasis on flexibility and adaptation aligns well with telecommunications' innovation imperatives, but also highlight challenges related to legacy infrastructure and regulatory constraints (Serdyuk & Pazderin, 2023).

A consciousness of dynamic capabilities prompts companies to continually adjust their technical and organisational skills. This is essential for success in a field characterised by rapid technological changes and sudden market shifts (Omungu & Kavale, 2025). Firms adopt new tools, such as 5G, cloud systems, and large-scale setups. These pave the way for fresh ideas and better services.

However, studies highlight several issues. Whilst the theory emphasises flexibility, which aligns with the need for innovative ideas in the telecom industry, companies encounter significant hurdles due to outdated systems and stringent regulations (Serdyuk & Pazderin, 2023). Outdated infrastructure and procedures limit the speed and scope of new technology adoption. These often require expensive interventions or slow step-by-step changes.

At the same time, strict rules and regulations add complexity. In South Africa, these include data control, radio wave permits, and fair play laws. Such rules cloud choices and hinder progress . In practice, building these skills means tackling heavy old structures and rule blocks (Majola, 2023). These factors slow down and limit the amount of change.

Evidently, to harness dynamic capabilities, firms need more than money in tech. Firm guidance from leaders is also required. There must be regulatory compliance, and appropriate change plans implemented.

MNOs experience significant challenges and threats in conducting business model innovations at the market-regulated pace due to stringent regulatory frameworks, which ultimately limit product development (Serdyuk and Pazderin, 2023).

However, from a different lens, scholars (e.g., Nashiruddin et al., 2019; Omungu and Kavale, 2025; Serdyuk and Pazderin 2023), argue that these market dynamics present an opportunity that requires robust sensing, seizing, and transforming capacities to manage technological, market, and regulatory uncertainties.

MNOs leveraging dynamic capabilities can better navigate data sovereignty regulations while capturing value from multi-cloud service innovations (Malagihal & Momaya, 2024). This is an opportunity amid the regulatory complexities.

2.6 Dynamic Capabilities in Telecommunications Innovation

Telecom firms operate in complex environments characterised by fast technological change and customer demands for digital services. Several studies confirm that sensing capabilities—environmental scanning and learning—are foundational to identifying emerging technologies such as hyperscale cloud services and AI capabilities (Omungu & Kavale, 2025)

Seizing capabilities, involving resource mobilisation and strategic investments, allow MNOs to capitalise on hyperscaler infrastructure by integrating cloud computing, edge services, and AI into their network offerings (Wong & Ngai, 2025). The literature demonstrates the role of dynamic capabilities in supporting new service development and collaborative strategies among service providers to reduce risks and to innovatively transform business and operating models (Nashiruddin et al., 2019; Omungu & Kavale, 2025). The adoption of virtualised network functions and migration towards software-defined networking (SDN) exemplify the strategic adoption of hyperscale innovations.

In telecom companies, seizing capabilities take the form of both external partnerships with hyperscaler cloud service providers and internal strategic investments (Majola, 2023). A large portion of cloud infrastructure and cutting-edge services, such as artificial intelligence (AI) and edge computing, are outsourced or delivered in collaboration with hyperscalers (Narayan, 2022).

MNOs must mobilise resources to integrate technologies such as virtualised network functions and software-defined networking (SDN). Through hybrid strategies, MNOs can leverage the scalable platforms and infrastructure of hyperscalers (Narayan, 2022) while focusing on service

customisation and customer-centric offerings, all without taking on the full costs or risks of development (Wong & Ngai, 2025). To improve network capabilities and service delivery, seizing opportunities entails both strategic contracting with hyperscalers and direct internal technical adaptation.

Transforming capabilities underpin the ongoing reconfiguration of organisational resources to maintain alignment with emergent business environments. This involves not only deploying new technologies but also organisational learning, capability renewal (Tripathi et al., 2025), and establishing partnerships with hyperscalers to co-develop new digital offerings (Yeow et al., 2020).

In the South African context, dynamic capabilities enable MNOs to adjust internal processes while ecosystem collaborations effectively transform legacy business models into cloud-based, AI-driven platforms (Nashiruddin et al., 2019; Woerner et al., 2021).

The literature in this section informs how MNOs exercise sensing capabilities to identify hyperscaler technologies and seize capabilities to adopt virtualised networks, cloud services, and hyperscaler partnerships. The discussion of organisational reconfiguration and learning processes directly links to the transforming capabilities for business model innovation explored in the next section.

2.7 **Business Model Innovation and Hyperscalers**

Hyperscaler-driven expansion of cloud infrastructure in South Africa has catalysed telecommunications firms' transition from traditional connectivity providers to integrated digital service platforms (Moyo, 2023). This shift has contributed to service differentiation and value creation through data analytics, AI-enabled services, and hybrid cloud solutions.

The literature posits that the dynamic integration of hyperscalers' capabilities represents both an external opportunity and a complex challenge, requiring robust sensing, seizing, and transforming capacities to manage technological, market, and regulatory uncertainties (Serdyuk & Pazderin, 2023; Nashiruddin et al., 2019). Notably, MNOs leveraging dynamic capabilities can better navigate data sovereignty regulations while capturing value from multi-cloud service innovations (Omungu & Kavale, 2025).

Gupta (2022) highlights how businesses often have to negotiate with regulators who grapple with the emergence of disruptive innovations. This means that, though stringent regulations exist, there is still room for negotiation and the potential to reach a fair compromise between businesses and market regulators.

Collaborations between MNOs and cloud giants, such as Huawei Cloud, enable access to cloud setups designed for AI, flexible systems, and robust data centres. Such links enable telecoms to hand off or jointly create robust cloud and AI tools. At the same time, services can be tailored to link networks and connect with customers. In this setup, how digital services are planned and implemented forms a key part of essential business approach updates. It combines internal changes within the company with external competencies. This supports the shifts instigated by cloud giants (Yeow et al., 2020; Nashiruddin et al., 2019; Woerner et al., 2021).

Nam (2022) argues that collaborations between MNOs and hyperscalers are viewed as innovative responses to hyperscaler market disruption, but they are also marked by high uncertainty and do not guarantee success. However, they do highlight that these cooperations influence the firm value of the MNOs.

However, Földes (2022) suggests that MNOs can innovate through co-investment partnerships with hyperscalers in order to manage their

operational and capital costs. This means innovating by working with hyperscalers, which also makes them consumers of hyperscaler services as they adapt to innovation.

Malagihal and Momaya (2024) found that to compete in the digital market, telecom providers must adopt a mindset focused on high-quality digital products and services. This requires an organisational culture shift where necessary to promote a culture of adaptive, high-value innovation.

Empirical studies in telecommunications, including those in African contexts, have shown that dynamic capabilities are positively correlated with innovation performance, particularly when combined with collaborative strategies for sensing and seizing opportunities alongside hyperscalers (Omungu & Kavale, 2025; Nashiruddin et al., 2019). This reinforces the critical role of dynamic capabilities in enabling MNOs to build agile and resilient business models that are responsive to hyperscaler-driven digital transformation.

This literature review establishes that hyperscalers are a critical external force catalysing business model innovation among South African MNOs. That dynamic capability theory provides a robust theoretical lens for understanding how MNOs sense, seize, and transform in response to such technological disruptions.

Khanagha et al. (2022) introduce the concept of mutualism in understanding the relationship between hyperscalers and MNOs. This concept means that MNOs and hyperscalers can reach a fair compromise, whereas competing businesses can reposition themselves to interact in ways that benefit both.

Hyperscaler-driven disruption impacts all three dimensions of dynamic capability, requiring MNOs to identify shifts in cloud ecosystems, capitalise on opportunities through partnerships and service redesign, and overhaul internal structures to incorporate multi-cloud and AI-based value propositions.

2.8 Integration of Dynamic Capabilities and Business Model Innovation

Figure 1 illustrates a conceptual mapping of dynamic capabilities and their impact on business model innovation

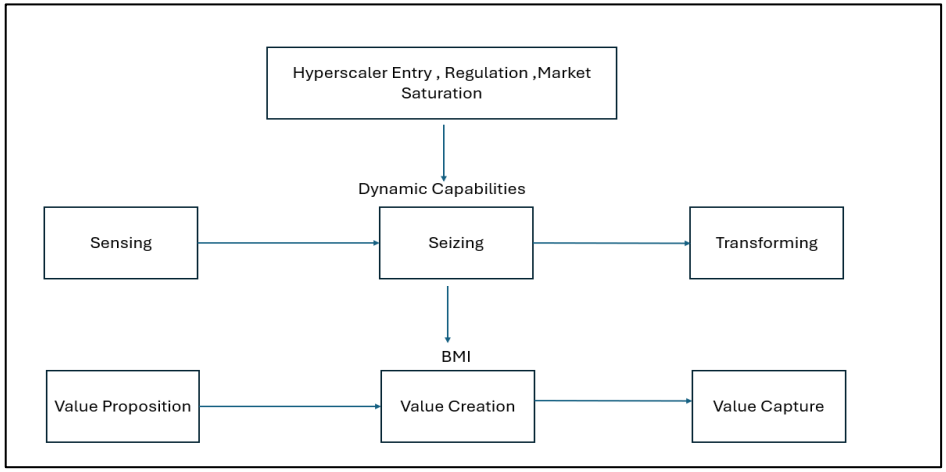

Figure 4: Conceptual framework of dynamic capabilities for business model innovation in telecommunications

Source: Adapted from Teece (2018)

Recent advances in dynamic capabilities (DC) research show that the divide between routine and non-routine capabilities oversimplifies how firms sense, seize, and reconfigure. Wilhelm et al. (2022) argue that routineness varies along frequency and structuring, creating nuanced configurations. They identify four DC patterns, namely experimental, adaptive, programmed, and analytical, based on routineness combinations.

Environmental dynamism does not determine routine use; however, intra-firm factors like learning orientation and resource allocation shape DC deployment. Multiple configurations can lead to operational adaptation, confirming that firms can achieve transformation through different capability patterns, regardless of environment. These findings strengthen the link between DCs and business model innovation, showing firms can adapt capabilities in response to disruption, not just environmental constraints.

Research exploring South Africa's telecommunications sector reveals that dynamic capabilities are critical drivers of business model innovation amid infrastructural and socio-economic complexities (Omungu & Kavale, 2025). Sensing capabilities are exercised through environmental scanning of global and regional trends, enabling MNOs to identify hyperscaler-driven opportunities, data sovereignty requirements, and shifts in customer demand (Yeow et al., 2018). Seizing efforts manifest as investments in virtualised networks, cloud migration, and digital service innovation, often in collaboration with hyperscalers (Nashiruddin et al., 2019). Organisations engage in transformational activities, including internal process reengineering and cultivating their partner ecosystem, to remain competitive (Serdyuk & Pazderin, 2023).

However, several critical perspectives emerge. First, empirical studies highlight a notable gap between potential sensing and seizing activities and actual transformative implementation, attributed to infrastructural deficits, regulatory hurdles, and market volatility (Omungu & Kavale, 2025). This gap raises questions about whether DCT adequately accounts for external institutional factors in emerging markets (Yeow et al., 2018).

Second, collaboration with hyperscalers, while necessary, presents challenges of power asymmetry and dependence, potentially constraining MNOs' ability to fully capture value from business model innovation initiatives (Serdyuk & Pazderin, 2023). This dependency dynamic complicates the neat linear model of sensing, seizing, and transforming, highlighting the importance of the ecosystem context (Qasim et al., 2025).

Third, while DCT emphasises learning and adaptation, the limited absorptive capacity within some MNOs hinders the development of dynamic capabilities, thereby limiting the effectiveness of business model innovation (Omungu & Kavale, 2025). Legacy infrastructure and skill shortages in South Africa create barriers to rapid technology adoption and organisational transformation.

The literature suggests that DCT is a robust framework to explain how MNOs can develop business model innovation in response to hyperscaler-driven disruption. Its focus on continuous capability development aligns with the sector's need for agility (Teece, 2007; Woerner et al., 2021). However, the theory's microfoundational focus on internal routines and managerial cognition does not fully capture the complex institutional and infrastructural factors distinctive to emerging economies (Omungu & Kavale, 2025; Yeow et al., 2020). Consequently, DCT applications must be adapted to incorporate broader ecosystem and institutional dimensions.

Moreover, the literature highlights the role of strategic partnerships and ecosystem approaches as integral to business model innovation, yet also problematises the challenges these pose in power relations and capability dependency (Serdyuk & Pazderin, 2023). This points to the need for empirical studies that investigate how South African MNOs can balance collaboration with hyperscalers against claims to autonomy and innovation leadership.

Serdyuk and Pazderin (2023) also highlight concerns that MNOs increasingly encounter significant barriers due to outdated systems and infrastructure although they also add stringent regulatory frameworks to the complexity. These hurdles limit the speed and scope of new technology adoption, which often require costly interventions or gradual changes (Serdyuk and Pazderin, 2023).

Capability development requires addressing capacity deficits, such as infrastructure modernization and skills development, areas currently under-researched in DCT-focused business model innovation studies. Addressing socio-economic and regulatory realities will be essential for refining theory and advancing practice in South African MNOs (Qasim et al., 2025).

This critical review reveals that while dynamic capability theory offers a valuable lens for understanding business model innovation in South Africa's telecommunications industry, contextual contingencies significantly shape its explanatory power. Integrating institutional and ecosystem perspectives can enrich DCT applications in emerging markets, offering a nuanced understanding of technology-driven business transformations. Future research should adopt longitudinal, mixed-method approaches to map how MNOs simultaneously develop internal capabilities and navigate external constraints in pursuing innovation.

Földes (2022) contends that MNOs engage in various competitive strategies, which include cooperation with hyperscalers in the form of co-investment partnerships, in a shift to utilisation of their cloud services. This move often contributes to value creation by MNOs. Partnering with competitors requires agility to navigate complex market dynamics (Serdyuk & Pazderin, 2023; Quasim, Bataineh & Alhur, 2025).

2.9 Research Gaps in Business Model Innovation and Dynamic Capabilities in South African Telecommunications

Despite considerable academic contributions on business model innovation in South African telecommunications, significant research gaps remain in understanding how dynamic capabilities support sustainable innovation within this sector. First, there is a marked lack of empirical, longitudinal studies that capture how MNOs develop and deploy dynamic capabilities over time to adapt their business models amid rapid technological change, regulatory shifts, and market liberalisation. Most existing research relies on qualitative or cross-sectional data, limiting insights into causal relationships and temporal dynamics critical to innovation performance (Van Tonder, 2024).

Second, scholars have tended to focus on formal regulatory frameworks, overlooking how informal factors such as industry networks, social norms, and cultural influences shape MNOs' ability to sense and seize opportunities to reconfigure resources effectively. Understanding how these

informal structures impact strategic decision-making and adaptability under disruptive pressures remains underexplored, yet is essential for explaining varied innovation outcomes.

Third, while established incumbents dominate studies, there is insufficient attention to start-ups, niche players, and new entrants who can drive more radical business model transformations. Barrett (2016) highlights the challenges South African firms face in navigating an unpredictable entrepreneurial environment and deploying business model innovation effectively, underscoring the need to investigate ecosystem-level enablers and barriers, including innovation support mechanisms such as funding and incubators.

Fourth, research has inadequately addressed the influence of regulatory uncertainty and fragmented governance on incentives for innovation. Institutional fragmentation among regulators like the Competition Commission and ICASA creates complexity favoring incumbents and hindering new market entry and innovation diffusion (Sutherland, 2021). Empirical studies quantifying these effects on innovation investment and performance remain scarce but critical for informed policy design.

Fifth, little is known about how regional bodies such as the Southern African Development Community (SADC) affect South African telecoms' innovation strategies through supranational regulatory and political-economic pressures. More research is required to clarify how regional integration impacts business model adaptation and competitiveness in integrated markets (Calandro, 2015).

Finally, the impact of emerging Industry 4.0 technologies, including cloud computing, artificial intelligence (AI), and the Internet of Things, on MNO business models within South Africa's specific regulatory, socioeconomic, and infrastructural context is insufficiently studied. Despite the

proven potential for digital transformation, fragmented infrastructure regulations and limited broadband investment hinder the effective deployment of business model innovation (Van Tonder, 2024; Gaffley, 2021)

The rapid growth and adoption of Industry 4.0 tools, such as cloud computing, AI, and the Internet of Things, pose significant challenges for South African telecom firms. Meanwhile, the technology keeps advancing. Standards, rules, and top methods are constantly changing. This leaves firms unsure how to match their operations to new technologies (Telesa, 2025).

The setup required to utilise Industry 4.0 also breaks down in certain areas. Gaps show up in steady links, power sources, and basic digital skills. Such issues block a wide rollout. Rules from regulators make things worse. Current policies often fail to support the integration of high-tech digital services. Telecom firms thus face a challenging mix of fixed technical standards, weak infrastructure, and unclear regulations. All this makes the task of planning for Industry 4.0 tools a challenging one. It occurs amid steady doubt and rapid technological shifts (Van Tonder, 2024; Batyi, 2025).

AI is reshaping competition by enabling MNOs to innovate rapidly in customer experience, network management, and operational efficiency through advanced, autonomous systems (Wong & Ngai, 2025). However, academic inquiry into how MNOs develop AI-powered dynamic capabilities and adapt business models to local conditions is still in its early stages and lags behind practitioner initiatives.

This study employs dynamic capabilities theory to expose the approach necessary for business model innovation in telecommunication firms. The research pursues actionable insights for policy and practice to bridge these critical knowledge gaps and promote sustainable innovation in the sector.

Research on how South African MNOs develop dynamic capabilities to collaborate with or compete against hyperscalers remains limited. There is a gap in understanding how these firms leverage cloud infrastructure and AI services offered by hyperscalers to innovate their business models

effectively (Van Tonder, 2024). Additionally, empirical evidence is scarce regarding the strategies MNOs use to integrate hyperscaler-driven technologies while maintaining flexibility and delivering customer value (Foss & Saebi, 2016).

The speed and effectiveness with which MNOs sense hyperscaler market moves and seize opportunities through business model renewal are also underexplored (Teece, 2007). Similarly, there is minimal research on how MNOs reconfigure their organisational resources and capabilities to respond dynamically to the disruptive impacts hyperscalers have on traditional revenue streams and service offerings (Ndebele, 2021).

Moreover, the implications of hyperscaler partnerships for MNO innovation ecosystems warrant deeper analysis, particularly regarding how these relationships affect the sustainability of competitive advantage in the South African context (Barrett, 2016). Finally, the influence of regulatory and infrastructural constraints on MNOs' ability to build dynamic capabilities that support hyperscaler-driven innovation has not been sufficiently investigated (Batyi, 2025). Addressing these gaps will provide a more comprehensive understanding of the evolving role of hyperscalers in South African MNO business model innovation.

These research gaps directly inform the study's design by highlighting the need for empirical evidence from South African MNOs on how dynamic capabilities emerge within hyperscaler-influenced innovation ecosystems.

2.10 Ethical Considerations in Business Model Innovation

Sustainability and ethics are critical factors in business model innovation, requiring MNOs to integrate responsible practices into their innovation strategies to minimise negative environmental and social impacts (Peralta & Gismera, 2021). From a dynamic-capabilities perspective, MNOs must develop the ability to sense and address ethical challenges. Additionally, they should embed sustainability into business model transformations to ensure long-term viability.

While business model innovation drives competitive advantage, not all innovations automatically meet ethical standards or produce positive outcomes. Therefore, MNOs need to carefully assess the broader implications of innovations, striking a balance between value creation and ethical responsibility and sustainability to foster trust and legitimacy in the market.

2.11 Conclusion

This research is grounded in business model innovation and dynamic capabilities theory. The approach is essential because the concepts are compatible and complementary, providing a robust framework for understanding complex firm-level transformations under disruptive conditions.

Business model innovation, as defined by Foss and Saebi (2017), focuses on significant, designed changes to the core elements and architecture of a firm's business model. This is particularly relevant for MNOs working with hyperscalers, where technological disruptions necessitate reconfigurations of value creation, delivery, and capture mechanisms in nontrivial ways. Business model innovation provides lenses to structurally analyse how MNOs innovate beyond products or processes to redesign revenue streams, customer interfaces, and partnerships.

Dynamic capabilities theory (Teece, 1997) explains the firm's ability to sense, seize, and transform opportunities in turbulent environments. It is crucial to understand how South African MNOs build the managerial routines, processes, and entrepreneurial decision-making needed to drive business model innovation, especially given institutional complexities such as regulation, infrastructure fragmentation, and socio-economic heterogeneity. Dynamic capabilities address the 'how' of sustaining innovation, enabling firms to adapt resources and organisational structures dynamically to leverage hyperscaler technologies for competitive advantage.

The significance of combining these theories lies in their integrated nature. Business model innovation clarifies the nature and scope of innovation needed in business models, while DC explains the capabilities and processes essential to enact and sustain such innovation. This dual theoretical

foundation underpins a comprehensive analysis of South African MNOs' strategic evolution, whether collaborating with or competing against hyperscalers, offering insights into both the 'what' (business model changes) and the 'how' (capability development) necessary for successful transformation.

This chapter has demonstrated that business model innovation and dynamic capability theory together provide a coherent theoretical foundation for analysing how MNOs respond to hyperscaler disruption. The literature establishes that MNOs must continuously develop sensing capabilities to monitor technological and market change, seizing capabilities to mobilise resources and form partnerships, and transforming capabilities to reconfigure their business models. However, the review also identifies significant gaps, particularly in empirical evidence on emerging markets, the role of institutional constraints, and the strategic implications of hyperscaler dependency. These gaps justify the present study's focus and directly shape the research questions, ensuring that the investigation is anchored in a clear theoretical and empirical need.

CHAPTER 3 RESEARCH QUESTIONS

3.1 Introduction

Increasingly, the telecommunications industry is facing significant external pressures, particularly from hyperscalers. These firms, with their expansive cloud infrastructure, scalable digital services, and advanced AI capabilities have reshaped the competitive and technological landscape, compelling traditional mobile network companies (MNOs) to rethink and innovate their business models to survive and thrive in this new environment. This challenge entails negotiating traditional MNO structures centred on infrastructure ownership and vertically integrated services, versus hyperscaler models that emphasise cloud platforms, digital ecosystems, and agile innovation.

This study examines how MNOs are responding to disruptions in the market, specifically those caused by hyperscalers. Attention is given to how business model innovation transforms, counters competition, and adapts to market changes. The research examines two main aspects: how MNOs innovate business models, triggered by hyperscalers and how recognising emerging dynamic capabilities is instrumental to approach (Gupta et al., 2024; Teece, 2018).

Business model transformation requires structured approach. For MNOs, this process began with environmental scanning and pressure sensing, which have exposed the nature of external disruptions and underscored the need for adaptation.

Evidently, strategic reframing of value propositions is an increasingly adequate intervention. MNOs recognise the need to shift from pure network providers to integrated digital services that leverage emerging technologies such as cloud computing, AI, and edge computing. For instance, partnerships or co-opetition models with hyperscalers while developing modular, specialised service offerings that complement, not compete with, hyperscalers' platforms. There are revenue implications.

In addition, South Africa's telecom companies must strike a balance between innovation speed and regulatory monitoring to comply with legislative regulations aimed at promoting digital inclusivity and addressing uneven digital infrastructure across regions (Hadzic, 2024).

Overall, structured transformation must enable MNOs to retain core competencies while adopting new ones demanded by digital disruption. It highlights a phased, deliberate, and dynamic approach, emphasising sensing external pressures, reframing strategy, and

Business model innovation (BMI) and dynamic capability theory are pivotal to shaping the research questions. BMI provides the lens for understanding how MNOs must adapt value creation, delivery, and capture mechanisms (Chesbrough, 2010).

Dynamic capability theory complements BMI by explaining the micro-foundations of how firms sense, seize, and transform in response to environmental changes. The research sub-questions specifically address these capabilities: sensing capabilities enable MNOs to detect and interpret hyperscaler threats early; seizing capabilities describe the mobilisation of resources and investment in new digital competencies; transforming capabilities relate to the organizational reconfiguration required to institutionalise innovations and sustain new business models under on-going disruption (Teece, 2007). Together, BMI and DCT are harnessed to articulate the *what* (innovative business model adaptations) and the *how* (dynamic processes and capabilities) of MNO solutioning.

This integrative theoretical approach advances understanding of incumbent MNOs ability to survive and thrive amid hyperscaler disruption by linking strategic intent with organisational learning and transformation (Chesbrough, 2010; Teece, 2007).

The study centres on the views of senior practitioners from traditional MNOs. This provides clear guidance on adapting business models and maintaining resilience in challenging environments.

3.2 Research Question

Main Question: How do MNOs define dynamic capabilities for business model innovation in the face of disruption from hyperscalers?

The question contains two core elements (measurable theoretical concepts):

3. Business model innovation (BMI): the strategic adaptations or changes to value creation/delivery/capture
4. Framing dynamic capabilities to steer business model innovation

Sub-question 1: How do MNOs interpret and respond to hyperscaler disruption through the use of dynamic capabilities, which will lead to new business models?

Sub-question 2: How do MNOs make use of seizing capabilities when responding to hyperscaler disruption?

Sub-question 3: What transforming dynamic capabilities emerge when MNOs respond to hyperscaler disruption through BMI?

The significance of the research question, lies in its focus on understanding the strategic adaptations necessary for MNOs to navigate the disruptive pressures posed by hyperscalers such as Amazon, Microsoft, and Google. This question addresses two core theoretical concepts business model innovation (BMI) and hyperscaler disruption that are crucial for explaining the dynamic interaction between established telecom firms and

emerging cloud-based competitors. Business model innovation refers to how MONs modify value creation, delivery, and capture mechanisms to remain competitive, while hyperscaler disruption serves as the external trigger compelling these strategic changes.

This research question is significant academically because it helps illuminate how established firms address the challenge of digital transformation posed by powerful new entrants adopting different institutional logics and technological paradigms. It moves beyond a purely technological or economic explanation to capture the interpretive processes by which MNO professionals perceive and make sense of these disruptions, thereby shaping the direction and nature of business model evolution.

The three sub-questions refine core dimensions of the dynamic capabilities framework sensing, seizing, and transforming that MNOs deploy in their response to hyperscaler disruption.

Sub-question 1, regarding sensing capabilities, investigates how MNOs detect, interpret, and prioritize early signals from hyperscaler activity and market shifts. This reflects the importance of environmental scanning and strategic awareness in enabling MNOs to anticipate threats and opportunities posed by cloud entrants.

Sub-question 2 pertains to seizing capabilities, focusing on how MNOs mobilise resources, make investment decisions, and develop new competencies to capitalise on identified opportunities in response to hyperscalers. This phase is critical as it reveals how MNOs actively engage in business model innovation rather than passively reacting.

Sub-question 3 stresses the need to transform capabilities, which involve restructuring organisational processes, culture, and governance to institutionalise and sustain new business models in the face of ongoing industry turbulence. Transformation ensures that short-term adaptations evolve into a durable competitive advantage. In response to disruption from hyperscalers like AWS and Google , the research question investigates how MNOs create new dynamic capabilities through business model innovation (BMI).

The enquiry surfaces how MNOs improve consumer interaction, technology integration, agility, and innovation in order to adapt. Collaboration with hyperscalers, quick adoption of AI and cloud-native technologies, utilising edge computing, and increasing organisational agility are important competencies. In an ecosystem powered by hyperscalers, MNOs must transition from traditional infrastructure suppliers to key digital partners.

Together, these questions provide a comprehensive theoretical and practical framework to study MNO navigation of hyperscaler-driven industry upheaval. Assessing these capabilities contributes to a richer understanding of how traditional firms can survive disruptive innovation by evolving holistically through sensing threats, seizing opportunities, and transforming operations within their institutional contexts. This approach bridges buniss model innovation and dynamic capability perspectives to reveal how MNOs balance legacy strengths and emergent digital imperatives. It also guides managerial strategies for fostering adaptability amid rapid technological and competitive change.

In sum, the research question is foundational for advancing knowledge on telecom business model renewal in the cloud era, informing both academic theory and practical management of hyperscaler disruption challenges.

3.3 Conclusion

This chapter establishes the foundation for the research on how MNOs professionals interpret and manage disruptive changes caused by large hyperscalers entering the market. It outlines the main research questions.

The next chapter outlines a focused research plan. It advances theory and outlines methodology employed to capture lived experiences within MNOs grappling with transforming business models under disruptive conditions.

CHAPTER 4 RESEARCH METHODOLOGY

4.1 Introduction

This chapter outlines the research strategy and methods used to capture data and insights for this study. A qualitative design was employed to investigate how seasoned practitioners at established mobile network operators (MNOs) perceive and respond to competitive pressure and market disruption. Rooted in interpretivist philosophy (Pervin & Mokhtar, 2022), the research explores perspectives on business model innovation to support essential dynamic capabilities. The research reveals how leaders navigate strategic actions in South Africa's telecommunications sector. Semi-structured interviews were used to capture data from purposively selected participants. Data was analysed using thematic analysis. The process was mindful of ethics, quality checks, and steps to ensure trustworthiness.

4.2 Research Design

Ahmad (2016) states that research helps uncover real events. This guides the researcher in a systematic approach to finding solutions to the challenges faced. A qualitative research design was chosen because it effectively examines the lived experiences of various stakeholders, such as telecom company executives, senior management, and subject matter experts, particularly within the context of disruptive challenges caused by hyperscalers entering the market. The research aim was to gain in-depth insights into individuals' subjective experiences (Cresswell, 2014). Qualitative research is effective when exploring emotions, thoughts, and personal experiences (Ugwu & Eze, 2023).

4.3 Research Paradigm

The interpretivist approach is based on the idea that people's views, thoughts, and experiences offer insight into the relationship between phenomena and contexts (Boas, 1995). Therefore, methods for pursuing meaning in the human and social sciences differ from those in the physical sciences. People interpret their world and act based on that understanding (Hammersley, 2013). Interpretivists adopt a relativist perspective of reality, where one event can have multiple meanings. No single method can definitively determine the truth. This enables researchers to explore the depth of events, uncover their layers, and recognise connections to broader contexts and conditions (Creswell, 2007).

Pervin & Mokhtar (2022) argue that interpretivist researchers draw on varied views of events, objects, and people. They go beyond simple descriptions to grasp deeper insights within the social and cultural settings. Researchers hold that shared experiences tie people together in communities (Pervin & Mokhtar, 2022). Interpretivism treats reality as a personal process formed within social forces. For this reason, interviews stand out in qualitative work like this one. They reveal personal stories, insights, and opinions (Nickerson, 2024).

Interpretivism uses qualitative research methods that focus on individuals' beliefs, motivations, and reasoning to gain an understanding of social interactions. Interpretivists assume that access to reality happens through social constructions such as language, consciousness, shared meanings, and instruments (Myers, 2008). Interpretivists can collect qualitative data using a variety of techniques (Nickerson, 2024). The most frequent of these is interviewing, which this study employed to gather data from target participants.

From an epistemic view, people build the meaning of reality through the stories shared by social actors. These stories often reflect events shaped by society (Whitley, 1984). As an interpretivist researcher, it is essential to acknowledge that data findings can have multiple meanings and researchers must grasp how people experience issues and settings across different cultures (Hammersley, 2013).

4.4 Philosophical stance

This study was guided by a research approach that examined how South African telecom practitioners confront disruption from large technology companies through new business models, viewed through the lens of dynamic capabilities. This approach focuses on grasping the personal views and shared social ideas that people and teams give to their experiences in certain settings (Saunders et al., 2023). It is well-suited for examining how these seasoned actors perceive and respond to the entry of hyperscalers.

From an ontological view, interpretivism holds that reality lacks a single, objective form. Instead, people build it through social interactions (Neuman, 2014). In telecommunications, experts work under institutional logics. These are groups of norms, values, and beliefs.

They shape how these experts view disruptions and plan innovations in response (Thornton et al., 2012). This approach enables researchers to investigate how professionals collectively comprehend the challenges presented by hyperscalers. It also shows how they adjust business models. Interpretivism emphasises in-depth, context-based insights into innovation. This treats innovation as a real, shared experience shaped by people (Schwandt, 2014).

From an epistemological perspective, interpretivism argues that knowledge develops through the collaborative efforts of researchers and participants. Interpretivism often uses qualitative research methods, such as in-depth interviews, to gain a richer understanding of people's

experiences, perceptions, and interpretations (Bryman, 2016; Wilson, 2020). This approach is suitable for this study as it helps to understand the subjective experiences of various stakeholders concerning dynamic capabilities and business model innovation.

The interpretivist method is essential for comprehending the intricacies of MNO business model reconfiguration. The study offers a nuanced examination of how the disruptive behaviours of hyperscalers account for the contextual factors that shape experiences. The researcher can obtain the rich, qualitative data required to comprehend the complex nature of dynamic capabilities for business model innovation (Pervin & Mokhtar, 2022).

When examining South African MNOs in this manner, a researcher must engage thoroughly with lived stories. This demonstrates how dynamic capabilities steer changes in business models in the face of threats from competitor firms. Such an approach respects the complex nature of company dynamics. It also considers cultural and social factors that influence strategic choices (Orlikowski & Baroudi, 1991). In this way, the research can yield deep insights into the processes of business model innovation in practice, rooted in institutionalised perspectives (Creswell & Poth, 2018).

4.5 Target Population

The study was guided by dynamic capabilities theory, aiming to understand how professionals engage in sensing, seizing, and transforming. It focused on a diverse group of individual participants in the telecommunications sector, including those involved in technology strategy, cloud

adoption, and MNO strategy. This includes experienced telecommunications practitioners within the industry. The diversity among participants ensured a range of perspectives on the topic and provided detailed insights into how market entry by hyperscalers impacts MNOs operating in South Africa. By gathering data from these various groups, the study explored the complex aspects of reconfiguring the MNO business model.

4.6 Unit of Analysis

The selection criteria for study participants define the target population members (Creswell & Creswell, 2018). The unit of analysis is the level at which a researcher examines a phenomenon to address the research question (Sedgwick, 2014). This research studied the experiences of senior management professionals in the telecommunications industry drawn from the incumbent MNOs operating in South Africa.

4.7 Sampling and Sample Size

Sampling involves selecting a subset of a larger group to collect data, make inferences, or reach conclusions about the population (Shaheen, 2019). This method is often used in research when it is not feasible to examine the entire target population due to limitations such as time, resources, or accessibility (Shaheen et al., 2019). Sampling ensures that the chosen sample accurately reflects the population, allowing findings to be representative of the broader group (Shaheen et al., 2019).

For this study, it was essential to ensure that the sampling technique aligned with the interpretivist stance and the qualitative research design. Purposive sampling, also known as judgmental or selective sampling, is well-suited for exploring a specific issue in depth (Palinkas et al., 2015).

Purposive sampling allows the researcher to choose participants who can provide the most relevant and detailed insights on this subject (Naeem et al., 2023).

A primary objective of this study was to explore the views of professionals on the reconfiguration of MNO business models in response to hyperscaler disruption. Consequently, non-probability purposive sampling was employed to select participants with relevant knowledge and experiences related to the study's aims. The primary objective is to understand the perspectives, experiences, and perceptions of key stakeholders.

Purposive sampling supports the targeting of participants with relevant knowledge or specific experiences related to the key aims of an enquiry. The researcher can collect detailed insights from individuals with the necessary expertise or lived experiences critical for answering the research questions (Naeem et al., 2023).

According to Shaheen et al. (2019), the recommended sample size for qualitative research is 12 to 20 participants. A total of 15 participants were selected and interviewed for this study. 12 transcripts were used for data analysis. Saturation was reached after the 9th participant, as no new insights emerged from the remaining interviews.

4.8 Sampling Criteria

To identify potential candidates, the researcher selected the top five MNO firms in South Africa. As an active member of the industry, the researcher was able to utilise his professional network as a veteran of the community. The sampling ensured the inclusion of participants from different

organisations. To ensure diversity, the researcher selected individuals from various domains, including technology, strategy, and the commercial arms of the different firms, representing people from senior to middle management roles and balanced across the incumbents of MNO firms.

4.9 Measurement instrument

The interview tools for this study were carefully constructed to collect information relevant to the research aims and objectives. An interview guide was developed guided by theory-building insights from the literature. The discussion questions guided the researcher in gathering qualitative data on the experiences, opinions, and insights of stakeholders grappling with framing dynamic capabilities for business model innovation.

4.10 Data Collection

In this study, qualitative data was gathered through in-depth interviews. Interviewing is an effective method for interpretivist research, as it allows the researcher to understand personal experiences, perspectives, and social meanings. Importantly, it facilitated the collection of rich, detailed data related to the challenges MNOs face from competition and their responses in efforts to develop new capabilities and reconfigure business models (Elbardan & Kholeif, 2017).

Interviews are a widely used method for gathering data in qualitative research, especially when aiming to gain a deep understanding of individuals' experiences and views (Creswell, 2014). This method aligns with the study's interpretivist framing, which seeks to understand how individuals perceive and interact with their environment.

The research employed semi-structured interviews, a common method in qualitative studies. This format allows interviewers to probe by asking follow-up questions based on participants' responses, providing a deeper insight into perspectives and experiences (Elbardanc & Kholeif, 2017).

The semi-structured approach offers flexibility, ensuring that key issues related to the research are covered. Simultaneously, participants can be encouraged to share views and insights that might not have been anticipated. In this study, interviews served as a powerful tool, enabling various stakeholders to share their subjective experiences and viewpoints.

4.11 Data analysis method

Qualitative data analysis involves several key steps: recording interviews, transcribing the data, and analysing the content thematically (Wilson, 2020). The interviews were conducted using Microsoft Teams and recorded on Otter and a physical recorder. Each data collection interaction lasted approximately 40 minutes to an hour.

According to Braun and Clarke (2006), thematic analysis is a popular qualitative data analysis technique that focuses on finding, examining, and summarising patterns or themes in data. This method allows the researcher to classify and interpret complex qualitative data by grouping it into more general themes that represent the underlying ideas, meanings, or problems that participants are discussing.

Data gathered through qualitative techniques, such as interviews, were examined using thematic analysis. This method is appropriate for interpretivist research because it aids in recognising, analysing, and understanding themes within qualitative data, especially when investigating individuals' experiences and perceptions (Naeem et al., 2023).

Thematic analysis allowed the researcher to explore how participants perceive and understand their surroundings, aligning with the interpretivist approach of the study (Naeem et al., 2023). This method supports efforts to extract meaning from the perspectives of participants and to assess the alignment with focus concepts and phenomena. Due to its adaptability and lack of rigid adherence to a particular theoretical framework, thematic analysis can be used to analyse qualitative data that is constantly changing (Braun & Clarke, 2006). This adaptability is crucial, as the research

may reveal surprising trends or insights about South Africa's telecommunications companies. Thematic analysis is therefore suitable for this design. It supports inductive insight generation while accommodating theoretically informed interpretation.

The study employed an inductive approach to identify patterns and categorisation of themes from the interviews, closely analysing and continuously comparing the data. The researcher manually coded the data in MS Excel. The inductive approach employed enabled the discovery of new insights from the unique issues and conditions affecting capabilities and business model configurations for MNOs South Africa

4.12 Quality Control and Research Validity

Maintaining the quality of collected data is essential for the reliability and validity of the research findings. The study utilised various quality control methods to ensure that interview data are precise, valid and reliable. Recording the interviews is part of the quality control process, and the researcher also took notes during the interviews.

Before the actual interviews, a pilot study was conducted with an industry veteran who complied with the sampling criteria for the target population. This process evaluated the appropriateness of the interview tool for gathering the desired data, allowing for refinement of questions and interviewing techniques used (Rutledge & Hogg, 2020). The pilot process identified ambiguous aspects of the questions in the interview guide and provided guidance for corrections. The focus was on ensuring the questions were relevant and that essential information was effectively captured. The flow of the interviews was assessed to maintain consistency in data collection (Rutledge & Hogg, 2020). Ultimately, the pilot study aimed to enhance the clarity and completeness of the interview process, thereby ensuring alignment with the research objectives.

Triangulation was used to consolidate and refine the findings. Refining data insights from multiple sources entails attending to categorising and comparing findings. This process strengthens the reliability of the information (Ferreira et al., 2021). This study applied triangulation by gathering data from multiple sources, such as literature and interviews. This approach allows for cross-checking information obtained from different

viewpoints, which helps to minimise bias and enhance the strength of the discussions and conclusions. By relying on multiple types of evidence, the study ensured that its findings are well-supported and not based on a single source.

This study ensured the trustworthiness of the research process through participant checking, triangulation, prolonged engagement, and maintaining an audit trail. These methods enhance the credibility of findings, accurately reflecting participants' experiences with hyperscalers in South Africa. By upholding high standards of execution, the researcher aimed to produce a study that offers a reliable and detailed understanding of how hyperscaler activity is prompting MNOs to reconfigure their business models.

Achieving data saturation is essential for ensuring the quality of qualitative research (Fusch & Ness, 2015). Saturation occurs when no new insights are gained from the data and is closely linked to the research questions (Mason, 2010; Saunders et al., 2018). It was crucial to maintain focus on both the research questions and the guiding theoretical framework for participant selection (Saunders et al., 2018). The researcher confirmed that the selected respondents were suitable for addressing the research questions. Data collection ended once a saturation point was reached, and the same themes began to recur in the data.

4.13 Ethical considerations

To respect the rights, dignity, and anonymity of participants, ethical issues must be addressed in any research involving human subjects (Gold et al., 2024). Ethical considerations were outlined and interventions were implemented accordingly to protect study participants and maintain the integrity of the research process. Before conducting the study, ethical approval was obtained from the University of Pretoria/GIBS Ethics Committee.

Stakeholders were informed about the study's purpose and the methodology for data collection to ensure full awareness of the research process. Informed consent was obtained through signing a consent form prior to the interviews. To protect confidentiality and maintain anonymity, participants were de-identified using numbers or pseudonyms. The researcher also remained objective throughout the process, thereby preventing bias (Gold et al., 2024).

The researcher ensured that the study was conducted in a manner that respects the rights and dignity of participants, while also producing reliable and trustworthy findings. By adhering to recommended ethical guidelines, the research process was able to protect and maintain confidentiality, ensuring cultural sensitivity and data privacy.

To secure the data, the researcher took precautions to ensure that the cloud platforms where the recordings were stored had adequate authentication measures to prevent unauthorised access. The researcher's personal computer is equipped with biometric authentication and password protection. Furthermore, the folders containing the transcripts and other data are password-protected.

4.14 Study limitations

The scope, data collection, analysis, and interpretation of findings may all be impacted by the inherent limits of any research project. This study may have several drawbacks, particularly given the complexity of the topic, the location, and the limitations of the research design. Challenges were encountered in securing access to some preferred participants, resulting in the selection of alternatives where this was feasible. Prejudices and socio-cultural differences may have coloured the data.

Nonetheless, the researcher minimised these constraints by implementing strategies such as partnerships and networking. Being aware of ethical concerns, researcher biases, and the needs of participants helped ensure that the research was inclusive, respectful, and effective. This ensured that the study generated legitimate, trustworthy, and significant findings that advance knowledge of hyperscaler-driven business model innovation for MNO firms.

4.15 Conclusion

This study examined how South African MNO professionals address the disruption caused by hyperscalers, identifying the business model innovations necessary to support emerging dynamic capabilities. This chapter has presented a detailed account of the qualitative research design choices made to execute the study. Qualitative methodology emphasises in-depth examination of participants' lived experiences, perceptions, and meanings within their institutional and cultural contexts. Semi-structured interviews and purposeful sampling ensured that rich, pertinent data were gathered from key industry participants, and thematic analysis provided a systematic way to identify patterns and subtle insights in the qualitative data.

The study's reliability and credibility were strengthened through quality control measures, such as participant verification, triangulation, pilot testing, and ethical safeguards. The design carefully balances methodological rigour with flexibility, considering the complexities of the South African telecommunications sector and the evolving roles of key players like hyperscalers.

Despite certain research limitations, mainly related to access and potential biases, the methodology pursued enhanced the chances of uncovering significant, context-specific insights into business model reconfiguration. Overall, this methodology chapter offers a detailed and reliable basis for advancing perceptions and findings.

CHAPTER 5

5.1 Introduction

This chapter outlines the data captured from participants to address the research challenge. The findings are presented according to each of the three sub-questions derived from the main research question which the study investigated.

The primary research question: *How do MNOs define dynamic capabilities for business model innovation in the face of disruption from hyperscalers?*

The responses are categorised based on key themes and refined into sub-themes which emerged from the perspectives shared by participants.

Figure 2 outlines the presentation of the findings. These are categorised by theme.

Figure 2: Key findings per question

Source: author's own

5.2 Sub-question 1: How do MNOs leverage sensing dynamic capabilities when responding to hyperscaler disruptions?

5.2.1 Theme 1: External Pressure from Hyperscalers

5.2.1.1 Sub-theme 1: Scanning and learning from the competition

Participants referred to the growing rivalry between MNOs, hyperscalers, and Over-The-Top (OTT) players in both infrastructure and application layers. They also noted the existence of peer pressure within the telecom industry, where firms strive to match competitor innovations or form partnerships to enhance product value.

Below is what participants said:

An9: "*Microsoft has emerged likely in the beginning as a partner, but in the interim as a competitor for some of the telco businesses, mostly in the enterprise business…They compete, they cooperate, and then we become competitors. You feel that, let's say here, it will maybe peer pressure… It's different from the hyperscalers coming in and launching some really great infrastructure and quick access… So that's a very big external force.*"

An4: *"About a year ago, we noticed what was manifesting as low-cost Wi-Fi players, common in major townships within the market… this posed a threat to us…"*

An6: *"they* ***(big cloud players such as Amazon, Google, Microsoft)*** *have actually changed the game… they are also playing as a competitor. So you find that they've also come to the game that we are also doing… they started building their own infrastructure.*

An7: *"They have transitioned from competition to partner and largely out of a realisation that they are too big, really, for a small telco player to contend with them, their budgets and their investments, I don't think there's any telco that can match them…"*

An12: "Due to traditional communication channels becoming challenged by new data technology… we decided to look for alternatives that can bring us new revenue streams."

These views reveal that when sensing through conducting an environmental scan, participants perceived their competitors as a threat in their environment. Hyperscalers and other emerging technologies are recognised as significant external forces that influence internal operations and business models. They are viewed as game changers who are also building competitive infrastructure. There are instances where competitors are too large for the MNOs to keep up with, so options for partnerships must be forged. The emergence of new data technology has compelled MNOs to adopt alternatives, reinventing the way product value is created and innovating business models to remain competitive.

An10: "I don't see them as threats because they are not really telecom players… they lower the variance of entry… you might tap into the hyperscaler, they offer you that platform, you switch on your services."

An11: "They took these open-source technologies… and just started offering them as an enterprise service… It was a shift away from traditional software licensing and hardware purchases to on-demand models."

An10: "They change the market, yes they do, the dimensions of the market are really changed."

An9: "At the inception… there's a big disruption happening… mostly the telco positioning themselves into a leaner organization, with less CapEx on infrastructure. Some of the largest private networks… were built for enterprise business, but made by private companies working with OEMs and hyperscalers… cutting telcos out of the equation. We fell into the pressure of announcing what we were doing as a cloud because the investors or the market was generally looking for that…"

***An1:** "There has been a downward pressure on pricing on most of the international connectivity, which has squeezed the telecom providers in terms of their revenue streams and margins, and in some countries, has forced some consolidation."*

Participants also revealed how hyperscalers have altered the competitive dynamics of the telecommunications sector by introducing new business models, shorter innovation cycles, and increased efficiency, often displacing traditional MNOs roles. This has meant that MNOs have had to align by reinventing their own business models. However, in a contradictory perspective, An10 reframed hyperscalers not as competitors but as *enablers* that lower barriers to market entry, creating indirect rather than direct competition. This participant partially disagreed with others who viewed hyperscalers as direct competitors, whilst aligning in recognising the disruptive influence in the market.

5.2.1.2 Sub-theme 2: Scanning for market disruptive Cloud Services

The data underscored the fact that hyperscalers have become key drivers of disruptive innovation which impacts market dynamics such that traditional business models have to change. Expanded product value is attainable through migration to cloud services which involve moving MNO workloads to cloud environments provided by hyperscalers. While this reduces costs, improves scalability, and enhances service delivery, it requires prudent collaboration with competitors and other industry stakeholders.

Participants expressed the following:

An10: "They have changed the way business is done, the speed at which business is done. They've changed the risk landscape, they've introduced new risks, new opportunities."

An9: "The biggest impact has been on the promise of what it means to either partner or deploy some of the hyperscaler capabilities by way of lowering our own investments in infrastructure…We have moved from a CapEx model of trying to acquire infrastructure to run our workloads, to an OpEx model…Every new deployment had to go to the cloud… we've tried to build metrics and business models… to see whether or not these are the right workloads to be moving to the cloud."

***An8:** "…the next wave, which we are seeing in the horizon is more of the AI… You see hyperscalers starting to deploy infrastructure in parts of this world, especially in the developed economies, and we expect that to increase in other parts of Africa as well."*

***An7:** "Hyperscalers themselves have been a huge influence in the direction the industry taking. The whole idea and the whole paradigm of cloud is really something that has been pushed heavily by the hyperscaler and that has impacted strategy and decision making for telcos…"*

An11: "They give us access to technology which we don't even have, such as the AI services and AI models… The value proposition that cloud has is simply undeniable."

Participants revealed the broader transformational impact of hyperscalers and new technologies on the mobile network market structure, competitive dynamics, and customer expectations. Participants described the multifaceted influence of hyperscalers on MNOs as partners, competitors, and technological disruptors, influencing adaptation through business model innovations to streamline operations and strategy to create and deliver product value. These views reveal that many firms have migrated to using cloud services and AI. The move to utilising cloud services is a game-changer and a market disruptor. It influences business strategy, decision-making, as well as the pace at which MNOs operate.

For example, participant An9 mentioned how they have had to transition from a capital to and operational expenditure driven model. This significant, enterprise-wide mindset shift was caused by the disruptive forces of hyperscalers on the market.

An9: "You can think under pressure a lot to be seen to be doing something with or in partnership with the hyperscalers. Telcos have just become customers for the hyperscalers in the majority of the workloads. They have learned a lot about the telco business in the partnerships where we've blindly shared a lot of the intellect… now they build their own core networks."

***An1:** "Yes, the cloud players have changed the dynamics of the industry from an Africa point of view… they have invested in building out subsea networks, especially the new subsea cables."*

***An4:** "I can give an example with Google. They've got minimum bandwidth requirements for a certain level of experience on YouTube. That is something indirectly imposed on a network operator like*

ourselves. To that end, they are in a way disrupting or even accelerating capacity in responding to the demands that were envisaged."

An2: "... With the revolution of internet services and the demand for cloud connectivity, there have been quite a number of services…"

An5: *"… I think they have been, sort of disrupted… they have been quite disruptive in telco in a sense, but also in many other aspects of technology utilization."*

Furthermore, participants referenced the need for MNOs to expand their services beyond traditional connectivity into digital platforms, cloud services, financial technology, and enterprise solutions, thereby adding complexity to business models. This diversification aims to create new revenue lines and reduce dependence on data and voice services. For MNOs, implementing sensing capabilities entails recognising the global domino effect that hyperscalers have on the sector, particularly in terms of infrastructure deployment.

Hyperscalers are shaping the direction that the industry is taking. New technologies and value propositions shaped by AI through hyperscalers' advances present unavoidable opportunities that MNOs must embrace to remain competitive. Some participants commented that MNOs have actually become customers of hyperscalers in response to the threat posed by the highly disruptive service offerings being introduced.

5.2.2 Theme 2: Cost and efficiency pressures

5.2.2.1 Sub-theme 1: Infrastructure costs as barriers to responding to hyperscaler disruptions

Participants referred to the heavy capital burden MNOs face in building and maintaining networks. They disclosed that the cost base remains a barrier and threat to agility and innovation, restricting business model innovations compared to hyperscalers.

Below is what participants said:

> *An9: "In telco, the biggest cost center or the biggest asset is your connectivity business. That's where the majority of the money costs. Outside of the stricter regulation of the telco and the expenses they pay on spectrum and all these kinds of things, it's a policy issue to really level the playing field. A telco like us should understand that the majority of the friction happens in the access technologies… we should have spent more understanding where we spend more of the money."*
>
> ***An7:** "If you look at hyperscalers , they charge, they charge throughput when you take data out of part of the cloud… So if you remove data, they make it very costly for you to remove data."*
>
> ***An3:** "…, the speed at which we'd be able to rollout services because of resources being able to be spun up quite quickly, scale with speed…"*
>
> ***An5:** "… the cost of running the operations of the network has become very expensive."*

Participants revealed how the costs associated with maintaining and upgrading infrastructure for connectivity are high. Participant An7 perceived hyperscalers as a threat to financial sustainability, as fees are levied for all services associated with managing data on behalf of MNOs. This

includes charges for removing information. This high infrastructure cost burden limits business model innovations by curtailing the speed at which MNOs can roll out solutions, as mentioned by Participants An3 and An5.

> ***An2:*** *"As a telco, we spend so much money developing our own data centers, and we pride ourselves in saying we can offer those services ourselves…The majority of the pressures come from the people you partner with. If you partner with a particular set of hyperscalers, their targets may conflict with your actual budget and agreements."*
>
> *An12: "Whenever we go to create new budgets, we always give a bit of room to counter such challenges… we're actually more conservative with our numbers."*
>
> *An10: "It might increase your cost of operations… you might not benefit from lower cost if the hyperscaler doesn't operate locally."*

However, An2 offered a different perspective, viewing the presence of hyperscalers as an opportunity for MNOs to develop their own data centres and provide similar services. It was also highlighted that when MNOs formulate their budgets, they actually make room for challenges associated with infrastructure costs, which may arise, as this would be a potential threat to growth plans. An10 noted that partnering with a hyperscaler that is not locally based can actually be a threat to operational costs.

5.2.2.2 Sub-theme 2: Transitioning from CapEx vs. OpEx financial models

Participants revealed that MNOs are transitioning from significant up-front infrastructure investments (CapEx) towards flexible cloud-based operating models (OpEx). When sensing, this shift in business models is seen as both innovative and risky.

Below is what participants said:

An10:"Where you have to make a huge cash outlay… you might tap into the hyperscaler, they offer you that platform."

An9: "We fell into the pressure of announcing what we were doing as a cloud… instead of paying enough diligence to say how does that really help us? We just increase cost by announcing some of these partnerships, without necessarily introducing the efficiency that working [with hyperscalers] was meant to bring. At the inception, it was mostly the telco positioning themselves into a leaner organization, with less CapEx on infrastructure, and trying to move as many workloads to the cloud."

An11: "You no longer have to wait and have constraints on technology… The technology is now available on demand for purchase with OpEx instead of a major capital expenditure."

***An6:** "… we then need to then shift from us being a CapEx-based business model to a maybe an OpEx model, where we are now having to pay for us to be hosted by other players. And then we resell these kind of solutions…"*

***An8:** "…what it does it changes your construction from being less CapEx, where you are investing things in your data centre to be more buying license from the different cloud providers."*

Participants revealed that, through scanning and learning from the environment, firms are moving towards an operating expense business model, which requires less capital expenditure on infrastructure. For example, participant An10 supported this shift, narrating how hyperscalers reduce upfront investment but introduce new recurring costs. Participants felt that MNOs recognise the need to adapt by adopting new business models that cost-effectively suit the new market interfaces. In this scenario, an operating capital business model emerges as a financially savvy decision.

5.2.3 Theme 3: Innovation and Market dynamics

5.2.3.1 Sub-theme 1: Product innovation

Participants referred to business model innovations they engage in through the creation and enhancement of MNOs products and services through new technologies, data insights, and digital platforms. They highlighted the struggle to move beyond connectivity toward value-added services enabled by partnerships and cloud-based solutions.

Below is what participants said:

An10: "Innovation moves faster than regulation… there is always a conflict there." and not everybody is on the same wavelength… we face a lot of pushback when it comes to implementations."

An9: "We use data to go to a company like Coca-Cola and tell them how they should make decisions now purely based on the insight that the telco produces. Telcos are looking at ways to develop products beyond voice and data, products that help enterprises digitize, automate, and make decisions. The inability to innovate or to move fast isn't because people don't know what to do, it's because you can't always cannibalize yourself. - We built analytics platforms that help small businesses understand consumer behavior. That's new territory for telcos."

An3: *"…there's a lot more new platform capabilities coming out as well. So there's continuous innovation happening in that space."*

Participants highlighted how when engaging in sensing, MNOs identify threats such as the slower pace at which regulation moves compared to the pace at which innovations are being produced, which affects product development. Evidently, MNOs are also facing challenges in adopting business model innovations at the required pace. The dilemma stems from efforts to prevent revenue loss from existing products by introducing newer ones, which participant An9 referred to as cannibalism.

An2: *"We've had a couple of debates about how we strategically partner with which hyperscaler and at which point across our networks so we can build better propositions for our customers."*

An4: *"We observed voucher methods used in informal retail environments and did drive tests for Wi-Fi experience in the townships… We created a solution, let's call it* ***Solution X*** *for this interview. We identified base stations close to the low-cost operators we came up with a neutralisation strategy and matched them one-to-one in coverage and pricing."*

An6: *"Talk about OTTs, how they've managed to really shift the way voice services happen today, talk about how people are using WhatsApp for calling has really shifted how our infrastructure is used for voice. If you look at messaging, for example, the hyperscalers are driving changes there…"*

The race towards innovation stems from MNO desire to create better propositions for customers through product development. However, hyperscalers hold a significant influence over how MNO infrastructure works.

5.2.3.2 Sub-theme 2: Regulation constraints as barriers to responding to hyperscaler disruptions

The strict rules and government oversight that govern how MNOs operate includes spectrum licensing, infrastructure sharing, pricing, and customer protection. Participants highlighted how regulation is often a limiting factor for business model innovation; meanwhile, hyperscalers are not equally burdened.

Participants commented:

> *An10: "Regulations generally affect telecoms… what the telecoms can do is heavily regulated… data residence affects many players… you might lose cost advantage if hyperscaler doesn't have presence in that region."*
>
> *An11: "We have a lot of pressure from our data sovereignty and data privacy regulators… implementing the technology to pull that off is always a challenge."*
>
> *An9: "Telcos themselves, as local entities, are overregulated compared to some of the cloud and OTT suppliers… it is very much tilted in favour of the OTTs. Outside of the stricter regulation of the telco and the expenses they pay on spectrum… it's really a policy issue to level the playing field. You can't launch a product as fast as the hyperscalers because everything must go through regulatory approval sometimes taking months."*

When engaging in sensing, regulatory threats motivate MNOs to engage in cautious decision-making, fearing regulatory penalties. This limits experimentation with new business models. Participants highlighted how, in South Africa, the telecommunications environment is heavily

regulated through data sovereignty and data privacy regulators. Some even described this environment as being "overregulated", which impacts the rate at which business models can be innovated. Consequently, this slows down the rate of innovation as noted by Participant An9 that, "you can't launch a product as fast as the hyperscalers because everything must go through regulatory approval sometimes taking months".

An1: *"Some of the institutions that are shaping the response are the telecom regulators. In countries like Uganda, they try to get the OTTs to get licenses or share part of their revenue. In other countries, the hyperscalers have been given free access to set up shop in those countries, which means they are able to operate their businesses. However, they have not been able to secure their licenses."*

An7: *"There are data residency laws in the majority of countries, some stricter than others, and they have, in a large way, impacted or had an influence in how the adoption of these hyperscaler technologies has been taken."*

An2*: "From a compliance standpoint, they come in with the mindset of how they delivered services in Europe or America, but when they get here, it's a different structure. Then you try to build some form of negotiation with them."*

Participant An1 supports this by arguing that, in contrast, "the hyperscalers have been given free access to set up shop, which means they can operate their businesses," whilst MNOs "have not been able to secure their licenses." However, some participants noted that data residency laws exist in every country, although the rules vary in stringency from one country to another.

5.2.3.3 Sub-theme 3: Business model shift

Participants described structural changes in how MNOs generate revenue, structure partnerships, and define value propositions in response to technological, market, and regulatory pressures.

Below is what participants said:

An9: "Telcos are using data insights to create new revenue streams with brands like Coca-Cola or Shoprite.The strategic mandate pushes us to adopt hyperscaler partnerships, even before full value is realized. Shifts include moving from purely connectivity revenue to digital services, analytics, cloud solutions, and enterprise partnerships. We've tried to diversify our portfolio by offering digital solutions, mobile money, and enterprise connectivity in one ecosystem. Telcos have realized that they can't just rely on selling bandwidth, they must sell solutions, insights, and platforms." - Through cloud, security, and IoT services, we've begun addressing customer pain points we couldn't touch before. It's no longer enough to offer SIM cards. Now we need to offer digital platforms that integrate with our customers' businesses."

***An5:** "… that was more of a business focus and utilization focus… the adaptation or the change is according to what is being put forward from those actors…"*

***An3:** "… our company has been trying to move from a telco leader into a platform player through a tech-co approach. So, in that, we mean that we're becoming a platform business."*

***An2:** "We have had to migrate off the traditional MPLS connectivity and move into new streams of SD- connectivity or links to particular service providers like Microsoft or AWS…"*

MNOs were reported to engage in business model shifts, which are displayed through the formulation of strategies to generate new income streams amid declining traditional revenues. They highlighted how MNOs pursue data-driven monetisation, partnerships with hyperscalers, and enterprise solutions to sustain profitability.

An6: *"… we then need to then shift from us being a CapEx-based business model to a maybe an OpEx model, where we are now having to pay for us to be hosted by other players. And then we resell these kinds of solutions…there's a lot of shifts that needs to happen there in terms of how we do things, in terms of how we structure our teams, how we structure our everything."*

An7: *"… the telco had declining voice revenue…"*

An8: *"…hyperscalers actually provide an opportunity where, instead of us build infrastructure which we sell on to enterprise customers, we can actually build a practice with Azure, practice with AWS, where we can actually on-sell their cloud services to our enterprise customers. So, I see it more of like, call it co-competition, where we cooperate and compete with hyperscalers…"*

An4: *"… The changing strategy has been looking at data, which is now a dying business over time, along with fintech and other growth verticals for the business…"*

An6: *"… of late, there was a move to try and offer services to other tech parties, so that at least that can be another revenue driver for the company."*

Participants revealed that MNOs are engaging in business model shifts they deem necessary in order to survive and sustain growth given the game-changing dynamics introduced by hyperscalers. In some instances, this change in business model has required partnering with the hyperscalers

themselves to add value to their service offerings. Participant An6, for example, admitted that the MNO has had to change how it structures internal teams and all operations. Likewise, participant An4 spoke of services previously offered as “a dying business over time”.

5.2.3.4 Summary of findings

Participants’ views revealed that when conducting an environmental scan, MNOs perceive competitors as a threat in their environment. Hyperscalers and other emerging technologies are expected to be a significant external force that influences operations and business models. These actors are game changers who are also building their own competitive infrastructure.

Participants also revealed that hyperscalers have brought forward disruptive innovation, which impacts market dynamics such that they have had to migrate to utilising cloud services. This involves moving MNO workloads to cloud environments provided by hyperscalers to reduce costs, improve scalability, and enhance service delivery.

Participants explained how the costs associated with maintaining and upgrading infrastructure for connectivity are high. When MNOs formulate budgets, extra provisions are now made for challenges related to infrastructure costs that may arise, as this would be a potential threat to growth plans.

Participants explained how on scanning and learning from the environment MNOs are moving towards operational expenditure business models that require less capital expenditure on infrastructure. It was highlighted that when engaging in sensing, MNOs identify threats, such as the slower pace at which regulation moves compared to the pace at which innovations are being introduced. These factors affect product development.

When sensing, regulatory threats motivate cautious decision-making due to fear of penalties and yet, this limits experimentation with new business models. It was revealed that the MNO business environment is heavily regulated through data sovereignty and privacy regulators. MNOs engage in business model shifts, which are displayed through the formulation of strategies to generate new income streams amid declining traditional

revenues. Furthermore, these firms pursue data-driven monetisation, partnerships with hyperscalers, and enterprise solutions to sustain profitability.

5.3 Sub-question 2: How do MNOs make use of seizing dynamic capabilities when responding to hyperscaler disruption?

5.3.1 Theme 1: External Pressures & Competition

5.3.1.1 Sub-theme 1: Engaging in tete-a-tete with competitive forces

Participants disclosed how competitive forces from other MNOs and hyperscalers influence business model innovation decisions taken in response to hyperscaler disruption. In seizing the opportunities created by hyperscalers they engage or respond by creating equally competitive services and products.

Below is what participants had to say:

An9: If a competitor launches something first, you feel the peer pressure. Company X announces partnerships with hyperscalers, and that filters down to us to react quickly even without fully validating the value."

An1: *"There are many providers competing for the same state and customer."*

An4: *"…current migration of the legacy to cloud-native core shift, which we're doing in our market… It's a vital project, quite significant…We created a solution, let's call it Solution X… The response was overwhelming, and the strategy successfully neutralized the competition."*

An6: *"…they really changed how we play because now we also need to form synergies with the very same company that is competing with us on the other side."*

Participants highlighted that MNOs respond to hyperscaler disruption by reacting quickly to how other competitors have responded to hyperscaler disruption. Response to the market is based on competitors' lead to keep up as well as remain competitive. The behaviours of competitors influence business model innovations. For example, participant An4 noted that their response of creating Solution X "successfully neutralised the competition," while participant An1 noted that MNOs are "competing for the same state and customer."

An5: *"The push to have 5G deployment is just a follow-on to what the Europeans and the American markets have been looking at. The only thing is just to be on top of it and understand where all of your external fits and opportunities are coming. Technology is changing at the rapid rate."*

An8: *"We should embrace hyperscalers to slow down the hyperscalers"*

> ***An7:*** *"You know you want to be ahead of your competition, and that slowness in rolling out new projects and products was impacting us in terms of our entry in the market, because taking away first mover advantage in some cases."*

Participants also highlighted how MNOs respond to hyperscaler disruption by sometimes forming partnerships with their competitors to remain relevant and avoid losing market share. They noted that embracing hyperscalers is an essential strategy towards closing the market gaps. The rapid pace of innovation often leads to a first-mover advantages that require business model innovations to keep up with the fast pace of change.

The data reveals that this requires MNOs to adapt agile development processes to stay ahead of or in line with market changes. Participants also revealed that, in response to hyperscaler disruption, MNOs sometimes replicate their product offerings. As noted by participant An5, for example, the firm is implementing services that are already in use in European and American markets.

5.3.2 Theme 2: Industry Disruption

5.3.2.1 Sub-theme 1: Migrating to the use of cloud services offered by hyperscalers

Participants revealed that hyperscalers broadly affect MNO business model innovations by influencing their operations, partnerships, and growth. As a result, in seizing the opportunity created by market disruption caused by hyperscalers, MNOs have become consumers of the services they provide.

Below is what participants had to say:

An9: "The promise of 5G and cloud, where telcos were supposed to benefit, has been built by OEMs and cloud suppliers. Telcos have largely just become customers… the majority of workloads are enterprise-based."

***An3**: "if you look at Meta or Google, a lot of their capabilities also come with OTT type services, which is the exact same ambition and aspirations that we have as traditional telcos… there's definitely an overlap. And that overlap would mean from that lens, we view them as disruptors…it's almost like the AI race that's going on between the East and the West… Like the adoption of AI is definitely linked to the success or failure of what happens with what the hyperscalers provide for us."*

***An4:** "…they are in a way disrupting or even accelerating capacity in responding to the demands that were envisaged… the level or rate of innovation that has to be quite rapid…in the market I play in, they've definitely accelerated the shift towards cloud."*

***An1:** "cloud players have changed the dynamics of the industry from an Africa point of view, in the following ways. One, they have invested in building out subsea networks, especially the new subsea cables. Two, they have driven demand in the older cable and in high utilization of those cables. Three, they have enabled their content within Africa."*

Participants revealed that hyperscalers have significantly disrupted the industry such that NPOs are now consumers of products and services offered by them. They are taking the opportunity to utilise these services as part of their business model innovation, capitalising on hyperscaler infrastructure. Participants acknowledged that the adoption of these services is linked to the future success or failure of MNOs, as noted by participant An3.

An2: *"AWS, Azure, and Google have been driving big sales and developments within Africa, and that's changed what the telcos are working on."*

An7: *"The disruption was seen with the decline of data center private cloud business."*

An8: *"we see the hyperscaler impacting our operations is purely in terms of our own consumption of IT services, rather than our products and services."*

Through the utilisation of services offered by hyperscalers, MNOs have been forced to accelerate "the shift towards cloud", as noted by participant An4. Participants also noted how hyperscalers are boosting product sales in Africa, such that MNOs must adapt by becoming customers of hyperscalers to enhance their product value offerings.

5.3.2.2 Sub-theme 2: Business Model Shift

Participants reported that they have had to adapt their business models to accommodate the new industry dynamics. They are seizing the opportunity created by hyperscalers through changing revenue streams, partnerships, and strategic focus.

Below is what participants had to say:

An10: "During COVID… telecoms had to adjust pricing, increase uptime, invest in other energy sources… they had to change the model."

An9: "Telcos are using data insights to create new revenue streams with brands like Coca-Cola or Shoprite."

An1: *"…we are now focused on huge build projects, and the plan is, once the network has been built out, with some subsidization, we can be able to offer connectivity in the market at more competitive price…Customers were asking for delivery of a more robust service and their three service within their territories to reflect the new realities of content being available locally. We were strictly a wholesale service provider now we are becoming an infrastructure service provider."*

An2: *"We have had to migrate off the traditional MPLS connectivity and move into new streams of SD- connectivity or links to particular service providers like Microsoft or AWS…"*

An3*: "our company has been trying to move from a telco leader into a platform player through a tech-co approach."*

Participants highlighted how MNOs are seizing the opportunities created by hyperscalers in the market through shifting their business models to align with these changes on various levels. Various response interventions include adjusting pricing, improving uptime competencies, and creating new revenue streams.

It was also revealed that they are utilising data insights to guide the shift in business models in response to the market disruption caused by hyperscalers. Additionally, MNOs are focused on providing more robust services, whilst in some instances changing the services offered. In some instances, these firms have had to partner with key hyperscalers such as Microsoft or AWS, whose influence is strong and widely spread across the market.

5.3.3 Theme 3: Financial & Economic Pressures

5.3.3.1 Sub-theme 1: Barriers limiting the seizing of hyperscaler opportunities

Participants revealed that although MNOs are keen on responding promptly to hyperscaler disruptions, incremental costs are associated with building and maintaining network assets. These costs impact business model innovation by influencing business operations and form a barrier to timely seizing of opportunities created by hyperscalers.

Below is what participants had to say:

An9: "The biggest cost center is connectivity; hyperscalers have played a very small role there. We moved to an OpEx model, leveraging cloud services to reduce infrastructure investments."

An2: *"The biggest frustrations are the lack of adequate quality equipment at the right points…The sad point with the African network is that power load shedding came at a stage when development was going well, and that affected and frustrated actual growth because we had to go back to basics and make sure we had redundant connectivity, redundant power, and redundant parts across the network."*

An7: *"There are certain use cases in the cloud that make the solution more expensive."*

An8: *"It changes your construction from being less CapEx, where you are investing things in your data centre to be more buying license from the different cloud providers…"*

An1: *"Customers will demand more for less. So that means we need to bring efficiencies into the business. We need to find models that allow us to build networks cost effectively."*

Participants revealed how MNOs' most significant costs are associated with establishing connectivity infrastructure, which is characterised by high capital costs. This funding challenge is a key reason why MNOs have migrated to using cloud services, an operational rather than capital investment-led business model. These infrastructure constraints were also linked to pressures of inadequate equipment to sustain top-quality standards. This frustrates efforts to serve customers and counteract hyperscaler disruptions.

Participants also highlighted how, in some instances, the existing infrastructure makes service provision expensive, and hampers competitive pricing; meanwhile, consumers demand more for less, as highlighted by participant An1.

These challenges have prompted MNOs to seek business model innovations that enable them to build and or access infrastructure cost-effectively. This includes seizing the opportunities created by hyperscalers in a timely fashion.

5.3.4 Summary of findings

Participants disclosed how competitive forces from peer MNOs and hyperscalers influence business decisions taken in response to market disruption. By seizing the opportunities created by hyperscalers, MNOs can respond with equally competitive services and products. Participants revealed that the hyperscaler's impact includes mobilising MNOs as both consumers and competitors through the products and services offered. Thus, the option to capitalise on hyperscaler infrastructure brings both benefits and challenges for revenue growth.

The data also highlights how MNOs are seizing the opportunities created by hyperscalers in the market by transforming their business models to navigate these changes on various levels. Various operational responses include price adjustments, improving uptime and creating new revenue streams. Participants also revealed how MNOs' most significant costs are associated with establishing connectivity infrastructure. This infrastructure burden is a key reason why MNOs have migrated to using cloud services through operational expenditure-led business models.

5.4 Sub-question 3: What transforming dynamic capabilities emerge when MNOs respond to hyperscaler disruption through BMI?

5.4.1 Theme 1: Innovation and Market Growth

5.4.1.1 Sub-theme 1: New product development

Participants disclosed that MNOs engage in business model innovations by creating new product offerings or enhancing existing ones in a strategic approach towards product innovation. They do this to adapt to hyperscaler disruption, explore new markets and gain a competitive advantage.

Participants commented as follows:

An9: "We define products specifically based on certain insights, even though marketed across everyone. Telcos use data insights to partner with brands outside traditional customers, unlocking new revenue streams."

An1: *"Some providers are now going into building out data centers because they hope the hyperscalers will utilize those. Others are building out terrestrial networks. Everyone views Africa as the highest growth platform for connectivity, and it considering that Africa has bypassed the copper utilization and jumped straight to fiber in some of the countries"*

An2: *"We had to renegotiate what we thought was going to be our initial sell point and viewpoint, and then build a better model for quicker scaling because the numbers were growing faster than anticipated. We've had a couple of debates about how we strategically partner with which hyperscaler and at which point…"*

Participants revealed that the emergence of hyperscalers has led them to transform their business framework by exploring new markets beyond traditional customers, unlocking new income streams. The emergence and strengthening presence of hyperscalers is creating opportunities for market diversification within the sector. Also highlighted was the fact that some MNOs are investing in new data centres and terrestrial networks, hoping that hyperscalers may also become future customers.

An6: *"…for example, you would want to deploy systems that are more integrable, I'd say more interoperable, more open systems- with an open architecture…right now we are actually sparing quite a number of platform evolution projects that are aligned to try and meet the strategic objective of pivoting and providing services to non-X companies……of late, there was a move to try and offer services to other tech parties, so that at least that can be another revenue driver for the company. So, this gets back to us trying to deploy platforms that can be utilized by other parties like hyperscalers."*

An3*: "They are partners because we would not be able to try and unlock those revenues that are potential revenues, especially for our market, where we're dealing with the youthful market who haven't really experienced some of these digital services at scale…We don't want to create services and service architectures that are only useful for short periods of time."*

An4: *"The changing strategy has been looking at data, which is now a dying business over time, along with fintech."*

An8: *"We need to start growing with agencies which are more complex."*

Participants highlighted that some firms are also establishing new projects that create more open systems, as highlighted by participant An6. This initiative is designed to achieve the strategic objective of pivoting and providing services to other companies. The aim here is to adapt to the emergence of hyperscalers by becoming more agile and adapting business model innovations to gain a competitive advantage.

Participants revealed that MNOs prioritise business longevity and that, despite the market disruption brought about by hyperscalers, long-term survival and business sustainability remain attainable. This is despite some products becoming redundant and the heightened pressure to innovate new offerings and competencies that can keep up with the market changes.

5.4.2 Theme 2: Regulatory Constraints and Governance

5.4.2.1 Sub-theme 1: Regulatory barriers to timely response

Sector governance rules affect MNO operations and influence business model innovations. Participants spoke of the requirement to ensure adherence to legal, technical, and consumer standards, which sometimes slows down the pace at which firms can adapt to the emergence of new technologies and counteract hyperscaler strengths. High legal barriers limit competition and the timely establishment of new product offerings.

Participants noted:

> *An9: "Telcos themselves, as local entities, are overregulated compared to some of the cloud and OTT suppliers. Every new product has to go through compliance teams, legal reviews, and national regulators. The telecom license restricts what we can sell and how we sell it, while hyperscalers operate freely. If we want to offer a new cloud-based enterprise solution, we must apply for a separate license."*

An2: *"Regulatory boards play a role in where the data is stored, who's storing it, how you're storing it, and for how long… You have to ensure that all regulatory and government requirements are met, otherwise the solution gets thrown out."*

An3*: "Regulators are usually a bit slower to understand… we try to enable them through education in most cases."*

An6: *"…you spent three years designing, rolling out a solution that commission needs, after all that effort, you find that because of the regulatory matters you have to be commissioned."*

An7: *"One country, specifically, one very adamant around its data sovereignty, and that's Rwanda. So, we've had to adapt the design…"*

The regulations that govern MNOs are complex and numerous. For example, participant An9 revealed that "every new product has to go through compliance teams, legal reviews, and national regulators." They argued that the telecom license, which allows them to operate, restricts product offerings. Meanwhile, hyperscaler firms domiciled in other countries are not impacted and can operate freely. This grants unfair competitive advantage to hyperscalers, while MNOs must contend with regulatory boards that sometimes reject or disapprove new product proposals before they even reach the market.

Participants lamented the long lead times for designing new products (years), only for them to be delayed in commissioning. They also highlighted how they perceived regulators to be slow in understanding the emergence of new technologies despite active efforts by MNOs to educate them. Also highlighted were the distortions in value propositions encountered when adapting designs to meet the expectations of regulators. These are unavoidable if an MNO seeks to avoid implementation challenges. Consequently, it is often regulators rather than market needs that influence the pace and approach to innovation.

5.4.3 Theme 3: Internal Dynamics & Organisational Factors

5.4.3.1 Sub-theme 1: Stakeholder influence

Participants revealed that sometimes there is pushback due to entrenched processes. Many diverse stakeholders with influential sway on perspectives characterise the value chain. Collaboration in effecting key business decisions and operational activities determines how and when MNOs can respond to hyperscaler disruptions, which in turn influence business model innovations.

Below is what participants had to say:

An9: "There's a big impact from stakeholders to be seen doing something, pushing agreements prematurely. The inability to innovate isn't because people don't know what to do, it's because you can't always cannibalize yourself."

***An2:** "Some of our biggest customers are in the banking sector… we've had conflict in terms of what we can provide to the customer, the time, and regulations we must follow."*

***An3**: "… The pressure comes through from the investor perspective as well… the speed at which we'd be able to rollout services because of resources being able to be spun up quite quickly, scale with speed. And then also ensure that we have resilience in our infrastructure setup…"*

***An4:** "The biggest ones that we've seen on our side come more from the customer side, particularly in enterprise"*

***An6:** "When you have external influence there's always different views coming. So when you make it more open, you are able to really accommodate the different requirements coming from the different*

external parties that are pushing in different directions. And the system can be something that can adapt easily."

As evidenced above, participants disclosed that the presence of numerous stakeholders surrounding MNO operations influences how firms can respond to hyperscaler disruptions. Influential stakeholders mentioned include customers, partners and investors. Whilst there is pressure to innovate at a fast enough pace, conflicting interests result in the need to guard against cannibalising current products by prematurely introducing new ones.

At times, there is conflict over the products that can be offered, the timelines within which they can be offered, and the regulations, due to tensions in stakeholder expectations. Investors may exert pressure for a rapid rollout of products or services, yet the MNOs must also ensure that their infrastructure setup and resources are aligned.

An1: *"We had to show why doing nothing would be harmful in the long run, and then we had to rely on key members within the executive team to help spread the message among their peers. This is the most effective way to bring through change…"*

An6: *"… strategy-driven decisions for you to listen to certain players than others. I'll tell you, for example, right now we cannot deploy another cloud other than Microsoft which is also a strategic decision. So then listen to that because it's a company strategic partnership that has already set up. So even if AWS is a better solution technically, we are inclined to use Microsoft in that case as a cloud provider…"*

An4: *"…resistance to support because you didn't inform the partners in advance… That, for me, was probably one of the major hurdles that resulted in delays…"*

Participants highlighted how MNOs attempt to accommodate multiple interests whilst responding to stakeholder pressure. As Participant An6 articulated, “when you have external influence, there are always different views coming”, which need to be managed.

The participant also pointed out that some stakeholder expectations do not always match business survival and growth strategies at a given time. Sometimes, business partners delay product launches, waiting for advance notice of key business manoeuvres; this can cause support for business model redirection to be disrupted.

5.4.3.2 Sub-theme 2: Organisational Culture

Participants also disclosed that organisational culture regarding restructuring teams, reporting, or processes to enable innovation influences when and how MNOs can respond to hyperscaler disruption. Aspects such as cultural shifts, changing mindsets, and new skills are essential to embracing innovation and agility within business models.

Below is what participants had to say:

> *An12: “I would rely on our internal supporting functions for commercial, finance, products, and legal to ensure we meet customer needs.”*
>
> *An9: “Innovation must happen internally and with partners to keep pace with hyperscalers’ speed. There’s a gap between strategic discussions and where money is allocated change is needed to bridge that.”*

An2: *"The first part is upscaling in terms of skills… The team has had to learn on a very steep slope how to build solutions adequately…"*

An3*: "… if the culture inside of my company was not one of learning culture and there was low adaptability, the pressure would be much, much more higher"*

Internal supporting functions are instrumental for a conducive business environment. Participants highlighted how an internal culture of innovation and support facilitates adaptation to hyperscaler disruptions and other emerging technologies that rapidly disrupt the market. A culture of ongoing and up-to-date skills training was also noted as valuable towards assisting employees to adapt solutions to new market dynamics. For example, Participant An3 noted that if the internal environment were not conducive to learning, conditions would negatively impact the ability to adapt to the market disruptions caused by hyperscalers.

An5: *"… There needs to be a lot of education and understanding of cloud."*

An1: *"we have had to adopt our ways of business to cater to this massive growth area, to utilize opportunity that we have to grow our network with these hyperscalers. Each team had their own priorities instead of a unified priority… To avoid frustration, we just need to work together and have one goal. When we do work well together… we blew everyone away. But when teams had conflicting goals, the product wasn't up to scratch."*

An4: *"it does affect our strategies. It does affect our operations in terms of what we focus on and the priorities thereof."*

Some participants called for more in-house education and training on cloud services to assist with adaptation. Participant An1 mentioned how a culture of unity within the business helps with adaptation to change. To avoid frustration, team members must work together and share a common goal, thereby displaying a united approach towards evolving the business model.

5.4.4 Summary of findings

Participants revealed how the emergence of hyperscalers has led to the transformation of the business framework by exploring new markets outside of traditional customers to unlock new income streams. They saw the emergence of hyperscalers as creating an opportunity for market diversification for MNOs. The data reveals that sector governance rules impact MNO operations. Mentioned were the requirements to ensure adherence to legal, technical, and consumer standards, which sometimes slow down the pace at which firms adapt to the emergence of new technologies or competition. Participants disclosed that the presence of numerous stakeholders in the telecommunications industry means these stakeholders have a significant influence on shaping conditions. Key stakeholders include customers, partners and investors.

Stakeholders pressure MNOs to innovate quickly. However, MNOs must also manage other challenges, such as preventing the cannibalisation of current products by launching new ones too early. Internal support functions allow firms to respond effectively to a changing business environment. The data shows that a corporate culture centred on innovation and support helps firms adapt to hyperscaler disruptions and other emerging technologies. Additionally, ongoing and current skills training is considered necessary to assist employees in adjusting solutions to new market dynamics.

CHAPTER 6 DISCUSSION OF FINDINGS

6.1 Introduction

This chapter presents the study's findings in relation to the existing literature and the theoretical framework used. The findings are discussed in relation to each of the three sub-questions derived from the main research question. The discussion is further organised according to key themes and broken down into sub-themes that emerged from the study results.

6.2 Sub-question 1: How do MNOs leverage sensing dynamic capabilities when responding to hyperscaler disruptions?

6.2.1 Theme 1: External Pressure from Hyperscalers

6.2.1.1 Sub-theme 1: Scanning and learning from the competition

The study's findings indicate that MNOs increasingly rely on sensing capabilities to navigate the competitive disruptions introduced by hyperscalers. The study participants strongly emphasised the growing rivalry between MNOs and hyperscalers across both the infrastructure and application layers. These findings point to the consistent description of hyperscalers, particularly Amazon, Google, and Microsoft as significant external forces that reshape MNOs' operating environment, influencing their business models and altering the overall competitive dynamics of the telecommunications industry.

Participants expressed concern that hyperscalers are becoming “gamechangers” who are also building their own competitive infrastructure and challenging MNOs’ dominance in the telecommunications industry. The findings emphasised the intensified pressure on MNOs to perceive, interpret, and match competitors’ innovations, or to create product value through strategic partnerships.

These findings align with Teece's (2018) conceptualisation of sensing capabilities, which emphasises scanning, learning, and interpreting signals in the external environment to anticipate threats and opportunities. Effective sensing involves organisations actively monitoring technological and market changes to sustain competitiveness (Wilhelm et al., 2022). Relatedly, scholars describe how hyperscalers are introducing new business models, faster innovation cycles, and greater operational efficiency, thereby increasingly displacing traditional roles of other players, such as MNOs (Cozzolino et al., 2022; Feil et al., 2024; Floerecke et al., 2023).

Literature on telecom digital transformation, highlights the heightened use of sensing routines, competitor analysis and ecosystem monitoring as MNOs aim to reposition themselves within the cloud-driven and data-intensive telecommunications sector (Richter, 2020). This is echoed by the study's findings, which show that MNOs actively monitor the environment to understand hyperscalers' and OTT players' innovations and use this knowledge to guide internal learning and strategic changes.

Another key feature of the study's findings is the increasing reliance on partnerships as a strategic response by MNOs when hyperscalers become too large and technologically advanced to compete with. This suggests that MNOs utilise sensing capabilities to identify complementary opportunities and respond to changing business environments through strategic adaptation rather than confrontation. Such strategic partnerships allow MNOs to access cloud technologies, extend product value and innovate their business models to remain competitive. Business ecosystems support strategic coopetition, suggesting that MNOs often engage in strategic cooperation with competitors when facing hyperscalers (Riquelme-Medina, 2022).

The findings also presented a contrasting perspective, with some participants reframing hyperscalers not as direct competitors but as enablers that lower barriers to market entry and indirectly influence innovation. This is supported by studies that emphasise hyperscalers' roles as promoters that expand digital technologies and systems, drive innovation and create new opportunities for MNOs rather than directly confronting them (Cusumano et al., 2019). Using the dynamic capability theory lens, this also reflects interpretive sensing, in which firms identify threats and consider potential partnerships and enhanced product value (Teece, 2018).

Furthermore, the study findings reveal that disruptions by hyperscalers have compelled MNOs to reinvent their business models through the adoption of cloud technologies, data-driven and partnership-oriented models. The findings thus demonstrate how MNOs leverage sensing dynamic capabilities to identify competitive threats, explore new technology opportunities and transform their business models to remain competitive in the dynamic digital environment. This is consistent with the literature on business model innovation (Foss & Saebi, 2017) that reveals how firms leverage sensing capabilities to initiate business model renewal in response to ecosystem dynamics (Tripathi et al., 2025)

6.2.1.2 Sub-theme 2: Scanning for market disruptive Cloud Services

The study findings emphasise that hyperscalers have introduced disruptive innovations that significantly impact market dynamics, thus compelling MNOs to alter their business models, strategies and decision-making processes. The study's findings point to an alteration of MNOs' operating models, from their own infrastructure to cloud environments provided by hyperscalers, as a calculated response to reduce costs, enhance scalability, and improve service delivery. This constitutes material change to routine dynamic capabilities (Wilhelm et al., 2022) with emphasis on enabling MNOs to rapidly reconfigure resources and processes and align with changing mindsets and roles in the ecosystem.

The findings suggest that hyperscalers impact MNOs' operational efficiency, market structure, competitive dynamics and customer expectations. Scholars (e.g., Yeow et al., 2020 & Woerner, 2021) have examined the same, focusing on the disruption of MNOs by large cloud providers through the introduction of advanced business models and dynamic innovations.

The findings also reveal the multifaceted role of hyperscalers in driving business model innovations and strategies through their function as partners, competitors, and technological disruptors. This aligns with Cusumano, Gawer and Yoffie's (2019) argument that hyperscalers concurrently enhance value for MNOs while exerting pressure, which ultimately necessitates strategic innovations and enhances operational efficiency. From the Dynamic Capability Theory's lens, MNOs therefore constantly deploy sensing capabilities to comprehend market signals, identify disruptive technologies, and leverage strategic partnerships to drive business model innovations.

Another notable finding is the MNOs' transition from CapEx to OpEx models, indicating significant shifts in their operational and financial approaches, driven by hyperscalers' disruptions. This aligns with the digital transformation literature, which emphasises the operational flexibility offered by hyperscalers, which influences MNOs' diversification and model innovations beyond traditional connectivity into digital platforms, cloud services, financial technology, and enterprise solutions (Richter, 2020).

The study's findings underscore a global domino effect on MNOs, whereby hyperscalers influence infrastructure deployment, AI adoption, and decision-making in the telecommunications sector. This confirms the assumptions of Moyo (2023) and Yeow et al. (2018) that cloud and AI use enhance operational efficiency and innovation in the telecommunications industry. The dynamic capability theory emphasises continuous sensing and resource reconfiguration to address technological and market disruptions (Teece, 2018). Consistent with prior findings, MNOs continually sense and strategically adapt to hyperscaler disruptions (Földes, 2022). This also aligns with the argument that hyperscalers drive business model innovation by compelling MNOs to restructure their operational models, service delivery, and infrastructure provisioning to remain competitive in the fast-changing digital and cloud-driven environment (Tripathi et al., 2025).

6.2.2 Theme 2: Cost and efficiency pressures

6.2.2.1 Sub-theme 1: Infrastructure costs as barriers to responding to hyperscaler disruptions

The study's findings highlight that infrastructure costs are a significant barrier to MNOs' effective response to hyperscaler disruptions. Study participants pointed to the heavy capital burdens associated with building and maintaining networks. Continuous maintenance and upgrading of connectivity infrastructure, as well as charges by hyperscalers for data storage, management and removal, are critical costs that impact financial flexibility for MNOs. These findings are supported by Földes (2022), who argued that infrastructure costs delay MNOs' ability to confront competition from cloud and digital providers. Infrastructure costs limit MNOs' capacity to configure and coordinate resources, aligning with iassertions of routine dynamic capability theory about processes and practices that weaken capacities to sense, seize (Wilhelm et al., 2022), and

transform in response to hyperscaler disruptions (Floerecke et al., 2023; Narayan, 2022).

Despite the constraints, the study's findings show that hyperscaler disruptions create new opportunities for MNOs to develop their own data centres, thereby generating revenue and reducing their dependency on hyperscalers. This is supported by Chen et al. (2019), who contend that MNOs often respond to hyperscaler disruptions by building data centres and in-house digital capabilities. However, Narayan (2022) argues that moving to cloud-based services offered by hyperscalers actually eliminates these physical infrastructure costs, allowing firms to operate with little marginal cost. MNOs can opt to utilise hyperscaler services as a means of adaptation. These strategic partnership models eliminate capital investment pressures whilst providing a competitive advantage over competitors without similar capabilities.

From a different perspective, Floerecke et al. (2023) introduce the concept of 'infrastructure as a service' market. This entails providing infrastructure to consumers, which, for hyperscalers, is largely cloud-based. As hyperscalers are a segment of the infrastructure services market, the lower prices they can offer give them dominance over other traditional service providers (Floerecke et al. 2023). These insights call for developing strategies and business models to counter the increasing dominance of hyperscalers. Given the existing infrastructure barriers, this calls for more resources to be channelled towards infrastructure upgrades. Cloud infrastructure-as-a-service models significantly reduce costs compared to on-premises infrastructure (Olariu et al., 2024).

6.2.2.2 Sub-theme 2: Transitioning from CAPEX vs. OPEX financial model transitions

The study's findings reveal that MNOs apply first-order dynamic capabilities to sense technological advancements in the telecommunications industry. Importantly, cloud-based infrastructure use by hyperscalers. Leading MNOs have recognised the urgency of staying abreast of evolving stakeholder expectations, fuelled by deeper exposure to innovations within and across industries (Duong et al., 2022). The study's findings show that the ambiguity and incessant pressure on MNOs must be mediated by sensing the interplay between external and internal competencies to gauge sustainable alignment for continued competitiveness. In this vein, MNOs are seizing opportunities to transition from large, up-front

infrastructure investments (CAPEX) to flexible, cloud-based operating models (Narayan, 2022).

Participants in this study reflected on strategic options, including migrating workloads to hyperscalers, purchasing cloud licenses, and adopting pay-as-you-use models (AN6; AN8). However, some scholars expressed caution over the risks of misinterpreting cloud-based opportunities by premature signalling of pressures and in response to hyperscaler-driven disruptions (Yeow et al., 2020).

While some MNOs are embracing innovative capabilities and transitioning from more capital-intensive CAPEX models to less capital-intensive OPEX models, the data also emphasises the risks of such business model transitions. These include exorbitant costs that could exceed benefits if not properly managed with the right depth of impact on organisational routines (Tripathi et al., 2025). This finding is supported by Serdyuk and Pazderin (2023), who contend that cloud transitions reduce managerial costs and improve organisational efficiency only when supported by effective governance, workload optimisation, and strategic alignment.

The transition instigated by funding model structures reflects the transformative dimensions of non-routine as well as routine dynamic capability (Tripathi et al., 2025). MNOs must adapt and modernise their business models and operations to align with hyperscalers' cloud environments and ecosystems.

The study findings indicate that MNOs are actively sensing, seizing, and transitioning their financial and operational models in response to hyperscaler disruptions; however, the organisational effectiveness of these transitions relies on financial, managerial, and governance capabilities. However, the transition is not always smooth; it is often constrained by regulatory frameworks, stakeholder tensions and infrastructure costs, barriers widely discussed in the telecommunication industry literature (Omungu & Kavale, 2025).

6.2.3 Theme 3: Innovation and Market dynamics

6.2.3.1 Sub-theme 1: Product innovation

The study findings show that MNOs are engaging in product innovation through new technologies, leveraging digital platforms and data insights, and creating and enhancing products as a responsive strategy to hyperscalers' disruptions and market dynamics. These findings align with Foss and Saebi's (2017) argument that business model innovations enable firms to refine their products, thereby strengthening market competitiveness and positioning.

Hyperscalers' influence over MNOs' infrastructure further constrains MNOs' flexibility and exacerbates product design and deployment dependency. Amit and Zott (2020) suggest that product innovation improves value propositions, yet, in contrast, this study's findings highlight that MNOs' capacity to enhance value propositions through product innovation is often hindered by external constraints. Increasingly, MNOs must rely on strategic partnerships to improve product innovation.

However, Földes (2022) suggests that MNOs can innovate through co-investment partnerships with hyperscalers to manage operational and capital costs. This means innovating by working with hyperscalers, which also makes them consumers of hyperscaler services as they adapt to innovation. For Nam (2022), collaborations between MNOs and hyperscalers are viewed as innovative responses to hyperscaler market disruption. However, the scholar cautions that these alignments are marked by high uncertainty and do not guarantee success. However, market valuation of MNOs is being influenced by positive market sentiment towards these collaborations.

Malagihal and Momaya (2024) found that to compete in the digital market, telecom providers must foster a product mindset focused on high-quality digital products and services. This requires an organisational culture shift to promote an adaptive outlook and competency for high-value innovation.

6.2.3.2 Sub-theme 2: Regulation constraints as barriers to responding to hyperscaler disruptions

The study findings establish that regulatory frameworks often act as significant barriers to MNOs' business model innovations in response to disruptive technologies. Unlike hyperscalers with freer and flexible operations, MNOs are governed by stringent rules, including spectrum licensing, infrastructure deployment, pricing strategies, and customer protection. These rigid regulations constrain MNOs' experimentation with new business models, thus limiting their responsiveness to dynamic telecommunications environments. This finding is supported by Gupta (2022), who describes the detrimental effect of contentious relations between technology-inclined businesses and the regulators, particularly in emerging market contexts.

Based on the study findings, increased regulatory threats drive cautious decision-making among MNOs when engaging in sensing. MNOs often limit their actions to avoid potential penalties, yet this slows innovation. Barrett (2016) describes the challenges faced by South African firms that hamper the effective deployment of business model innovations. Expected compliance with complex regulatory frameworks, coupled with stringent protections for vulnerable stakeholders, hinders MNOs' creativity and experimentation.

The findings also reveal that a fragmented regulatory landscape exacerbates the challenges of effectively deploying business model innovation to enhance competitiveness. Similarly, this finding aligns with Sutherland (2021), who contends that multiple regulations, including those of the Competition Commission and ICASA, create regulatory fragmentation that favours established hyperscalers while hindering MNOs' business model innovations and responsiveness to dynamic cloud and digital markets. In the same vein, Batyi (2025) emphasises that fragmented infrastructure regulations on network sharing, spectrum allocation and data management further complicate and delay the deployment of new business models.

Gupta (2022) highlights how businesses often have to negotiate with regulators who grapple with the emergence of disruptive innovations. This means that, though stringent regulations exist, there is still room for negotiation and the potential to reach a fair compromise between businesses

and market regulators. This also implies that, in some instances, regulators need to be educated about innovations if they are not fully knowledgeable about them. However, these negotiations and engagements with regulators do not guarantee successful regulatory adjustments in favour of business innovations.

6.2.3.3 Sub-theme 3: Business model shift

The study's findings illustrate a clear shift in business models among MNOs, driven by the rise of hyperscalers, declining revenue from long-standing products, and technological disruptions. The study's findings reflected on strategic dynamics in revenue generation, partnership structures, and value proposition definitions in response to technological, market, and regulatory pressures. The participants described structural changes from traditional, purely connectivity-based revenues, now considered a "dying business" (An4; An7), towards data-driven monetisation, digital services, analytics, cloud solutions, and enterprise partnerships to sustain profitability. These findings align with the literature by Moyo (2023) on how hyperscaler disruptions necessitate MNOs' transitions to digital services and SD-connectivity from pure network operations. Study participants emphasised a dynamic, technologically progressive telecommunications sector environment, with analytics, AI, cloud, mobile money, and SD connectivity links to specific service providers such as Microsoft and AWS (An9, An2). Similarly, Földes (2022) contends that business model shifts to accommodate technological adjustment occur to improve revenue streams and redefine MNOs' value propositions.

The study findings also emphasised the significance of hyperscaler partnerships. Participants commented on the necessity and enabling capability of hyperscalers. Findings on building cloud partnerships with Azure and AWS for resale echo the literature on strategic partnerships (e.g. Nashiruddin et al., 2019; Woerner et al., 2021), in which hyperscalers provide significant infrastructure while MNOs provide network capabilities and local presence. These strategic partnerships help MNOs navigate dynamic cloud markets where they cannot stand alone; thus, they enable efficient hybrid business model alignments (Yeow et al., 2020). These findings on business model shifts are theorised by Teece (2018), whose framing of dynamic capability theory emphasises shifts in focus through sensing and seizing emerging technologies, as well as structural transformations for sustained competitiveness.

The findings herein reveal that MNOs actively monitor revenues and seize opportunities through reselling, technological expansion, organisational restructuring, strategic partnerships, resource reallocation, and realigned organisational operations to remain competitive. This has become more challenging in hyperscaler cloud and digital environments. According to Omungu and Kavale (2025), MNOs with dynamic and innovative capabilities are more likely to navigate regulatory barriers and complex cloud environments with ease.

6.3 Sub-question 2: How do MNOs make use of seizing dynamic capabilities when responding to hyperscaler disruption?

6.3.1 Theme 1: External Pressures & Competition

6.3.1.1 Sub-theme 1: Engaging in tete-a-tete with competitive forces

The study findings indicate that MNOs' business models and innovation decisions in response to hyperscaler disruptions are primarily influenced by competitive forces from other MNOs and hyperscalers. Study participants revealed that competitors' moves are pivotal in shaping new business models and innovation decisions. In a related study, Földes (2022) argues that MNOs employ various competitive strategies, including cooperation

with hyperscalers through co-investment partnerships, as they shift toward hosted cloud services. This move often contributes to MNO value elevation. Partnering with competitors requires agility to navigate complex relationship models. This finding also aligns with studies that argue that hyperscaler collaborations present unique opportunities for MNOs but also create power imbalances and limit innovation efforts (Quasim et al., 2025).

The study's findings depict intense competition across multiple levels among MNOs, "competing for the same state and customer" (An1), thereby illustrating how hyperscaler disruption exacerbates competition in already congested markets. The participants spoke of sometimes "successfully neutralising" the competition through counter responses, as described in AN4's sentiments on a solution that blocked competitor threats. This reflects a fast-paced, dynamic environment where MNOs must continuously adjust and innovate to avoid displacement. It also reflects, once more, a need for MNOs to quickly adapt, innovate, and evolve. According to Rufaidah and Julina (2024), for MNOs to successfully engage with the competition, they need to adjust their business strategies and develop several strategic innovations.

The study's findings pointed to a complex situation in which MNOs sometimes responded to hyperscaler disruptions by forming strategic partnerships with competitors to remain relevant and retain market share. An6's assertions on forming alliances "with the very same company that is competing with us on the other side" reflect a common recurring tension. Similarly, these findings are supported by Serdyuk and Pazderin (2023), who emphasise both the risks and the significance of strategic partners in a business environment marked by ongoing complexity and highly competitive forces.

Study findings also reveal that increased technological dynamics exert pressure on MNOs to remain relevant. As participants asserted, the push for 5G, cloud environments, and other digital services (An5, An7) reflects how MNOs often feel forced to imitate global market developments. These observations are supported by Carvalho et al. (2024), who emphasise the significance of responsiveness and continuous learning in dynamic digital environments. Business models for contending firms should be agile to allow for ongoing innovation. Competition is a persistent feature in market spaces, which calls for businesses to establish a culture of ongoing innovation through continuous learning. Additionally, capturing new

insights through market research is an integral aspect of remaining relevant.

The findings also present partnerships as a tactic to manage hyperscalers' influence. Early research by Serdyuk and Pazderin (2023) suggests that strategic cooperation with hyperscalers simultaneously deepens dependence and secures a competitive market position.

6.3.2 Theme 2: Industry Disruption

6.3.2.1 Sub-theme 1: Migrating to the use of cloud services offered by hyperscalers

Study findings reveal significant disruptions within the telecommunications industry, forcing MNOs to reposition themselves as consumers and strategic partners rather than infrastructure owners. Study participants described how MNOs are compelled to accelerate their shift to the cloud by using hyperscaler services. Similarly, this study is supported by Shaislamova (2021), who argues that cloud-driven market disruption is a key influence on business model transitions in the telecommunications sector. To adapt to the market disruption caused by hyperscalers, MNOs must innovate their business models to enable strategic partnerships with them.

In this study, hyperscalers, including AWS, Azure, Google, and Meta, are emphasised as major disruptors setting the pace for technological progress, thereby transforming MNOs' business models and organisational operations. This finding aligns with Shaislamova (2021), who contends that the accelerated cloud adoption in the telecommunication sector in response to increased online services is needed. Similarly, Parmentia and Gandia (2025) emphasise the central role of advanced technologies, including AI, 5G, and cloud computing, in the telecommunications industry's transformations. This shift is reflected in study participants' observations of MNOs becoming "customers" and partners rather than infrastructure

owners. This means that MNOs must remain agile to accommodate shifts from traditional practices to the adoption of new cloud-based product and service solutions.

In a different narrative, Khanagha et al. (2022) introduce the concept of ‘mutualism’ in understanding the relationship between hyperscalers and MNOs. This refers to the possibility of parties reaching a fair compromise. In contrast, competing businesses position themselves to interact in ways that seek superior benefit. Using a balancing lens encourages symbiosis, enabling an MNO in a peripheral position to realign by innovating solutions that utilise some or all of a hyperscaler's more dominant services. This brings about win-win outcomes for both hyperscalers and MNOs. According to Malagihal and Momaya (2024), such a move requires MNOs to think beyond their core activities in adopting a ‘product mindset’ to navigate competition and sustain a competitive edge.

6.3.2.2 Sub-theme 2: Business Model Shift

The study's findings reveal that, in response to hyperscaler disruptions, MNOs are actively shifting their business models to adapt to the emerging competitive competencies of the telecommunications industry. Study participants described adjusting pricing, increasing uptime and creating new digital revenue streams as a reflection of business model transition from traditional MPLS connectivity to new streams of SD-connectivity. This finding is supported by Shaislamova (2021), who argues that the rapid integration of information technology requires innovative business models that align with current economic conditions, particularly in response to increased demand for online services.

Use of data insights to create new revenue streams has been highlighted as the backbone of these business model shifts. Participants emphasised MNOs’ use of data to create new revenue models through strategic partnerships with big brands such as Coca-Cola and Shoprite. This reflects a shift in business model, where data analytics and digital intelligence drive new revenue capabilities. The literature confirms this revelation that hyperscaler disruptions enable the adoption of AI, advanced data, and cloud capabilities in MNOs’ transitions to digital service platforms (Moyo, 2023).

The study findings also reveal that MNOs are adjusting their services to meet customer demands. Participants described how MNOs transitioned from being wholesale service providers to becoming infrastructure service providers. This reflects how increasing market pressure on MNOs due to hyperscaler disruptions pushes firms to expand their networks. These findings are supported by Omungu and Kavale's (2025) assertions regarding MNOs' dynamic capabilities to navigate the regulatory and technical complexities embedded in business models. However, one can argue that the relevant resources need to be made available to allow for the necessary flexibility to engage in business model shifts.

6.3.3 Theme 3: Financial & Economic Pressures

6.3.3.1 Sub-theme 1: Barriers limiting the seizing of hyperscaler opportunities

Study findings established that the high costs of building and maintaining connectivity infrastructure are a significant barrier to MNOs' intent to seize opportunities created by hyperscaler disruptions expeditiously. Participants described how infrastructure connectivity remains the key expenditure area for MNOs, impacting their business model innovations and organisational operations. As study participants highlighted, network equipment costs compel MNOs to transition to OPEX models, in which they increasingly depend on cloud services to avoid heavy upfront investments. These findings are supported by Omungu and Kavale (2025), who offer a South African perspective that legacy infrastructure and skills shortages create significant barriers to rapid technology adoption and organisational transformation. Earlier, Barrett (2016), highlighted the barriers South African firms encounter in navigating an unpredictable entrepreneurial environment and in effectively deploying business model innovation without ecosystem-level enablers, including funding and incubators.

These infrastructural weaknesses are further reflected in participants' frustrations with inadequate and poor-quality equipment, which hinders

efforts to support business growth and respond to hyperscale disruptions. Participants described how load-shedding compelled MNOs to “go back to basics” (AN2), reflecting the outdated and unreliable nature of available infrastructure, which delays MNOs’ hyperscaler responsiveness. This confirms Hess et al. (2016)’s arguments that existing technologies and legacy assets often hinder the exploitation of capabilities and frustrate innovation efforts.

This literature is consistent with participants’ assertions that macro- and micro-infrastructural deficits slow responsiveness to hyperscale disruptions and make innovative solutions costly. Using a dynamic capability lens, which encourages flexibility for innovation (Teece, 2018), it is evident that a valuable capability in the telecommunications sector is the ability to adapt new infrastructures to traditional systems. Serdyuk and Pazderin (2023) highlight similar concerns: MNOs increasingly face significant barriers due to outdated systems and infrastructure, complicating plans. These hurdles limit the speed and scope of new technology adoption, which often requires costly interventions or gradual changes.

6.4 Sub-question 3: What transforming dynamic capabilities emerge when MNOs respond to hyperscaler disruption through BMI?

6.4.1 Theme 1: Innovation and Market Growth

6.4.1.1 Sub-theme 1: New product development

Participants disclosed that MNOs create new product offerings or enhance existing ones in a strategic approach towards product innovation. They do this to adapt to hyperscaler disruption, explore new markets and gain a competitive advantage. This finding is supported by Shaislamova (2021), who argues that the rapid integration of information technology requires innovative business models that align with current economic conditions, particularly in response to increased demand for online services. For example, AI adoption, 5G networks, automation, and cloud computing help traditional telecom firms become tech-focused companies, enabling them to offer new products.

MNOs react by developing new services to protect revenue amidst the threat of hyperscalers. Failing to innovate in products and services could compromise performance or result in market share loss. Heikki and Ailisto (2018) argue that technological advancements can create new market leaders, while new entrants emerge and sector boundaries blur as market conditions change. The development of new products by MNOs is a form of business model innovation, which involves transforming the overall business framework to gain a competitive edge, adapt to disruption, or explore new markets (Teece, 2010; Chesbrough, 2010). As Rayna & Striukova (2016) emphasise, businesses do this to create, capture, and deliver value through product innovation.

Participants revealed that the emergence and strengthening presence of hyperscalers is creating opportunities for market diversification within the sector. For example, it was highlighted that some MNOs are investing in new data centres and terrestrial networks, hoping that hyperscalers may, in turn, become future customers. This exposes potential for co-innovation and partnership deals with hyperscalers. For firms to engage successfully in market diversification, they utilise insights gained through business model innovation as a guide, as Foss and Saebi (2017) contend,

business model innovation provides companies with insights into markets, competitors, and emerging technologies, enabling them to develop and refine product offerings for market entry or enhanced positioning.

Market diversification requires the business to have adequate resources. Apprehension over funding often leads organisations to either maintain current business models or pursue only minor innovations, rather than fully embrace a comprehensive transformation. Chesbrough (2010) argues that a mismatch between a firm's resources and emerging business models obstructs innovation initiatives. Adequate resources are required to shift the value proposition or enhance functionality by focusing on premium offerings or creating commonalities across products (Amit and Zott, 2020). Optimising current resources while pursuing new avenues drives steady innovation and maintains a competitive edge over rivals (Parmentier & Gandia, 2025).

6.4.2 Theme 2: Regulatory Constraints and Governance

6.4.2.1 Sub-theme 1: Regulatory barriers to timely response

It emerged that sector governance rules affect MNO operations and influence business model innovations. Participants spoke of the need to ensure adherence to legal, technical, and consumer standards, which sometimes slows the pace at which firms can adapt to emerging technologies and counter hyperscaler strengths. For example, they noted how high legal barriers limit competition and the timely introduction of new products. This finding is supported by Serdyuk and Pazderin (2023), who contend that the telecom industry has many stringent regulations that limit firms' flexibility to respond to innovations, thereby leading them to spend more time with outdated systems. This means that a firm's agility is limited by these regulations, as such rules cloud choices and hinder progress. For example, institutional fragmentation among regulators such as the Competition Commission and ICASA creates complexity, favouring incumbents and hindering new market entry and the diffusion of innovation (Sutherland, 2021). Similarly, in a study by Hagar et al. (2024) on the adoption of innovation practices amongst mobile network operators in

Yemen, it emerged that a highly regulated environment is both a threat and an obstacle to innovation practices and limits the extent to which business plans and strategies can be implemented.

However, using dynamic capability theory (DCT) as an analytical tool, it is evident that a stringent regulatory environment poses a barrier to rapid, immediate responses to the emergence of hyperscalers. The DCT posits that firms gain and sustain competitive advantage by sensing opportunities, seizing opportunities, and reconfiguring resources in rapidly changing environments (Teece, 2007; 2018; Wong & Ngai, 2025; Yeow et al., 2020). Using this lens, it is evident that the regulatory environment creates stumbling blocks to adaptation for MNOs, particularly at the stage of seizing opportunities and reconfiguring resources. This is because, at the stage of sensing opportunities, firms engage in market scanning to identify emerging opportunities, and regulatory requirements do not influence this process. However, in the next phase, where firms must proactively seize opportunities, they must do so in compliance with existing laws in the tech space. Meanwhile, when firms reactively transform and reconfigure their resources to adapt to market disruptions caused by hyperscalers, this also requires a regulatory lens, as they must comply with sector-specific laws.

The participants also revealed that regulations governing MNOs are complex and numerous, highlighting that every new product must go through compliance teams, legal reviews, and national regulators. This slows down the pace of adaptation or even hinders it. However, some scholars (Kleinbaum & Stuart, 2014; Pisano, 2017; Teece et al., 2018) highlight that large firms that coordinate and adapt quickly possess vital dynamic capabilities, influenced by their resource positions, allowing for constant agility. This means that larger firms with more resources can navigate the business complexities brought by regulatory barriers much more quickly than smaller players, as they can reconfigure their internal and external resources efficiently in response to change.

Participants also argued that the telecom license, which allows them to operate, restricts product offerings; meanwhile, hyperscaler firms domiciled in other countries are not impacted and can operate freely. This grants unfair competitive advantage to hyperscalers, while MNOs must contend with regulatory boards that sometimes reject or disapprove new product proposals before they even reach the market.

However, from a different lens, scholars (e.g., Nashiruddin et al., 2019; Omungu and Kavale, 2025; Serdyuk and Pazderin, 2023) argue that dynamic markets offer opportunities that require robust sensing, seizing, and transforming capacities to innovate amid evolving conditions. MNOs that leverage dynamic capabilities can better navigate data sovereignty regulations while capturing value from multi-cloud service innovations, which is an opportunity that exists in the midst of the regulatory complexities.

Empirical studies in telecommunications, including those in African contexts, have shown that dynamic capabilities are positively correlated with business model innovation, particularly when combined with collaborative strategies alongside hyperscalers (Nashiruddin et al., 2019; Omungu & Kavale, 2025). This reinforces the critical role of dynamic capabilities in enabling MNOs to build agile, resilient business models that are responsive to regulatory complexities and the hyperscaler-driven digital transformation.

6.4.3 Theme 3: Internal Dynamics & Organisational Factors

6.4.3.1 Sub-theme 1: Stakeholder influence

Participants revealed that the value chain is characterised by diverse stakeholders with significant sway over perspectives. Influential stakeholders mentioned include customers, partners and investors. The presence of numerous stakeholders surrounding MNO operations influences how firms can respond to hyperscaler disruptions. This finding concurs with Do Manh et al. (2023), who note that stakeholder influence in the telecommunications industry affects firm sustainability. The scholars also highlighted that the level of influence of stakeholders differs, with some, such as government, users, and investors, being more dominant, whilst others, such as civil society, have a more passive influence. For example, the needs and expectations of the various stakeholders include access to quality services, reliability, data privacy, regulatory control, and data monetisation, among others (Yrjölä et al., 2023).

Participants highlighted how MNOs attempt to accommodate multiple interests whilst responding to stakeholder pressure. The data reveals that at times there is conflict over the products that can be offered, the timelines within which they can be offered, and the regulations, due to misaligned expectations. Tension between stakeholder influence and business strategies or operations introduces complexity and constraints. Managers must work to balance the interests of all stakeholders (Do Manh et al., 2023). However, meeting and satisfying stakeholder expectations is not always a seamless and straightforward process.

According to Yrjölä et al. (2023) the presence of conflicting views calls for strategic management where long-term compromises are made. This requires insight into the nature of stakeholders and how they interact with one another and with the business, as these dynamics influence the operational environment. Effective stakeholder management requires ongoing analysis to identify existing and emerging stakeholders and to guide appropriate action plans to manage them. Freudenreich et al. (2020) advise that prioritising stakeholders by influence supports efforts to innovate for new value creation, as the withdrawal of support by any one of them can severely impact business viability.

Similarly, in a study by Hajar et al. (2024) on the adoption of innovation practices amongst mobile network operators in Yemen, it emerged that key stakeholders should be engaged in the innovation development process, as they are key catalysts for success. This calls for management to develop a multi-stakeholder partnership to sustain the business (Duong et al., 2022).

6.4.3.2 Sub-theme 2: Organisational Culture

Participants disclosed that organisational culture regarding restructuring teams, reporting, or processes to enable innovation influences when and how MNOs can respond to hyperscaler disruption. Aspects such as cultural shifts, changing mindsets, and new skills are essential to embracing innovation and agility within business models. This finding is supported by Moalusi and Naidoo (2022), who show how in the South African telecommunications industry, organisational culture, which involves the firm's values, standards, and beliefs, influences business practice.

Leadership drives organisational culture, as leaders have a significant influence on the firm's internal climate. This means that leaders have a significant influence on the adoption of a culture of innovation and on the pace of innovation within firms.

However, Najm and Ali (2024) offer a different perspective, suggesting that organisational culture can serve as a stabiliser of the status quo rather than driving innovation and adaptation to market changes. A culture that does not evolve or is static can actually become a stumbling block to business innovation. Likewise, an organisational culture that supports continuous adaptation enables advancement in the face of new market dynamics. This underscores the role of internal supporting functions in a conducive business environment.

Participants highlighted how an internal culture of ongoing skills development is valuable in equipping employees to sense and adapt solutions to new market dynamics. This finding aligns with the views of Al-Shammari and Almulla (2024), who contend that for knowledge sharing to be successful in an organisation, it requires the presence or establishment of an organisational culture that fosters it and integrates it into business strategy, thereby enhancing innovation performance. Evidently, a corporate culture that fosters a willingness and readiness to share information is essential for training and equipping firms for innovation.

In a similar vein, Hameed et al. (2025) examined knowledge transfer and management within the telecom industry in Egypt and noted that an organisational culture that fosters collaboration, learning, and trust amongst employees facilitates knowledge transfer and enhances innovation capabilities. This study links knowledge management to leadership style, highlighting the importance of a leadership approach that fosters a corporate culture of training and information sharing. This provides a new dimension to the understanding of knowledge transfer for innovative business models.

6.4.4 Summary of findings

Summary of outcomes in relation to the literature

Theme	Sub-theme	Similarity or difference	Outcome
6.2.1 Theme 1: External Pressure from Hyperscalers	Sub-theme 1: Scanning and learning from the competition	• Similarity	• Adds to existing scholarly literature
	Sub-theme 2: Scanning for market disruptive cloud services	• Similarity	• Adds to existing scholarly literature
6.2.2 Theme 1: Cost and efficiency pressures	Sub-theme 1:Infrastructure costs as barriers to responding to hyperscaler disruptions	• Similarity • Difference • New dimension	• Adds to existing scholarly literature • Potential refinement of body of knowledge

	Sub-theme 2: Transitioning from CapEx vs. OpEx financial model transitions	• Similarity	• Adds to existing scholarly literature
6.2.3 Theme 3: Innovation and market dynamics	Sub-theme 1: Product innovation	• Similarity • Difference • New dimension	• Adds to existing scholarly literature • Potential refinement of body of knowledge
	Sub-theme 2: Regulation constraints as barriers to responding to hyperscaler disruptions	• Similarity	• Adds to existing scholarly literature
	Sub-theme 3: Business model shift	• Similarity	• Adds to existing scholarly literature

6.3.1 Theme 1: External pressures and competition	Sub-theme 1: Engaging in tete-a-tete with competitive forces	• Similarity	• Adds to existing scholarly literature
6.3.2 Theme 2: Industry Disruption	Sub-theme 1: Migrating to use of cloud services offered by hyperscalers	• Similarity • Difference • New dimension	• Adds to existing scholarly literature • Potential refinement of body of knowledge
	Sub-theme 2: Business model shift	• Similarity	• Adds to existing scholarly literature
6.3.3 Theme 3: Financial & economic pressures	Sub-theme 1: Barriers limiting the seizing of hyperscaler opportunities	• Similarity	• Adds to existing scholarly literature
		•	•
6.4.1 Theme 1: Innovation and Market Growth	Sub-theme 1: New product development	• Similarity	• Adds to existing scholarly literature

6.4.2 Theme 2: Regulatory Constraints and Governance	Sub-theme 1: Regulatory barriers to timely response	• Similarity • Difference • New dimension	• Adds to existing scholarly literature • Potential refinement of body of knowledge
6.4.3 Theme 3: Internal Dynamics & Organisational Factors	Sub-theme 1: Stakeholder influence	• Similarity • Difference • New dimension	• Adds to existing scholarly literature • Potential refinement of body of knowledge
	Sub-theme 2: Organisational Culture	• Similarity • Difference • New dimension	• Adds to existing scholarly literature • Potential refinement of body of knowledge

The study's findings reveal how the emergence of hyperscalers has transformed business models by exploring new markets, non-traditional customers, and solutions to unlock new income streams. The new data was discussed alongside existing literature explored in Chapter Two. Participants describe the emergence of hyperscalers as an opportunity for MNOs to diversify their markets. The literature also supports this insight.

However, the finding of a positive influence of organisational culture was contradicted by Najm and Ali (2024), who offer a different perspective, suggesting that organisational culture can act as a solidifier of the status quo rather than propelling innovation and adaptation to market changes.

Stakeholder analysis framing (Freudenreich et al., 2020) underscored the influence of stakeholders, leading to the conclusion that increasingly, all key stakeholders are influential in the adaptation of innovations for value creation, as the withdrawal of support by any one of them can severely impact business viability. The following chapter concludes this dissertation.

Chapter 7: Conclusion

7.1 Introduction

This chapter concludes the study by presenting the research outcomes derived from the discussion of findings in Chapter 6. The research set out to explore how MNOs define dynamic capabilities for business model innovation in the face of disruption from hyperscalers. The analysis focused on MNOs in South Africa. The participants were managers, senior managers, and executives in the telecommunications sector, including those involved in technology, cloud adoption, and MNO strategy.

The study set out to answer the following research questions:

Main Research Question: How do MNOs define dynamic capabilities for business model innovation amid disruption from hyperscalers?

Sub-question 1: How do MNOs make use of sensing capabilities when responding to hyperscaler disruption?

Sub-question 2: How do MNOs make use of seizing capabilities when responding to hyperscaler disruption?

Sub-question 3: What transforming dynamic capabilities emerge when MNOs respond to hyperscaler disruption through BMI?

7.2 Theoretical Conclusion

The theoretical conclusions of this study are presented per each of the three sub-questions that the study investigated.

7.2.1 Research sub question 1: How do MNOs leverage sensing dynamic capabilities when responding to hyperscaler disruptions?

Similarities with scholarly literature:

Research outcomes were consistent with the literature on the need for dynamic capabilities in sensing conditions as revealed through the MNOs' approach in navigating the competitive disruptions introduced by hyperscalers. These findings align with scholars' views (e.g., Gupta, 2022; Teece, 2018) on the conceptualisation of sensing capabilities, which emphasises scanning, learning, and interpreting signals in the external environment to anticipate threats and opportunities.

The study revealed that hyperscalers have become "gamechangers," building their own competitive infrastructure and challenging MNOs' dominance in the telecommunications industry. This outcome was consistent with Cozzolino et al. (2022) and Földes (2022), who found that hyperscalers introduce new business models, faster innovation cycles, and greater operational efficiency, thereby increasingly displacing traditional MNOs' roles. This observation is also consistent with data from Yeow et al. (2020) and Woerner (2021), who reported that large cloud providers' capacities disrupted MNO markets through the introduction of advanced business models and dynamic innovations.

Research outcomes showed that MNOs actively monitor the environment to understand hyperscalers' and OTT players' innovations and apply this knowledge to guide internal learning and strategic changes. This was consistent with literature on telecom digital transformation, as the work of Richter (2020) notes heightened use of sensing routines, competitor analysis and ecosystem monitoring as MNOs strive to reposition themselves within the cloud-driven and data-intensive telecommunications sector.

Research outcomes showed that MNOs transitioned from CAPEX to OPEX-oriented funding models, indicating significant changes in their operational and financial approaches, influenced by hyperscalers' disruptions. This is consistent with the digital transformation literature, which

emphasises the operational flexibility offered by hyperscalers. MNOs are framing business model innovations beyond traditional connectivity into digital platforms, cloud services, financial technology, and enterprise solutions (Serdyuk & Pazderin, 2023; Richter, 2020).

The study's findings showed that infrastructure costs are a significant barrier to effective response by MNOs to market changes. Narayan (2022) acknowledges this cost barrier and suggests that moving to cloud-based services offered by hyperscalers eliminates these physical infrastructure costs, allowing firms to operate with limited marginal costs.

The research revealed that regulatory constraints limit MNOs' experimentation with new business models, thus restricting their responsiveness to dynamic telecommunications environments. These findings are consistent with the literature on hyperscalers, which describes contentious relations between technology-inclined businesses and the market regulators (Gupta, 2022; Sutherland, 2021; Batyi, 2025). According to Omungu and Kavale (2025), MNOs with dynamic and innovative capabilities are more likely to navigate regulatory barriers and complex cloud environments with strategic prudence.

Nuances of difference from scholarly literature:

Amit and Zott (2020) suggest that product innovation improves value propositions. However, this study's outcomes highlight that MNOs' capacity to enhance value propositions through product innovation is often hindered by external constraints.

7.2.2 Research Sub question 2: How do MNOs make use of seizing capabilities when responding to hyperscaler disruption?

Similarities with scholarly literature:

The study revealed a complex situation in which MNOs responded to Hyperscaler disruptions by establishing strategic partnerships with competitors to remain relevant and retain market share. This finding aligns with Serdyuk and Pazderin (2023), who emphasise both the risks and importance of strategic partners in a business environment characterised by ongoing complexity and highly competitive forces.

Study outcomes revealed significant disruptions within the telecommunications industry, forcing MNOs to reposition themselves as consumers and strategic partners rather than infrastructure owners. This finding is consistent with the literature on cloud-driven market disruption, which describes the rise of this phenomenon as a key influence on business model transitions in the telecommunications sector (Parmentia & Gandia, 2025; Shaislamova, 2021;).

The research reveals that MNOs are adjusting their services to meet customer demands. This reflects how increasing market pressure on MNOs due to hyperscaler disruptions pushes firms to expand their networks. Omungu and Kavale (2025) observed that it is through transformative dynamic capabilities that MNOs can realign service offerings to navigate the regulatory and technical complexities posed by market disruptions.

Study findings established that high costs and infrastructure burdens associated with building and maintaining connectivity infrastructure are significant barriers to the timely exploitation of opportunities created by Hyperscaler disruptions. This finding is consistent with the literature by Omungu and Kavale (2025), who offer a South African perspective which indicates that legacy infrastructure creates significant barriers to rapid technology adoption and organisational transformation. Similarly, Serdyuk and Pazderin (2023) highlight similar concerns that MNOs increasingly encounter significant barriers due to outdated systems and infrastructure.

Nuances of difference from scholarly literature:

None

7.2.3 Research sub question 3: What transforming dynamic capabilities emerge when MNOs respond to hyperscaler disruption through BMI?

Similarities with scholarly literature:

Research revealed that MNOs create new product offerings or enhance existing ones in a strategic approach towards product innovation. The rapid integration of information technology requires innovative business models that align with current economic conditions, particularly in response to increased demand for online services.

Additionally, the study found that sector governance rules affect MNO operations and influence business model innovations. The telecom industry has many stringent regulations which limit firms' flexibility to respond to innovations. This hampers progress in efforts to transition from outdated systems.

The study showed that having many diverse stakeholders with significant influence is a prominent hurdle within the value chain. This presence surrounds MNO operations and influences how firms can respond to Hyperscaler disruptions. Stakeholder influence in the telecommunications industry affects the sustainability of MNO firms. It differs, with some actors being more dominant than others, such as government, users, and investors, having a dominant influence, whilst others, such as civil society, are more passive (Manh et al., 2023; Yrjölä et al., 2023).

The data highlighted the role of organisational culture on operating structures, reporting, and other support processes at the routine level of capability as essential enablers of innovation. Internal configurations and behaviours influence when and how MNOs can respond to Hyperscaler disruption. Aspects such as cultural shifts, changing mindsets, and new skills are essential to embracing innovation and agility required to reframe business models. Moalusi and Naidoo (2022) examined South African telecommunications firms and demonstrated how organisational culture — comprising the firm's values, standards, and beliefs — shapes business practices. Similarly, Al-Shammari and Almulla (2024) and Hameed et al.

(2025) contend that for knowledge sharing to be successful in an organisation, it requires the presence or establishment of an organisational culture that fosters it and integrates it into business strategy, thereby enhancing dynamic capability for business model innovation.

Nuances of difference from scholarly literature:

The research outcomes revealed that MNOs must contend with regulatory boards that sometimes reject or disapprove new product proposals before they even reach the market, hindering adaptation to Hyperscaler disruption. However, scholars support the argument that these market dynamics present an opportunity that requires robust sensing, seizing, and transforming capacities to manage technological, market, and regulatory uncertainties (Nashiruddin et al., 2019; Omungu and Kavale, 2025; Serdyuk and Pazderin, 2023). MNOs leveraging dynamic capabilities can better navigate data sovereignty regulations while capturing value from multi-cloud service innovations, an opportunity that exists despite regulatory complexities.

7.3 Research contribution

The insight and contributions are outlined for each of the three sub-questions examined in this study.

7.3.1 Research sub-question 1: How do MNOs leverage sensing dynamic capabilities when responding to Hyperscaler disruptions?

The research findings presented diverse perspectives, with some participants redefining hyperscalers not as direct competitors but as enablers that lower barriers to market entry and indirectly influence innovation. From a dynamic capability theory perspective, this reflects interpretive sensing, in which firms not only identify threats but also consider potential partnerships and enhanced product value (Teece, 2018).

The research touches on the ‘infrastructure as a service” market to aid in analysing how hyperscalers offer cloud-based infrastructure services and how MNOs participate. As hyperscalers represent a segment of the infrastructure service market, they can offer lower prices and in so doing, eclipse traditional service providers, especially smaller MNOs. These insights highlight the need to develop strategies and business models to counter the growing dominance of hyperscalers. Cloud infrastructure-as-a-service models considerably reduce costs compared to on-premises infrastructure (Olariu et al. 2024).

7.3.2 Research Sub-question 2: How do MNOs make use of seizing capabilities when responding to hyperscaler disruption?

Evidently, MNOs are seeking options for fair compromise arrangements with hyperscalers, recognising that competing businesses can reposition themselves to interact in ways that benefit both. From this stance, MNOs can realign by innovating models that utilise some or all of the services offered by hyperscalers. The research adopts the concept of ‘mutualism’ (Khanagha et al., 2022) to explain the emerging relationship interfaces between hyperscalers and MNOs.

7.3.3 Research Sub-question 3: What transforming dynamic capabilities emerge when MNOs respond to hyperscaler disruption through BMI?

The research uses the dynamic capability theory (DCT) as an analytical tool to assess the regulatory challenges highlighted by participants. This posits that firms gain and sustain competitive advantage by sensing and seizing opportunities to reconfigure resources in rapidly changing environments (Teece, 2007; 2018; Wong & Ngai, 2025; Yeow et al., 2020). Using this lens, it is evident that the regulatory environment creates stumbling blocks to adaptation for MNOs, particularly at the stage of seizing opportunities and reconfiguring resources.

When sensing, firms engage in market scanning and identify the emerging opportunities; regulatory requirements do not influence this process. However, when transforming and reconfiguring resources to adapt to market disruptions, a regulatory lens must be applied to ensure compliance with the sector's existing laws.

Stakeholder interfaces are instrumental to MNOs' considerations towards business model innovation. Firms must closely monitor and analyse the influence of existing and emerging stakeholders to navigate strategies for responding to hyperscaler disruption. Participants in this study highlighted the diverse stakeholder influences as potential barriers to progress. According to Freudenreich et al. (2020), all key stakeholders must be considered when firms are intent on innovating for value creation, as the withdrawal of support by any one of them can significantly affect the viability. This requires management to establish multi-stakeholder partnerships that ensure sustainability (Duong et al., 2022).

7.4 Recommendation for Management and other stakeholders

For clarity, the recommendations are laid out per sub-question answered:

Sub-question 1: How do MNOs leverage sensing dynamic capabilities when responding to hyperscaler disruptions?

- MNOs should enhance their sensing skills to adapt to market disruptions. In so doing, firms can better evaluate risks, responsiveness, and strategic options, avoiding impulsive reactions and optimising responses to challengers.
- MNOs should restructure their operational models, service delivery, and infrastructure provisioning to remain competitive in the dynamic, digital, and cloud-driven environments as described in the study.
- Firms should invest in the infrastructure needed for rapid adaptation, as the study found that infrastructural barriers delay MNOs' ability to adapt to cloud and digital provider competitors.
- MNOs should also invest in ongoing research to gain market insights that enable quick adaptation and foresight into the future trends of hyperscalers and other market disruptors, thereby gaining a competitive advantage.
- Leadership support is also recommended for quick adaptation as the study revealed that support from senior managers ensures quicker adaptation.
- Regulators need to create a compliance environment that simplifies quick adaptation to evolving market disruptions caused by hyperscalers.

- MNOs need to execute on the necessary organisational culture shift to foster an internal climate that is adaptive to high-value innovation and business model structures to cater for hyperscaler disruptions.

Sub-question 2: How do MNOs make use of seizing capabilities when responding to hyperscaler disruption?

- MNOs should remain agile to enable continuous adjustment and innovation and avoid displacement. MNOs need flexibility to quickly adapt, innovate, and evolve as needed to accommodate shifts from traditional practice to the adoption of new cloud-based product and service provision.
- The relevant resources need to be made available to allow the necessary flexibility to implement business model changes, as this is not possible in their absence, as shown in this study.

Sub-question 3: What transforming dynamic capabilities emerge when MNOs respond to hyperscaler disruption through BMI?

- A relaxation of the regulatory environment in South Africa is necessary to allow MNOs to respond to hyperscaler disruptions quickly, as is the case with their counterparts in developed countries.
- Managers must find a balance between satisfying the interests of varied stakeholders, given that the study revealed that conflicting stakeholder interests affect MNOs' ability to respond to hyperscaler disruption.
- It is recommended that leaders practice transformational leadership, as they have a significant influence on the adoption of a culture of innovation and on the pace at which firms innovate. Adaptive leader behaviours serve as an internal support function for conducive innovation in the business environment.
- MNOs should foster a corporate culture that fosters a willingness and readiness to share information, as this is essential to training and equipping firms for innovation that adapts to hyperscaler disruptions.

7.5 Limitations of the research

The study was conducted in the South African context, which, whilst similar to other developing economies, has its own idiosyncrasies that may not be translatable to other contexts. Furthermore, the findings might not apply to advanced economy environments, although many themes remain relevant across settings.

Another potential issue could be the resource-constrained environment that has limited the ability of incumbents in South Africa to be patient with experimentation and R&D. More developed economies may not face the same constraints as South African firms, which have to contend with infrastructure challenges such as electricity supply, meaning that more investments that could be allocated to R&D may instead be used to supplement backbone infrastructure. South African MNOs are heavily reliant on vendors such as Huawei, ZTE, Cisco, Nokia, and Ericsson. This could have contributed to a missed opportunity to become hyperscalers themselves; however, this aspect of the ecosystem was out of scope for this study.

7.6 Suggestions for Future Research

The study was exploratory and has uncovered interesting findings that warrant further testing through quantitative research. More qualitative work is needed to explore other relevant aspects of the telecommunications ecosystem.

As more studies are conducted, developing quantitative tools to test relevant hypotheses in the field will become necessary.

Since the study participants were managers, senior managers and executives in the telecommunications sector, future research could explore the perspectives of lower-level employees. The study could benefit from looking at other aspects of dynamic capabilities beyond the process-level foundations of sensing, seizing, and transforming.

- Future studies should also explore barriers and successes to the implementation of business model innovation by MNOs to build on the insights that emerged from this study.

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Appendices

8.1 Appendix 1: Informed Letter of Consent

I am conducting research on **"** Exploring the role of hyperscalers in South African MNOs' business model innovation**."**

Our interview is expected to last **1hr** , and will help us understand **How MNOs define dynamic capabilities for business model innovation in the face of disruption from hyperscalers?**

Your participation is voluntary and you can withdraw at any time without penalty. By signing this letter, you are indicating that you have given permission for:

• The interview to be recorded;

• The recording to be transcribed by myself

• Verbatim quotations from the interview may be used in the report, provided they are not identified with your name or that of your organisation;

• The data to be used as part of a report that will be publicly available once the examination process has been completed; and

• All data to be reported and stored without identifiers.

If you have any concerns, please contact my supervisor or me. Our details are provided below.

Researcher name :

Email :

Phone

Research Supervisor name : Robert Grosse

Email :

Phone

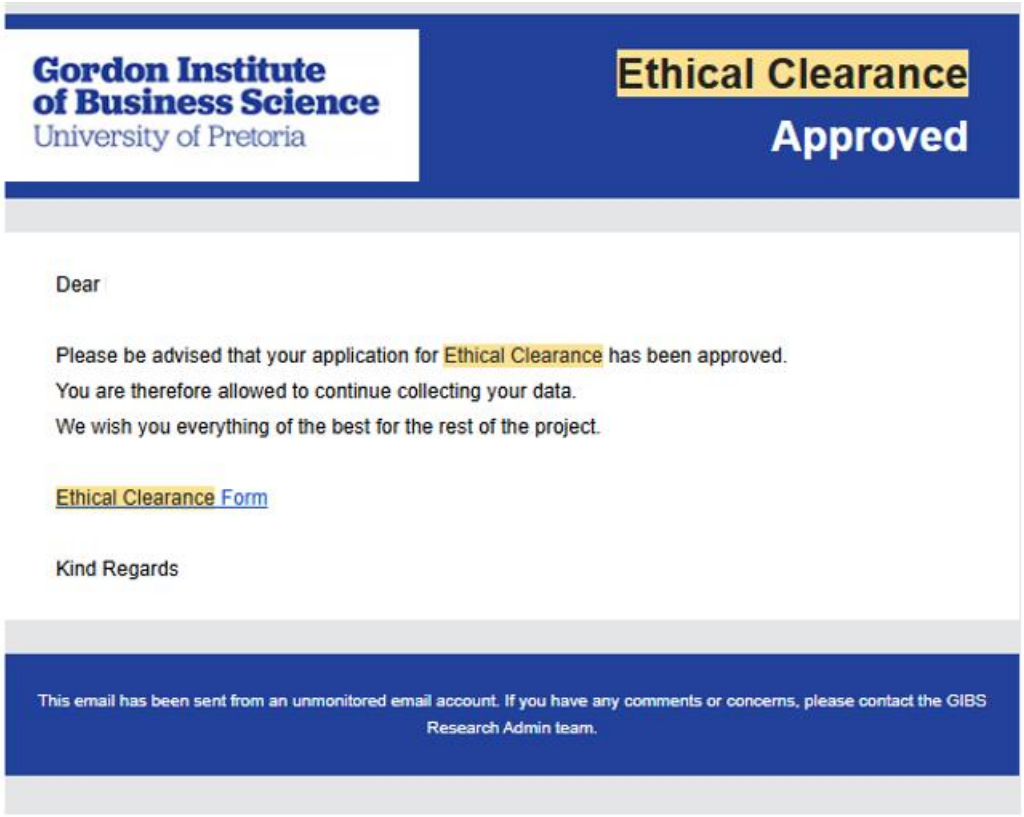
Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

8.2 Appendix 2: Ethical Clearance



Gordon Institute of Business Science
University of Pretoria

Ethical Clearance Approved

Dear

Please be advised that your application for Ethical Clearance has been approved.
You are therefore allowed to continue collecting your data.
We wish you everything of the best for the rest of the project.

Ethical Clearance Form

Kind Regards

This email has been sent from an unmonitored email account. If you have any comments or concerns, please contact the GIBS Research Admin team.

8.3 Appendix 3: Interview Guide

Category	Interview Question	Objective
Background and Context(5mins)	1. Can you briefly describe your role in your company? 2. How long have you been involved in the telecom industry or digital transformation initiatives? 3. At what level of seniority do you work? (e.g., executive, senior manager, etc.) 4. Have you been involved in projects where your company was changing its value proposition or some revenue stream	Gain insights into the background of an individual to drive towards their own experiences.
Framing Hyperscaler Disruption (10 mins)	5. In your view, have big cloud players changed the dynamics of the telecoms industry? 6. What kinds of external actors or institutions are most influential in shaping how telcos respond to this disruption? **Probes**: o What pressures do you feel from these actors (e.g., regulators, clients, investors, or partners)? o How has this impacted your own and the team's way of working o How do these expectations support or constrain your strategic innovation?	Understand how participants interpret hyperscaler disruption and identify influential actors, or even define hyperscalers in a language they understand to mean (AWS, AZURE, GOOGLE, etc)

Dynamic Capabilities (15 mins)	7. In your current or past roles, can you describe a situation where you faced conflicting expectations from external institutional actors, such as regulators, shareholders, clients, or hyperscalers? (To probe individually what each of these expected from them.) **Follow-up**: o What made these expectations difficult to reconcile? o Have you ever felt pulled in a particular direction, eg needing to follow regulations but also needing to move fast and innovate? o Have you been involved in any debates or disagreements about how to respond to hyperscaler competition? 8. In your experience, how have external expectations influenced your decisions or thinking about what direction is appropriate or legitimate for business model changes? **Probes**: o Are there actors whose expectations you feel more compelled to satisfy? (looking for the dominant/salient institutional logics) o Are there expectations you try to resist or work around? How? 9. Have you ever had to adjust your approach or strategy to meet the expectations of a specific external actor? What influenced your decisions?	Identify the institutional logics and how they shape decisions

	Probe: What specific expectations influenced the choices around product design, partnerships, pricing, or delivery?	
Business Model Innovation as a Response (15mins)	10. Can you walk me through a time when you were involved in changing or adapting a business model in response to external pressure? What was your role in that process? **Follow-up**: What value systems or expectations were they trying to align with in that decision? 11. How did you personally navigate or influence the balance between competing demands, like speed vs. compliance or innovation vs. fulfilling shareholder demands? **Probe**: o Were there trade-offs, such as between market speed and compliance, or between technological ambition and financial accountability? o How were decisions made about which direction to take?	Explore how telcos innovate in response to institutional complexity.

	12. Did you find yourself rethinking the value of your offering or how you presented it to gain support or buy-in? What helped you communicate or justify the change? **Probe**: What kinds of communication or adjustments helped you secure buy-in?	
Outcomes and Strategic Reflection (10 mins)	13. From your perspective, what have been the most rewarding or frustrating outcomes from the innovation efforts you've been part of? 14. Which external pressures have you personally found challenging or helpful when trying to implement change? 15. Looking back, is there anything you would have done differently in how you or your team responded to hyperscaler disruption?	Understand the perceived consequences and lessons learned.
Closing and Reflection (5 mins)	16. Is there anything we haven't covered that you think is important to understanding how you interpret and respond to competing external expectations while trying to innovate in your job responsibilities? 17. Is there someone you think I should speak to for a complementary or different perspective?	

8.4 Appendix 4: List of codes

No	Theme	No.	Subtheme
1	**Market Competition & Industry Dynamics**		
		1a	Competition
		1b	Competitive Response
		1c	Peer Pressure
		1d	Market Speed
		1e	First-mover Advantage
		1f	Market Disruption
		1g	Industry Disruption
2	**Hyperscaler Disruption & Influence**		
		2a	Hyperscaler Power
		2b	Pricing Control
		2c	Traffic Concentration (e.g., Google authentication)
		2d	Displacement of Telcos
		2e	Business Model Shift
		2f	Cloud Dominance
		2g	Bargaining Power Imbalance
3	**Cloud Transformation & Digital Technologies**		
		3a	Cloud Services
		3b	API Development
		3c	Platform Modernisation
		3d	OTT Influence
		3e	Digital Channels
		3f	Messaging Evolution
		3g	Data-driven Services
4	**Financial & Economic Pressures**		
		4a	Infrastructure Costs
		4b	Operational Expenses (OpEx)
		4c	Capital Expenditure (CapEx)
		4d	Shift from CapEx to OpEx
		4e	Cost Reduction Strategies
		4f	FX Volatility
		4g	Economic Pressures
5	**Service & Product Innovation**		
		5a	Product Innovation
		5b	Service Diversification
		5c	Market Innovation
		5d	New Revenue Streams
		5e	Value Proposition Redesign
		5f	Authentication Products
		5g	API-based Services
6	**Regulatory & Institutional Pressures**		

		6a	Regulation
		6b	Compliance Requirements
		6c	Market Restrictions
		6d	Tariff Controls
		6e	Foreign Exchange Constraints
		6f	Consumer Protection
		6g	Segmentation Rules
		6h	Licensing & Approval Processes
7	**Organisational Barriers & Internal Resistance**		
		7a	Internal Resistance
		7b	Slow Approvals
		7c	Executive Buy-in Challenges
		7d	Silos
		7e	Stakeholder Influence
		7f	Institutional Inertia
		7g	Slow Speed of Execution
8	**Organisational Culture & Change Processes**		
		8a	Cultural Shift
		8b	Innovation Roadblocks
		8c	Short-term Focus
		8d	Risk Aversion
		8e	Bureaucracy
		8f	Change Fatigue
		8g	Process Misalignment
9	**Strategic Partnerships & External Actor Influence**		
		9a	Partnerships with Hyperscalers
		9b	Partnerships with Vendors
		9c	Inter-telco Collaboration
		9d	Investor Expectations
		9e	Client Pressure
		9f	Shareholder Demands
10	**Innovation Strategy & Response Measures**		
		10a	Proactive Measures
		10b	Reactive Measures
		10c	Future-proofing
		10d	Scenario Planning
		10e	Long-term Strategic Alignment
		10f	Innovation Frameworks
11	**Customer & Market Pressures**		
		11a	Client Quality Expectations
		11b	Pricing Sensitivity
		11c	Delivery Speed
		11d	Performance Demands
		11e	Need for Faster Innovation
		11f	Enterprise Customer Needs
12	**Business Model Transformation**		

		12a	Shifting from Traditional Services
		12b	Cannibalisation Concerns
		12c	Decline of SMS/Voice
		12d	Platform-based Business Models
		12e	New Channels Adoption
13	**Operational & Technical Challenges**		
		13a	Pricing Model Conflicts
		13b	Quality vs Price Trade-offs
		13c	Fraudulent Traffic
		13d	Route Quality Issues
		13e	Technical Readiness Delays
		13f	Product Launch Delays
14	**Decision-making Conflicts & Trade-offs**		
		14a	Speed vs Compliance
		14b	Innovation vs Financial Accountability
		14c	Margin Rules vs Market Reality
		14d	Pricing vs Quality
		14e	Quick Wins vs Long-term Stability
15	**Future-oriented Strategy & Capability Building**		
		15a	Anticipating Market Evolution
		15b	Technology Forecasting
		15c	Preparing for New Digital Products
		15d	Capacity Building
		15e	Long-term Investment Needs
16	**Talent, Skills, and Capability Development**		
		16a	Skill Gaps
		16b	Need for Upskilling
		16c	Digital Talent Shortages
		16d	Cross-functional Collaboration
		16e	Innovation Mindset
		16f	Leadership Development
17	**Governance & Approval Constraints**		
		17a	Slow Legal Reviews
		17b	Finance Approval Delays
		17c	Pricing Committees
		17d	Multiple Layers of Sign-off
		17e	Policy Misalignment
18	**Organisational Alignment & Coordination**		
		18a	Misaligned Priorities
		18b	Cross-department Conflict (Sales vs Commercial vs Product)
		18c	Challenges in Joint Execution
		18d	Lack of Integrated Vision
19	**Pricing Constraints & Market Realities**		
		19a	Margin Guidelines
		19b	Pricing Pressure
		19c	Competitive Undercutting

		19d	Currency Exposure
		19e	Cost-to-serve Considerations
20	**Infrastructure & Technology Deployment Challenges**		
		20a	Integration Issues
		20b	Time-to-market Constraints
		20c	API Readiness
		20d	Network Limitations
		20e	Scale Requirements
21	**External Environmental Uncertainty**		
		21a	Rapid Tech Evolution
		21b	Volatile Market Conditions
		21c	Policy Uncertainty
		21d	Impact of Global Tech Giants
		21e	Shifts in Consumer Behaviour

8.5 List of Interviewees

Respondent	Pseudonym	Job Description
1.	***An1***	Manager
2.	***An2***	Senior manager
3.	***An3***	Senior manager
4.	***An4***	General manager
5.	***An5***	Manager
6.	***An6***	Senior manager
7.	***An7***	Senior manager
8.	***An8***	Senior manager
9.	An9	Principal Network and Architecture
10.	An10	Senior Manager Security architecture
11.	An11	Lead cloud architect
12.	An12	Digital sales manager