
# The adoption of artificial intelligence and customer value creation in emerging market telecommunications industry

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**ABSTRACT**

Artificial intelligence (AI) has emerged as one of the sources of business value. However, extant literature places little emphasis on the use of AI in emerging markets and has minimal focus on the telecommunications industry. In response, this research explores the nature of AI adoption and customer value creation in emerging market telecommunications firms. Based on the technology-organisation-environment (TOE) framework, the enablers, obstacles and outcomes of AI adoption and customer value creation are explored for in-depth insights.

Primary data was gathered through 12 semi-structured interviews with industry decision-makers and consultants. The participants work for organisations in three emerging market economies, allowing for a fair comparison across different markets and organisations. The approach used to analyse the primary data was thematic analysis. Secondary data was retrieved from internet searches for telecommunications industry reports and company annual integrated reports to retrieve any customer benefits and trends regarding AI adoption.

The research findings highlight similarities to the literature on the TOE framework and identify new enablers, obstacles, and outcomes specific to the emerging market telecommunications industry. This research contributes to the extant theoretical literature on AI adoption by exploring the TOE framework in this context. Furthermore, new insights on customer value creation were developed from decision-makers' perceptions of the emerging market telecommunications industry. Moreover, the study provides a conceptual framework for AI adoption's enablers, obstacles and outcomes for customer value creation in emerging market telecommunications firms. Finally, the study provides practical recommendations to managers regarding strategic considerations to guide the successful adoption of AI in emerging market telecommunications.

The study's limitations include covering only some emerging market telecommunications and looking at customer value creation as the business value for AI adoption when AI adoption can provide other business value.

**KEYWORDS:**

Artificial intelligence, customer value creation, telecommunications, emerging markets, technology adoption, AI adoption

**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 (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 conduct this research.

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Name & Surname Signature

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# 1. INTRODUCTION TO THE RESEARCH PROBLEM

## 1.1. Background to the research problem

This research focuses on the adoption of artificial intelligence (AI). The context is the emerging market telecommunication industry. The goal is to explore the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry.

Business leaders must address the rapid technological advancements that have taken place since the early 2000s if they want to remain competitive. The World Economic Forum describes these advancements as the “Fourth Industrial Revolution or cyber-physical systems” (Davis, 2016). Some examples of these systems include blockchain, artificial intelligence (AI), machine intelligence, and genome editing (Davis, 2016). To underscore the significance of the rise of AI, the 2024 Gartner CIO report highlights that 92% of CIOs surveyed believe that AI will be implemented in their organisations by 2025 (Gartner, 2024).

The emergence of these technologies is also exacerbating existing digital inequalities, and the rush to adopt these new technologies without proper analysis can lead to unintended consequences for end users (Imran, 2023). Countries that lack the supply of AI technologies may suffer from rising inequalities (Kopalle et al., 2022). Therefore, one strategy to tackle the digital divide is implementing inclusive technology solutions and services that promote digital inclusion (Imran, 2023).

According to the World Bank Group (2021), low—and middle-income countries are hindered from participating in the data-driven economy due to the need for modern data infrastructure, which hinders their ability to harness data for economic and social value creation. Furthermore, Kiron and Schrage (2019) posit that a strategy for AI can only be achieved with a strategy for data.

The telecommunications (telco) industry in emerging markets has undergone significant transformation over the past decade, with increased demand for connectivity and advancements in telco infrastructure being one of the key drivers. Thus, the

telecommunications industry is essential to advancing development through data (World Bank Group, 2021).

An example of this is provided in the 2021 Word Development Report (World Bank Group, 2021), where cell phone data, specifically call data records (CDRs), were repurposed in various countries for contact tracking during the COVID-19 pandemic, contributing to lower infection and death rates (World Bank Group, 2021).

Concerning the emergence of groundbreaking technologies, the 2023 report on the mobile telco economy in sub-Saharan Africa reported that the current upsurge of artificial intelligence (AI) capability and applications, new investment impetus, and countless debates over responsible usage could be interpreted to mean that AI will significantly impact society (GSMA, 2023). Thereby speeding up the change in most sectors and business processes (GSMA, 2023). Furthermore, AI advancements have primarily been taking place in developed markets, whereas AI can assist in mitigating the limited resources and poor infrastructure and enhance services in sub-Saharan Africa (GSMA, 2023). AI's potentially significant benefit to society has led some mobile telco industry players in sub-Saharan Africa to invest in and use AI. These mobile operators have used it in new product development, improving network operations and customer services, and improving efficiencies and cost savings (GMSA, 2024).

Having argued the significance of AI in the emerging market telco industry, I have yet to define what AI is. According to Russell and Norvig (2020), AI is the creation of systems capable of exhibiting intelligent behaviour. Additionally, AI can be approached from various perspectives, emphasising different aspects of intelligence, and these perspectives include acting humanly, thinking humanly, thinking rationally and acting rationally (Russell & Norvig, 2020). Similarly, Humeau and Deshpande (2024), define AI as machines or computers that can perform tasks that require human-like intelligence. Furthermore, by interpreting large data sets, AI can derive insights to make predictions and decisions (Humeau & Deshpande, 2024).

The GSMA Intelligence Telco AI: State of the Market Q3 2024 (GSMA, 2024) report indicates that only a few mobile operators have adopted AI, and a few early adopters will start using it in 2025. After that, in approximately three years, mobile operators will commercialise AI, deploying it wherever possible and beneficial (GSMA, 2024). By adopting this approach, Abraham et al. (2023) posit that telcos can protect core revenues and grow margins.

Additionally, the GSMA (2024) report provides some use cases for AI in telcos. This includes AI helping with network capacity planning and optimisation, security and fraud prevention, energy optimisation and customer care (GSMA, 2024). Moreover, benefits from adopting AI can be realised through self-healing infrastructure to personalised customer experiences (Abraham et al., 2023).

However, many telcos have yet to plunge into the realm of AI due to limited AI capabilities and fragmented AI investments, which have resulted in a lack of benefit realisation (Abraham et al., 2023).

### 1.2. The research problem

Recent literature has shown that the use of artificial intelligence has benefits for organisations. Krakowski et al. (2023) have explored the impact of AI adoption on competitive capabilities and performance. Krakwoski et al. (2023) investigated the same "chess players' capabilities and performance in conventional, centaur, and engine chess tournaments using the resource-based view" (Krakowski et al., 2023, p.6). The analysis demonstrated that adopting AI triggered interrelated substitution and complementation dynamics between humans and machines (Krakowski et al., 2023). According to Krakwoski et al. (2023), further research on AI in specific industries and decision-making and problem-solving domains is required.

Additionally, more studies are needed to differentiate performance metrics based on the AI use case. Understanding the appropriate metrics to measure the effects of AI and how to benchmark similar applications is essential for organisations to maximise the value derived from AI implementations (Enholm et al., 2021).

Finally, (Borges et al., 2021) propose future research on how AI technologies improve customer experience and engagement and enable automation based on business needs to generate a competitive advantage.

The research gaps identified above have led me to research how organisations should effectively adopt AI to ensure the strategic benefit of customer value creation. Furthermore, the relevant literature on adopting AI in telcos about customer value creation, specifically in emerging markets, was not identified.

The subject of the investigation is an exploration of the ingredients required to successfully adopt AI for optimal customer value creation as a strategic benefit to telcos.

Existing top-rated literature focuses on AI adoption in developed markets and in a particular field of study or non-telco industries. Thus, a theoretical gap exists regarding how AI adoption influences customer value creation in emerging market contexts. This gap presents a theoretical problem: How does AI adoption impact customer value creation in the telecommunications industry of emerging markets, and what factors facilitate or hinder this process?

Addressing the question is urgent because, in an article at the World Economic Forum, Brekke (2024) posits that AI has become a central force in the digital revolution. The telco industry plays a vital role in fostering AI by ensuring cybersecurity and the resilience of critical infrastructure (Brekke, 2024). This role is crucial for harnessing AI's potential to provide sustainability and climate solutions in our increasingly digitised world (Brekke, 2024). The convergence of AI, connectivity, and cybersecurity is not merely a byproduct of technological advancement but should be viewed as an intentional strategy to address complex challenges and opportunities (Brekke, 2024). Understanding why this relationship is particularly critical now, beyond the prevailing hype, is essential.

### 1.3. The research aims

This research aims to explore the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry.

Furthermore, this research will contribute to the theoretical understanding of technology adoption and customer value creation by addressing a notable gap in the existing literature concerning AI in the telco industry of emerging markets. By focusing on this under-researched context, the study provides fresh and valuable insights into how AI technologies can be leveraged to enhance customer value in these markets. The research delves into emerging markets' unique enablers, obstacles and outcomes, offering a nuanced perspective on AI adoption that is often overlooked in mainstream studies centred on developed economies.

The findings have important implications for telcos operating in emerging markets. The research offers strategic guidance on adopting AI technologies to improve customer experiences, streamline operations, and provide personalised services. By implementing these insights, telcos can enhance customer satisfaction and gain a competitive advantage in a rapidly evolving industry landscape. The research underscores the

potential of AI to drive innovation, efficiency, and growth within the telecommunications sector.

Additionally, the research fills a critical void in the academic literature by combining theoretical exploration with practical application. The research is a valuable resource for industry professionals and academics, highlighting AI's transformative impact on customer value creation and offering a roadmap for successful technology adoption in emerging market contexts.

Finally, the research answers the research problem using qualitative research methods because qualitative research methods typically address broad questions and often yield insights(Hannah et al., 2021), into novel phenomena and new domains (Hannah et al., 2021).

### 1.4. The research questions

Based on the various gaps in the literature discussed above regarding the factors impacting AI adoption and customer value creation in the telecommunications industry of emerging markets, the focal research question is: How can AI adoption be changed to ensure optimal customer value creation?

The sub-questions that will be used to support the main research questions are as follows.

**Research sub-question 1:** What is the nature of AI adoption in emerging market telecommunications companies?

**Research sub-question 2:** What are AI adoption's enablers, obstacles and outcomes?

**Research sub-question 3:** How do managers perceive the use of AI to improve customers' experience and engagement?

The illustrated alignment of the research objectives (RO) and research questions (RQ) is depicted below in Figure 1:

| | | |
|---|---|---|
| RO1: Examine the current state of AI adoption in emerging market telecommunications companies.<br><br>RQ1: What is the nature of AI adoption in emerging market telecommunications companies? | RO2: Identify the facilitators and obstacles to effective AI adoption for customer value creation<br><br>RQ2: What are adoptions enablers, obstacles and outcomes? | RO3: Understand how AI adoption influences customer value creation.<br><br>RQ3: How do managers perceive using AI to improve customers' experience and engagement? |

Figure 1: Alignment of research aims and research questions

Source: Author's own

## 1.5. The research contributions

### 1.5.1. Practical contribution

The potential of AI as a general-purpose technology that enhances productivity and drives innovation across sectors draws parallels to other innovations that have fuelled economic growth in the past (Babina et al., 2024). When done right, AI is an essential source of business value(Accenture, 2024).

The research findings guide business leaders and managers in the emerging market telecommunications industry to craft strategies that will enable the adoption of AI that provides customer value and addresses digital inequality from the customers' perspective.

### 1.5.2. Theoretical contribution

The theoretical contribution adds to the literature on technology adoption and customer value creation. According to Crane et al. (2016), contributing to theory can involve testing, building, or refining it. This research contributes to the theoretical understanding of the ingredients required in technology adoption and customer value creation, particularly AI adoption as an emerging technology.

By addressing the gap in the literature concerning AI adoption in the emerging market telecommunications industry and using the technology-organisational-environmental (TOE) technology adoption framework (Cruz-Jesus et al., 2019), the research theorises the principles highlighted in the TOE technology adoption framework regarding AI adoption in the emerging markets telecommunication industry. Similarly, the theoretical contribution by (Chatterjee et al., 2021), was to theorise the technological, social and environmental developments needed for the digitisation of sustainable manufacturing and production systems in the context of the fourth industrial revolution (Chatterjee et al., 2021).

## 1.6. Roadmap of the research

This research paper consists of seven chapters. The first chapter introduces the research problem and sets the stage by addressing the purpose of the research. Additionally, chapter one outlines the research questions used to carry out the purpose of the

research. In summary, this chapter will provide context for what is being researched and why it is worth researching.

The second chapter reviews the present-day literature on AI, technology adoption, and customer value creation. The literature is critically analysed to form arguments on AI adoption and customer value creation from the perspectives of different scholars. This is followed by chapter three, where the research questions are set out. The research questions are open-ended to foster exploration for a qualitative research project. When answered, they will fulfil the purpose of the research and address the problem highlighted in chapter one.

The fourth chapter presents the research methods and design used to conduct the study. Additionally, evidence from research methodology literature supports the decisions and choices made on the research methods and design. After that, chapter five logically and systematically presents the findings from interviews conducted with 12 participants from different countries in emerging markets. Chapter six discusses the interview findings and compares them to the literature in chapter two. The comparison draws on the similarities and differences between the literature and participant interviews.

### 1.7. Conclusion

The introduction to the research problem commenced with acknowledging the technological advancements that have occurred since the early 2000s (Davis, 2016) and the digital divide new technologies have caused.

This was followed by articulating the problem to be researched from an academic and business perspective. The research problem is to explore how AI adoption impacts customer value creation in the telecommunications industry of emerging markets and what factors facilitate or hinder this process.

Following the definition of the research problem, the research purpose is articulated as exploring deeply the ingredients of successful AI adoption about customer value creation. This allowed for a logical segue into the focal research question of how AI adoption can be changed to ensure optimal customer value creation. Furthermore, three sub-research questions support the focal search question, where responses to these questions will provide decision-makers with perceptions of the influences, obstacles, and outcomes of AI adoption on customer value creation.

The chapter then provides an overview of the managerial and theoretical contribution this research will provide, culminating in a roadmap for the research paper and the chapter conclusion.

## 2. LITERATURE REVIEW

### 2.1. Introduction

This research explores the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry. In this chapter, I will critically evaluate the present-day literature on the essential paradigms for adopting AI within the telecommunications industry in emerging markets, focusing on how it contributes to customer value creation. Conclusive data on the economic impact of firms adopting AI remains a challenge (Babina et al., 2024). However, AI can revolutionise telecommunications by enhancing network optimisation, customer service, predictive maintenance, and personalised offerings (Abraham et al., 2023; Humeau & Deshpande, 2024).

The primary purpose of this literature review is to synthesise and determine the current research (Dale Bloomberg & Volpe, 2012) and identify gaps in understanding the interplay between AI adoption and customer value creation in the emerging market telecommunications industry. Understanding other researchers' contributions to my research aim will provide a setting for my work (Dale Bloomberg & Volpe, 2012). I will begin the literature review by exploring the theoretical frameworks providing a multifaceted perspective on the factors influencing technology adoption and customer value creation. These frameworks are the Technology-Organisation-Environment (TOE) framework (Cruz-Jesus et al., 2019), the Resource-Based Theory (RBT) (Barney et al., 2021), and the Service-Dominant Logic (SDL) (Sun & Gregor, 2023). Therefore, these frameworks serve as lenses to examine the complexities of technology adoption and value co-creation in the telecommunications industry.

The three frameworks are used because they provide a view of internal and external factors influencing AI adoption and customer value creation. The TOE framework offers insights into the technological capabilities, organisational readiness and environmental factors that impact technology adoption (Chatterjee et al., 2021; Cruz-Jesus et al., 2019). The framework details the influences, obstacles, and outcomes of technology adoption based on technological, organisational, and environmental perspectives (Cruz-Jesus et al., 2019). This is particularly relevant in emerging markets, where government support and technology resources are crucial to AI adoption (Pan et al., 2022). The resource-based theory (Barney et al., 2021) emphasises the strategic importance of a firm's internal resources and capabilities in gaining competitive advantage (Barney et al.,

2021). The Service-dominant logic shifts the focus from traditional goods-centric views to a service-oriented perspective, emphasising that firms, customers and partners can co-create value (Sun & Gregor, 2023; Vargo & Lusch, 2017).

The review then delves into the world of artificial intelligence. I will provide a scholarly overview and analysis of AI adoption, encompassing the influences, obstacles, and impacts of AI adoption in firms. The research provides evidence on effectively adopting AI for a firm's strategic relevance, focusing on customer value creation in emerging markets and the telecommunication industry. Krakowski et al. (2023) provide insights into how AI adoption can change a firm's sources of competitive advantage by triggering heterogeneous resource dynamics. Choudhary et al. (2023) provide examples of specialisation in decision-making tasks that demonstrate the potential of AI to augment human capabilities in tasks such as hiring employees, investing in projects, launching new products, acquiring firms, and selecting suppliers and strategic partners. In contrast, Enholm et al. (2021) note the lack of studies that examine the impact of AI-driven automation in decision-making. Additionally, more studies need to be conducted to provide the appropriate measures to capture the effects of AI on firm performance linked to the success of AI implementation (Enholm et al., 2021).

The review then addresses customer value creation to explore the interplay between AI adoption and customer value creation. This section of the review commences by presenting evidence of customer value creation attained by technology adoption, followed by evidence about customer value creation through the adoption of AI. By understanding the mechanisms of customer value creation, the review provides insights on the direct impact of AI adoption on customer experience and engagement through personalised services, chatbots for customer support and customer churn predictions (Abraham et al., 2023; Amin et al., 2019; GSMA, 2024) to name a few.

The literature review involved extensive searches across multiple databases and Google Scholar using keywords such as artificial intelligence, telecommunications industry, customer value creation, emerging markets, technology adoption, TOE framework, resource-based theory, and service-dominant logic. The search primarily looked for articles rated three or four stars by the Academic Journal Guide (AJG). Furthermore, telecommunications industry-related reports were reviewed to ensure that relevant industry-specific prior or current work was included.

In conclusion, the literature review comprehensively examines the academic literature on adopting AI and customer value creation in the emerging market telecommunication industry. The review highlights gaps in the academic literature, resulting in the researcher contributing to the academic literature on AI adoption and customer value creation in the merging market telecommunications industry. The review culminates with a conceptual framework meant to assist telecommunications industry decision-makers seeking to harness AI's power for customer value creation. Figure 2 below provides a roadmap for the literature review chapter.

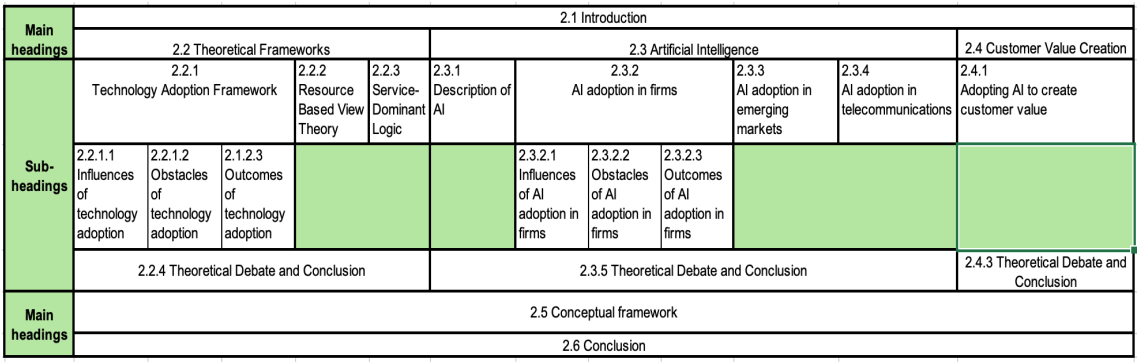


Figure 2: Literature review chapter roadmap

Source: Author's own

## 2.2. Theoretical frameworks

### 2.2.1. Technology adoption framework

Technology adoption models can improve the relationships between citizens, businesses and governments (Sepasgozar et al., 2019), and upon reviewing the existing academic work concerning the adoption of technologies, a large number of heterogeneous factors influencing this process were identified. Davis's technology adoption model (TAM) and the unified theory of acceptance and use of technology (UTAUT) by Venkatesh et al.in 2023 (Venkatesh, 2022) are used to examine technology adoption by individuals (Dwivedi et al., 2019). The technology-organisation-environment (TOE) framework (Cruz-Jesus et al., 2019), developed by Tornatzky and Fleischer (Cruz-Jesus et al., 2019), is used to investigate organisational technology adoption (Wang et al., 2016). The TOE framework (Cruz-Jesus et al., 2019; Wang et al., 2016) was determined to be context-specific compared to the others (Wang et al., 2016). In this research paper, the focus is on the TOE framework (Cruz-Jesus et al., 2019; Wang et al., 2016), which is described by Wang et al. (2016), technological, organisational and environmental factors that impact an organisation adopting a technology.

Developments of the TOE framework by Cruz-Jesus et al. (2019) have incorporated adoption stages into the model, including evaluation, adoption, and routinisation (Cruz-Jesus et al., 2019). The inclusion of stages aims to elucidate how different antecedents impact each stage. Cruz-Jesus et al. (2019) posit a positive relationship between technology adoption stages and factors such as data quality, technology competence and top management support (Cruz-Jesus et al., 2019). However, Cruz-Jesus et al. (2019) differ from Wang et al. (2016) in that competitive pressure is described as negatively impacting technology adoption but positively impacts routinisation (Cruz-Jesus et al., 2019). Furthermore, Cruz-Jesus et al. (2019) state that the TOE framework is based on dimensions that impact the organisational adoption and implementation of technological innovations (Cruz-Jesus et al., 2019).

The technological context includes internal and external technologies, with factors like cost and compatibility; the organisational context consists of the aspects of the company's resources and assets, with factors like top management support and technology teams' readiness; and the environmental context includes the industry, customer, competitors, suppliers, and relations with governmental entities (Cruz-Jesus et al., 2019).

To culminate the review of the TOE framework (Cruz-Jesus et al., 2019; Wang et al., 2016), a final view of the framework is provided by Chatterjee et al. (2021). Chatterjee et al. (2021) extend the TOE framework to integrate it with TAM to help identify the antecedents of AI adoption, assess organisational readiness, and examine how leadership support moderates AI adoption in manufacturing and production organisations (Chatterjee et al., 2021).

#### 2.2.1.1. Influences of technology adoption

The technological factors influencing the adoption of technology include relative advantage, complexity, and compatibility (Wang et al., 2016). Relative advantage is the degree to which an innovation is perceived as having benefits and superiority over other competing solutions (Wang et al., 2016). Complexity, on the other hand, indicates the ease with which an innovation can be understood and used (Wang et al., 2016), while compatibility is an analysis of how the innovation fits current systems and processes (Wang et al., 2016). In summary, these factors combine to provide the likelihood of

application and effectiveness through the use of a new technology in the organisation (Wang et al., 2016).

Furthermore, Wang et al. (2016) elucidate that the organisational factors impacting the adoption of technology include top management support, firm size and technological competence. Top management support is necessitated in setting a pro-technology environment and enabling resources (Wang et al., 2016). The firm size and technological competence factors assist in ascertaining the organisation's ability to adopt new technologies thoroughly (Wang et al., 2016). Similarly, the TAM-TOE (Chatterjee et al., 2021) model identifies critical variables that influence the adoption of AI, including organisational competency, complexity, compatibility, readiness, competitive advantage, and partner support (Chatterjee et al., 2021). Organisational competency, complexity, and readiness are the variables most important in influencing employees' perception of the usefulness of the technology (Chatterjee et al., 2021). Organisational competency will positively influence perceived usefulness, whereas organisational complexity will negatively influence perceived usefulness and ease of use (Chatterjee et al., 2021).

To complete the description TOE framework by Wang et al. (2016), the potential environmental factors include competitive pressure, critical mass, and information intensity (Wang et al., 2016). The competitive pressure may induce the organisation to adopt innovations, especially if there is a belief that non-adoption may cause a competitive disadvantage, such as losing customers (Wang et al., 2016). The influences of critical mass are when more players in the same industry or environment adopt the new technology (Wang et al., 2016). The information intensity factor is defined as the degree of information in a product or service where an information-intensive industry will be more willing to adopt new technologies to meet real-time information requirements (Wang et al., 2016).

#### 2.2.1.2. Obstacles of technology adoption

Despite the perceived benefits of adopting technology in the telecommunications industry, obstacles impede its adoption. Ganguly (2024) articulates that obstacles include implementation costs and infrastructure capabilities. The TOE framework (Cruz-Jesus et al., 2019) can help identify and overcome such challenges (Ganguly, 2024). In addition to this research, Wang et al. (2016) revealed that the complexity of the technology is one of the main challenges for organisations.

The above paragraph provides a high-level summary of the obstacles; however, to align with the TOE framework (Cruz-Jesus et al., 2019), I will break down the obstacles into technological, organisational and environmental obstacles. To begin, the complexity and compatibility of the implementation are significant obstacles (Wang et al., 2016). Highly complex implementations require highly skilled individuals, which may not always be available within the organisation. Compatibility is a significant obstacle because organisations have expensive legacy systems to replace yet incompatible with emerging technologies. Furthermore, data quality and availability will hinder technology adoption (Ullah et al., 2021). Moreover, due to the regulatory environment, the lack of data privacy and security (Ullah et al., 2021) can impede technology adoption.

In addition to the technological obstacles, there are organisational obstacles to technology adoption for telecommunications organisations in emerging markets. The primary organisational obstacle is the lack of skilled resources to implement the technology (Wang et al., 2016). Adopting technology can also come with resistance from employees due to possible job losses (Sepasgozar et al., 2019). According to Kopalle et al. (2022), AI-driven services such as call centre agents are likely to be supplanted by AI. Therefore, ensuring sufficient buy-in from top management (Chatterjee et al., 2021) is crucial in managing the adoption process.

### 2.2.2. Resource-based view theory

The resource-based theory (Barney et al., 2021) is relevant to this study to assess how technology assets can provide a sustained competitive advantage. Additionally, the resource-based theory (Barney et al., 2021) provides a framework for why some firms consistently outperform others based on their unique resources and capabilities commanded by the firm (Barney et al., 2021). RBT has evolved over the last three decades with variations from different scholars; the theory fundamentally dictates that competitive advantage and sustained performance in a firm are determined by the ability it has in the management of resources, those which are valuable, rare, inimitable, and non-substitutable (Barney et al., 2021). In contrast, Zahra (2021) sees the same attributes as a view, not a theory. Zahra (2021) describes creating a competitive advantage through the resource-based view (Zahra, 2021). This approach helps view a firm's tangible and intangible resources and how managers utilise organisational resources to obtain and sustain this advantage.

The latest development of RBT focuses on how firms create and appropriate economic value (Barney et al., 2021). It distinguishes the creation of economic value, which relates to increasing customer willingness to pay and reducing costs, from the appropriation of economic profit and rent (Barney et al., 2021). This distinction is fundamental since it directly relates to a firm's capability to create and sustain a competitive advantage over time (Barney et al., 2021).

Further advancements in RBT by Barney et al. (2021) integrate other theoretical frameworks, such as dynamic capabilities, organisational behaviour, and industry structure analysis, to continue to be relevant to explaining firm performance in such rapidly changing technological environments and market turbulence. Furthermore, recent advancements have considered several criticisms and misunderstandings associated with RBT, such as the fact that RBT is often painted as static and the accusations of tautology (Barney et al., 2021).

Concerning building AI capability, Mikalef and Gupta (2021) draw on RBT to define a firm’s AI capability as the ability to select, orchestrate, and leverage AI-specific resources (Mikalef & Gupta, 2021). In addition, Mikalef and Gupta (2021) acknowledge that merely having AI technologies is not enough to gain a competitive advantage and requires a unique mix of physical, human, and organisational resources to be utilised in building an AI capability.

### 2.2.3. Service-dominant logic

Service-dominant logic(Vargo & Lusch, 2017) conceptualises platforms as multifaceted information system capabilities that enable value co-creation between customers and businesses (Sun & Gregor, 2023). This value co-creation happens through relationality, ambidexterity, and cooperativity (Sun & Gregor, 2023; Vargo & Lusch, 2017). Relationality highlights that AI platforms can bring together service providers, customers, and technology partners to create value (Hartwig et al., 2021; Sun & Gregor, 2023). An example is an AI platform for customising customer experience from various touchpoints in the business to enhance customer experience. Ambidexterity highlights the design of AI platforms to ensure they are flexible, stable, and scalable for future innovations (Hartwig et al., 2021; Sun & Gregor, 2023). Cooperativity highlights the seamless integration of platforms to generate value (Hartwig et al., 2021; Sun & Gregor, 2023).

Sun and Gregor (2023) posit that technology mediates value co-creation, not just a tool. Technology is a strategic asset in transforming service exchange and value co-creation (Sun & Gregor, 2023). By adopting the service-dominant logic, AI adoption in telecommunications can take a multifaceted approach in relationality, ambidexterity and cooperativity in the value creation process.

### 2.2.4. Theoretical debate and conclusion

While the study deals with AI adoption, it is essential to note that the central contribution is related to the strategic outcome. For this reason, the resource-based view of the firm offers the best explanation of technology as a resource that contributes to firm performance. In other words, RBT was selected as a theoretical framework for this study because the study aims to explore AI's value-generating mechanisms and understand the link between a firm adopting AI and firm performance. Therefore, adopting RBT as a central premise for adopting AI will allow for comprehending the required resources that form organisational capabilities to drive performance gains (Mikalef & Gupta, 2021). The final reason to mention the appropriability of RBT in this research is that RBT is suitable for frequently changing business environments (Mikalef & Gupta, 2021) and that developing inimitable capabilities is linked to providing competitive success (Mikalef & Gupta, 2021). The study contributes to this theory by expanding insights into a specific context.

Even though RBT offers insights into the relationship between AI adoption and firm performance, there is also a need to examine frameworks that describe the mechanisms within AI adoption. The TOE framework (Cruz-Jesus et al., 2019) provides insights into the technological, organisational, and environmental drivers, challenges, and impacts of organisations' adoption of AI. It links how organisations can build a technology capability through valuable, rare, and inimitable tangible and intangible assets, creating strategic value and a sustained competitive advantage. On the other hand, the service-dominant logic (Sun & Gregor, 2023) provides a view of how AI platforms in telecommunications can play a role in value co-creation.

In conclusion, Barney et al. (2021) signify the importance of RBT in strategic management and its potential contribution to building a solid academic foundation for understanding the mechanisms of value creation and competitive advantage within a diverse organisational and market context. Similarly, Mikalef and Gupta (2021) contend that the Resource-Based Theory (RBT) is one of the significant theories of strategic

management, and its insights have resulted in substantial contributions across the literature on the link between IT and business value.

This research focuses on analysing the TOE framework, which provides a detailed position on the technological, organisational, and environmental reasons for adopting technology. Finally, the literature review details how adopting AI creates customer value and highlights the need for future industry studies.

## 2.3. Artificial intelligence (AI)

### 2.3.1. Description of AI

Before proceeding further, we need to confirm our shared comprehension of AI. Babina et al. (2024) define AI as machines exhibiting human traits, learning, connecting, and adapting to varying degrees. AI can self-improve through learning from inputs like big data and machine learning, leading to adaptability (Babina et al., 2024). Connectivity is another defining trait of AI, enabling machines to connect with customers, other machines, or employees, as seen in applications like AI assistant Alexa and Roomba vacuuming robots (Babina et al., 2024).

Enholm et al. (2021) define AI as a scientific discipline that involves machines simulating human-like capabilities to perform tasks requiring human intelligence. AI is further described as cognitive technology, enabling computers to think and act like humans by emulating how humans learn and process information (Enholm et al., 2021). Additionally, AI aims to reproduce human cognition by interpreting external data, learning from it, and using this learning to achieve specific goals and tasks (Enholm et al., 2021).

Babina et al. (2024) recognise AI as a predictive technology that enhances a firm's capacity to derive actionable data insights, facilitating more informed business decision-making processes. Babina et al. (2024) further state that AI has characteristics of a general-purpose technology, emphasising its capacity to augment productivity and propel innovation across various sectors. This perspective parallels previous technological advancements significantly contributing to economic expansion (Babina et al., 2024). AI capabilities are an organisational competence in deploying and applying AI applications to support business (Enholm et al., 2021). AI capability can be defined as how an organisation utilises resources specific to AI, both technical and non-technical, to create value (Enholm et al., 2021). This further extends the view of AI to encompass

not only technical resources but also organisational resources significant in the exploitation of the strategic potential of AI (Enholm et al., 2021).

### 2.3.2. AI adoption in firms

Industry 4.0 is the fourth industrial revolution (4IR), powered by advanced technologies such as nanotechnology, artificial intelligence, robotics, and the Internet of Things (Chatterjee et al., 2021). Implementing 4IR technologies within firms has proven to provide sustainability and an edge over competitors because AI can help improve productivity, business decisions, and strategies. On the other hand, the adoption of AI is still facing challenges, as numerous organisations are unwilling to embrace the technology despite its benefits (Chatterjee et al., 2021). Adopting AI with a firm is contingent on various factors, encompassing personnel, technical competencies, job configuration and external contextual factors such as regulations. Furthermore, successful adoption is based on the strategic alignment of AI initiatives with organisational goals, attaining top management buy-in, ensuring adequate and effective technical resources, and addressing pertinent social and ethical dilemmas (Yu et al., 2023)

#### 2.3.2.1. Influences of AI adoption

Various enablers impact firms' adoption of AI. However, in alignment with the TOE framework (Wang et al., 2016), I will be presenting the technological enablers first, followed by the organisational enablers and lastly, the environmental enablers. Data and infrastructure are vital to successfully adopting AI technologies (Enholm et al., 2021). According to Verganti et al. (2020), data and algorithms are crucial to innovation. By availing large amounts of data to AI algorithms, firms can create dynamic and customised solutions for their customers (Verganti et al., 2020). This results from AI being trained and learning to make decisions based on the data sets it is provided rather than making decisions based on pre-defined rules (Enholm et al., 2021).

To have the capabilities to support the varied volumes of data and doormats that can be scalable, (Mikalef & Gupta, 2021) posit that storage infrastructures need to be invested in by firms. Additionally, AI technologies require infrastructure for fast data processing and running complex algorithms (Mikalef & Gupta, 2021). One of the pivotal themes concerning organisational enablers of AI adoption in firms is top management support. Bankins et al. (2024) uncovered that organisations with solid leader support for digital transformation help facilitate the process of AI adoption. Similarly (Enholm et al., 2021)

emphasise the need for top management buy-in to help allocate resources, provide capital funds, and foster a culture of acceptance and integration to AI. Business value created by companies from AI investments ranges and relies on supportive leadership, an understanding of AI technologies, and proper planning for implementing AI (Mikalef & Gupta, 2021).

Furthermore, organisations that take a risk-orientated approach to implementing AI reap benefits sooner than those that do not (Mikalef & Gupta, 2021). Additionally, organisations with a high propensity for risky projects will find themselves at the forefront of AI adoption, thus gaining a competitive advantage (Mikalef & Gupta, 2021).

To conclude, the organisational enablers and, according to Mikalef and Gupta (2021), human capital incorporation in the organisation require technical and business skills to align any AI initiative. The technical skills include implementing and operationalising AI algorithms, managing infrastructure, and evolving its developments (Mikalef & Gupta, 2021). Technical skills of AI include statistics, programming, data structures, and cognitive learning theory. Business skills include where the application of AI technologies exists and how to drive significant transformation and move the organisation through transitions. To avoid friction and inertia while adopting AI, the technical staff will partner and work with other employees of the organisation (Mikalef & Gupta, 2021).

Some environmental enablers to firms' adoption of AI are seen as intangible resources. Intangible resources, viewed as either unable to be copied by competitors or difficult to imitate, are vital in uncertain and volatile markets. These resources are hard to grasp and need an itemised way of identifying them in an organisation, but they are considered valuable to an organisation. Although it might be challenging to measure intangible resources, they are seen to provide a competitive advantage by being unique and valuable in RBT (Mikalef & Gupta, 2021). Furthermore, organisations interact with the external environment to be competitive and continually evolve. Various organisational relationships, such as mergers, acquisitions, and alliances, might lead to more potential AI inventions (Enholm et al., 2021). Additionally, transparency and trust in AI technologies might influence the perception of external stakeholders and, thereby, the reputation and financial performance of the organisation (Enholm et al., 2021).

#### 2.3.2.2. Obstacles of AI adoption

Having the TOE framework (Wang et al., 2016) in mind, there are technological, organisational and environmental obstacles to the adoption of AI in firms that various scholars have delved into.

From a technological perspective, AI algorithms are not engineered to replace human decision-makers mainly because of the restrictions in capturing and interpreting the relevant data (Choudhary et al., 2023). Not all relevant data can be codified, so AI algorithms can effectively use it. For example, in the recruitment process, AI can consume and extract data from a resume but cannot correctly interpret information such as the hiring manager's life experiences and intuition (Choudhary et al., 2023).

Furthermore, AI that uses statistical machine translation systems can generate gender stereotyping from gender-neutral languages. For instance, Google Translate prepares Turkish gender-neutral sentences with gendered English sentences (Shrestha et al., 2019). Shrestha et al. (2019) further demonstrate that AI technologies can embed a negative bias that can lead to discrimination, as observed in instances on search engines or Facebook advertisements (Shrestha et al., 2019). However, with emphasis on ethical decisions in the design of algorithms and the decision-making process, the harm and discrimination by AI can be minimised (Shrestha et al., 2019).

The second last obstacle from a technology perspective is that developing complex AI models requires more time and effort (Choudhary et al., 2023). AI algorithms implemented in the large neural network architecture, such as GPT-3 and GPT-4, depend on massive data and computationally expensive infrastructure (Choudhary et al., 2023). Additionally, deep learning systems require constantly updated data feeds, necessitating infrastructure investments from data ingestion to inference, storage, transfer, and processing power (Mikalef & Gupta, 2021). The final technological obstacle I will mention in my research is that organisations must overcome primary issues when integrating systems and data and ensuring the use of quality data for AI training. These challenges necessitate developing novel technological solutions to address the unique data requirements for AI (Mikalef & Gupta, 2021).

From an organisational viewpoint, some obstacles scholars observe highlight a need for more technology competence and understanding of data requirements, which poses significant challenges in deriving value from AI projects (Mikalef & Gupta, 2021). Therefore, organisations must develop AI capabilities that align with their strategic

objectives, leveraging resources effectively to achieve desired outcomes (Mikalef & Gupta, 2021).

An interesting obstacle that emerged is algorithm aversion, where individuals prefer avoiding algorithms altogether, regardless of whether the models generated by these algorithms are accurate (Venkatesh, 2022). This aversion to AI tools can hinder adopting and using these technologies in operational management contexts. Similarly,
Bankins et al. (2024) include workers' resistance to algorithm-generated advice as an adverse factor influencing their willingness to use AI.

Lastly, Enholm et al. (2021) highlight the need for organisational changes to accommodate the technical requirements of AI applications and leverage the knowledge generated by these technologies. Decision-making structures and competitive advantage also emerge as critical areas that organisations must address to maximise AI applications' value and drive business success.

Obstacles from the environmental perspective can also derail a firm's efforts to adopt AI. This includes speculation from policymakers, economists, and service providers about the potential displacement of unskilled employees as the use of AI gradually increases (Huang & Rust, 2021). The challenge to be answered is how these employees can be retained (M. H. Huang & Rust, 2021). According to Kopalle et al. (2022), AI adoption could exacerbate the wealth gap with a class-based divide, where the ultra-wealthy technocrats benefit the most, and the low-wage gig workers work for algorithms. Finally, cultural differences will provide different perceptions of the application of AI (Enholm et al., 2021). The understanding of cultural elements is of significance for the successful implementation and uptake in real-life applications of AI, therefore including cultural differences with the AI strategy of an organisation is how firms make resonance of AI within different cultural contexts for its use effectively and inclusively (Enholm et al., 2021)

#### 2.3.2.3. Outcomes of AI adoption

AI technologies drive data-driven insights to enhance service delivery, innovation, and productivity (Bankins et al., 2024). Integrating AI has unique implications for workers at different skill levels (Bankins et al., 2024). Shrestha et al. (2019) highlight the growing significance of artificial intelligence in enhancing decision-making capabilities, surpassing human performance in specific contexts such as game-playing and visual

recognition. Shrestha et al. (2019) add that AI can be used in diverse fields ranging from surgery allocation, human resource management, psychological counselling, credit risk prediction, astronomy, self-driving cars, immigration decisions, legal counselling, and hiring processes.

Furthermore, introducing AI in firms could change the decision-making structures in various ways. According to Shrestha et al. (2019), five primary contingency factors distinguish human decision-making from AI-based decision-making: “the specificity of the decision search space, the interpretability of the decision-making process and outcome, the size of the alternative set, decision-making speed, and replicability (Shrestha et al., 2019).” Moreover, Shrestha et al. (2019) present a framework that outlines three categories wherein decisions made by organisational members interface with AI-based decisions: an entire delegation from people to AI, hybrid sequential decision-making amalgamating both humans to AI and AI to human interactions, and aggregated decision-making conjoining inputs from both humans and AI systems.

According to Verganti et al. (2020), integrating AI into design processes enhances user experiences, efficient decision-making, and organisational innovation. Verganti et al. (2020) delve into practical examples of AI-powered design in companies like Netflix and Airbnb. Netflix's data-driven and AI-centric operating model revolutionised the media industry by leveraging big data and AI (Verganti et al., 2020). Netflix uses machine learning techniques within its problem-solving loops to personalise user experiences, recommend content and design user interfaces in real-time (Verganti et al., 2020). Verganti et al. (2020) further explain how Netflix employs algorithms to make decisions about content recommendations, interface design, and user experience based on user behaviour data.

Similarly, Airbnb's use of AI has empowered it to deliver personalised solutions to individual users through data-driven insights. By leveraging AI to analyse vast quantities of data gathered from user interactions, the company can develop dynamic and customised solutions for guests and hosts. This level of personalisation and efficiency is unattainable through traditional design practices (Verganti et al., 2020). M.H. Huang and Rust (2020) focus on the use of AI in marketing and the variations of AI. Mechanical AI excels at standardisation, whereas cognitive AI is adept at personalisation, and feeling AI is optimal for rationalisation (M.H. Huang & Rust, 2020).

Mechanical AI is applicable in various industries, such as collaborative packaging robots, distribution drones, and self-service robots in service delivery, aiming to produce

standardised outcomes (M.H. Huang & Rust, 2020). Cognitive AI, on the other hand, is predominantly used in marketing for personalisation, exemplified by Amazon's cross-selling recommendations (M.H. Huang & Rust, 2020). Conversely, feeling AI provides rationalisation benefits by recognising and responding to emotions, thus fostering personalised relationships in marketing, including customer service, customer satisfaction and emotional advertising (M.H. Huang & Rust, 2020).

Lastly, AI can contribute to service creation by identifying new markets and developing new services (M. H. Huang & Rust, 2021). Companies such as Gap and Netflix use the application of cognitive AI to run data and make predictions about industry trends to create new products and services for consumers (M. H. Huang & Rust, 2021). According to Hoyer et al. (2020), it is crucial to identify key outcomes that are linked to customer experiences in a new technological environment. Assessed outcomes should include "the satisfaction with the decision-making process, satisfaction with the outcome of the transaction, and customer engagement" (Hoyer et al., 2020, p.65).

### 2.3.3. AI adoption in emerging markets

Despite its potential, AI adoption in emerging markets faces obstacles, including limited data infrastructure, data privacy concerns, and high initial costs. Effective AI models require substantial, high-quality data, which can be difficult to obtain in regions with underdeveloped digital ecosystems (Balmer et al., 2020). Additionally, the emerging markets telecommunications industry has stringent regulatory environments, making AI models such as neural networks that operate like black boxes lack transparency, which may hinder regulatory approvals (Balmer et al., 2020). Therefore, aligning AI capabilities with regulatory compliance requirements ensures that telecommunications organisations can operate within these constraints and enhance customer experience (Krammer, 2019). Furthermore, technological alliances with foreign partners increase quality improvements and firms' innovative performance (Krammer, 2019).

The rapid rise in digital adoption and evolving customer expectations in emerging markets necessitates effective AI-driven strategies (Vieira et al., 2019). However, the limited access to advanced knowledge and technology in emerging markets often requires organisations to partner with external sources (Badir et al., 2019). Furthermore, digital strategies that account for institutional and socio-political complexities can drive customer engagement and innovation (Vieira et al., 2019).

### 2.3.4. AI adoption in telecommunications

Several scholars have studied AI adoption in telecommunications as it poses unique challenges compared to other industries. Focusing on applications that create customer value, the extant literature reviewed examines applications in network management, customer relationship management (CRM) and customer churn prediction (Amin et al., 2019; Balmer et al., 2020; Höppner et al., 2020; Qi et al., 2007). With the acceleration of digital technology adoption, telecommunication companies must improve operational efficiency, customer retention and service personalisation (Balmer et al., 2020).

AI in network management improves fault management, optimises resource allocation and reduces operational costs (Qi et al., 2007), resulting in improved customer experience with reduced downtimes and improved customer engagement with lower costs. An example of this is using AI technologies for predictive maintenance to identify potential faults in the network before they impact service delivery. According to Balmer et al. (2020), AI-driven traffic management offers telecommunication providers with limited infrastructure the ability to handle increased network capacity demands without significant investments in physical infrastructure.

In the context of customer churn management, telecommunications customers often have more than one service provider, opting for the provider with the best deal for a particular service. According to Höppner et al. (2020), AI-driven churn prediction models are crucial in identifying customers likely to leave and developing retention interventions. Various AI models and techniques predict churn(Amin et al., 2019), but profit-driven models align prediction efforts with business objectives by prioritising high-value customers (Höppner et al., 2020).

CRM data provides a significant amount of information for AI to use to improve customer experience and engagement through personalisation. By understanding customer behaviours, AI can predict preferences and deliver personalised experiences. According to Qi et al. (2007), AI-driven CRM systems can anticipate needs and suggest tailored services, which enhances customer satisfaction and loyalty. AI-driven CRM systems also allow for the targeting of marketing campaigns (Qi et al., 2007).

## 2.4. Customer value creation

Network effects can influence the perceived value of products and services (Gregory et al., 2021). Gregory et al. (2021) introduce data network effects that occur when a

platform learns from user data, making it more valuable to each user. Furthermore, Gregory et al. (2021) argue that AI is a crucial tool for the generation of user value by enabling platforms, products or services.

Digital tools advance innovation in business models, creating new distribution channels and ways to deliver value to customers (Matarazzo et al., 2021). Additionally, new digital technologies such as big data and AI optimise process management, enhance market orientation, and transform how organisations create value and interact with consumers (Matarazzo et al., 2021). Digital tools, particularly chatbots leveraging artificial intelligence, are instrumental in fostering conversations, addressing inquiries, processing transactions, and providing recommendations. These functions significantly enhance customer satisfaction and engagement. Positive post-purchase experiences foster brand advocacy and value co-creation, underscoring the social dimension and further amplifying customer satisfaction (Matarazzo et al., 2021).

Similarly, Libai et al. (2020) identified AI technologies as valuable in predicting consumer behaviours and preferences. Furthermore, AI technologies enable firms to analyse large quantities of data and interact with customers at scale to provide personalised services efficiently. This ultimately leads to optimised customer relationships and enhanced profitability (Libai et al., 2020). However, increased personalisation may contribute to social inequality in critically examining an AI-driven future (Libai et al., 2020). Therefore, it is essential to design AI technologies to increase customer equity.

### 2.4.1. Adopting AI to create customer value

AI allows organisations to leverage large amounts of customer data, enabling predictive capabilities that enhance customer acquisition, product development, and customer retention (Libai et al., 2020). By analysing data in real-time, AI technologies provide data-driven insights into customer behaviours and preferences (Libai et al., 2020). Therefore, AI technologies enhance an organisation's ability to understand, anticipate, and respond to customer needs to create value for the customer.

Additionally, AI can ensure more reliable connectivity by analysing network usage patterns and predicting potential issues (Qi et al., 2007). This improves customer value by enabling telecommunications organisations to deliver responsive and adaptive services through predictive maintenance and network management. Similarly, Matarazzo et al. (2021) posit that AI-driven predictive analytics contribute to a proactive

approach to customer services that reinforces trust and strengthens customer relationships.

Furthermore, AI empowers organisations to leverage customer data for continuous service improvement (Libai et al., 2020). AI systems analyse customer interactions and identify patterns and trends that inform service enhancements and product innovation (Balmer et al., 2020; Libai et al., 2020; Qi et al., 2007). This data-driven approach aligns with customers' evolving expectations in the digital age, where constant improvement and responsiveness to feedback are critical to maintaining competitive advantage (Libai et al., 2020). For telecommunications organisations, this continuous learning loop, fuelled by AI, means they can stay ahead of customer needs and deliver more relevant and compelling service offerings over time

### 2.4.2. Theoretical debate and conclusion

AI provides transformative benefits for customer value creation, from creating personalised products and services to network management and faster and more accurate decision-making. However, some of these benefits may be construed as intrusive or unethical. Therefore, an inclusive AI adoption approach involving all stakeholders, from policymakers to employees, the top management team, and regulatory authorities, is required. Ensuring ethical AI within the ambits of the law then becomes an additional value proposition to adopting AI for customer value creation.

## 2.5. Qualitative conceptual framework

The TOE framework is used as a foundation of this research based on the literature reviewed in this chapter. Figure 3 below illustrates a conceptual framework for AI adoption's influences, obstacles, and outcomes in the emerging markets of the telecommunications industry. This framework, which gives an outline of the literature examined, will be used to guide the interpretation of the findings of this qualitative exploration into AI adoption in the industry and show where new knowledge emerges.

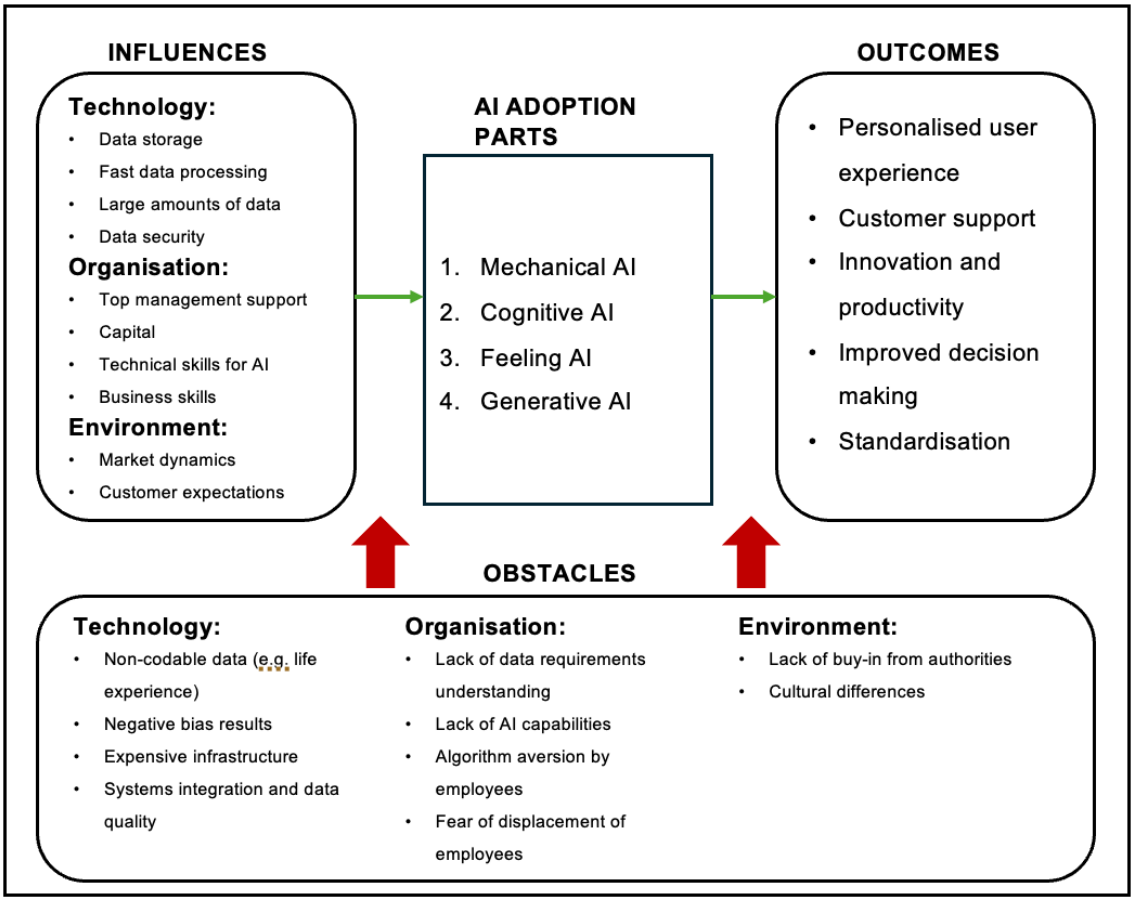


Figure 3: Conceptual framework of AI adoption in emerging market telecommunication industry

Source: Author's own

### 2.6. Conclusion

Adopting AI can bring about new demands, such as the need for skills development (Bankins et al., 2024). However, before that, human-AI collaboration works better when the people trust the AI, understand its nature and purpose, and develop the necessary skills to use it effectively (Bankins et al., 2024).

Organisations expect AI applications to help them improve their financial performance regarding revenues, growth, and cost reductions (Enholm et al., 2021). However, determining the causal relationships between AI adoption and economic performance is complex. Therefore, it requires a new way of developing more business- and context-specific KPIS to understand the effect of AI projects on business performance, as this is crucial to gaining insights into the long-term financial implications of AI adoption (Enholm et al., 2021).

This study's literature review focuses on customer value creation as a strategic business value for AI projects in the telecommunications industry. Driven by the digital ecosystem's market dynamics, customer expectations, and technological advancements, telecommunications providers can adopt AI as a strategic asset for customer value creation.

# 3. THE RESEARCH QUESTIONS

## 3.1. Introduction and roadmap

This chapter provides deeper insights into the research questions explored in the ensuing chapters. This research comprises a focal research question, with three sub-research questions to support the focal research questions. Additionally, each research question is addressed separately, where supporting evidence from academic literature provides context and relevance to the research question.

## 3.2. Focal research question

*Main research question: How can AI adoption be changed to ensure optimal customer value creation**?***

This research question will contribute to the literature on the telecommunications industry's technology, AI adoption, and customer value creation. New digital technologies such as big data and AI optimise process management, enhance market orientation, and transform how organisations create value and interact with consumers (Matarazzo et al., 2021). Some use cases for creating customer value with AI adoption include the use of chatbots (Matarazzo et al., 2021), predicting consumer behaviours and preferences (Libai et al., 2020), and creating new products and services (M. H. Huang & Rust, 2021). Based on the gap in literature relating to telecommunications organisations in emerging markets and Krakowski et al.'s (2023) call for further research on AI in specific industries and decision-making and problem-solving domains, the main research question was formulated in Chapter 1.

## 3.3. Sub-research question 1

*Sub-research question 1: What is the nature of AI adoption in emerging market telecommunication companies?*

This sub-research question will assist with providing evidence on current AI adoption in telecommunications companies. During my research, finding recent top-rated literature on AI adoption in the emerging market telecommunication industry was not easy. This gap in the literature led to the formulation of the first research sub-question.

## 3.4. Sub-research question 2

*Sub-research question 2: What are AI adoption enablers, obstacles and outcomes?*

This sub-research question will contribute to the theory and help business leaders navigate AI adoption in telecommunications. This sub-research question was formulated to understand the technology, organisational, and environmental enablers, obstacles and outcomes of AI adoption in telecommunications companies. According to Wang et al. (2016), the technology adoption framework offers industry-specific and technology insights into the TOE framework that was developed by Tornatzky and Fleischer (Cruz-Jesus et al., 2019). Additionally, the TOE framework is more context-specific than other technology adoption frameworks (Cruz-Jesus et al., 2019). Bankins et al. (2024), Enholm et al. (2021), Mikalef and Gupta (2021), and Yu et al. (2023) provide various examples of technological, organisational, and environmental enablers, obstacles and outcomes of AI adoption.

### 3.5. Sub-research question 3

*Sub-research question 3: How do managers perceive using AI to improve customer experience and engagement?*

This sub-research question will assist with contributing to the literature on the outcomes of AI adoption. Additionally, the sub-research question was formulated to explore the perceptions of telecommunications managers regarding how AI could improve customer experience and engagement. One way to use AI to improve customer experience and engagement is to supply large amounts of data to AI algorithms, creating dynamic and customised customer solutions (Verganti et al., 2020). Other ways to improve customer experience and engagement are to use AI to personalise products and services (Libai et al., 2020) and chatbots for customer interactions (Matarazzo et al., 2021).

### 3.6. Chapter summary

This chapter aligns the literature reviewed in Chapter 2 with the research questions presented in Chapter 1. Furthermore, the research questions are open-ended to foster the exploration and discovery that supports the research aim of exploring the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry.

# 4. RESEARCH METHODOLOGY AND DESIGN

## 4.1. Introduction and roadmap

This chapter provides a comprehensive examination of the research methodology and design applied to the research, which aimed to explore the adoption of AI and customer value creation in the emerging market telecommunications industry. Following a systematic process that enables a person to know more about something than before engaging in that process is called doing research (Merriam & Tisdell, 2016, p.3). Furthermore, according to Bell et al.(2019), research is the process of generating knowledge through the collection and analysis of data. Therefore, business researchers primarily use the analysed data to acquire theoretical insights into the world (Bell et al., 2019). Finally, Bell et al. (2019) elaborate on research and define “business research” (Bell et al., 2019, p.10) as “research conducted for the illumination of issues that arise in the context of academic thinking in the area of business and management” (Bell et al., 2019, p.XX).

Having articulated research and business research, it is imperative to note that the research problem and purpose are directly linked to the choice of research approach, with the research approach following the research problem (Dale Bloomberg & Volpe, 2012). The core components that need to be covered in a research methodology and design chapter are the introduction and overview, research sample, information needed, research design, methods of data collection, methods of data analysis, ethical considerations, issues of trustworthiness and limitations of the study (Dale Bloomberg & Volpe, 2012, p.100)

Figure 4 below provides an overview of this chapter's main headings and sub-headings.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Main headings** | 4.1 Introduction | | | | | | | | | | |
| | 4.2 Research philoposphy | | 4.3 Data collection design | | | | analysis | 4.5 Quality controls | | | |
| **Sub-headings** | 4.2.1 Research design | 4.2.2 Choice of methodology | 4.3.1 Population, setting and sampling | 4.3.2 Unit and level of analysis, and sampling frame | 4.3.1 Data gathering process | 4.3.4 Research instrument | 4.4.1 Data analysis approach | 4.5.1 Research quality and rigour | 4.5.2 Validity | 4.5.3 Reliability | 4.5.4 Transferability |
| **Main headings** | 4.6 Ethical considerations | | | | | | | | | | |
| | 4.7 Limitations of research and design methods | | | | | | | | | | |
| | 4.8 Chapter summary | | | | | | | | | | |

Figure 4: Research methodology and design chapter roadmap

Source: Author’s own

### 4.2. Research philosophy

Bell et al. (2019) state that three assumptions and the chosen research methods and designs must be consistent. These assumptions include ontological, epistemological, and methodological. Scholars and researchers ought to know about these assumptions when conducting business research. Therefore, how the world is known is based on what the world is thought to be, meaning that ontology underpins epistemology (Bell et al., 2019). With the research aim of exploring the adoption of AI and customer value creation in the emerging market telecommunications industry, and from an ontological perspective, I wanted to gain knowledge of the constructed reality of different individuals in the telecommunications industry on how they perceive AI adoption and its impact on customer value creation, considering the unique technological, organisational and environmental factors in emerging markets. This is important because customer value is subjective and varies by individual perception. Therefore, in this research, ontology within philosophy explores the nature of social occurrences as individual entities.

Furthermore, this research was conducted using an interpretivism research philosophy. From an interpretive point of view, reality and knowledge are created through communication, interaction, and practice; they do not exist objectively. Similarly, Merriam and Tisdell (2016) state that there is a reality that can be socially constructed. Therefore, knowledge cannot be ascertained; a research topic has multiple realities and interpretations (Merriam & Tisdell, 2016). The subjective epistemology perspective states that social occurrences are constructed based on the perceptions and actions of social actors (Saunders et al., 2007). Therefore, the rationale for using interpretivism as opposed to positivism epistemology for this research was that positivism would use surveys or experiments to test hypotheses on AI adoption and customer value creation. In contrast, I wanted to understand the experiences and perceptions of managers regarding AI adoption in telecommunications in relation to customer value creation based on the nuances of emerging markets.

#### 4.2.1. Research design

The researcher's decisions were crafted during the research design to give readers confidence in the work (Bono & McNamara, 2011). Therefore, the appropriate design selection was crucial (Bono & McNamara, 2011). It was equally important to match the research design to the research questions for effective testing (Bono & McNamara, 2011). The key objective of the research design section is to outline the methods and processes used in data collection (Dale Bloomberg & Volpe, 2012). I collected initial data

from annual integrated reports from telecommunication organisations in Africa and other industry reports. Reviewing this information provided context for these organisations' strategies, products and services and insights into the sector's economic impact. This was followed by obtaining relevant literature on AI adoption and customer value creation to establish a solid theoretical foundation for the research. The literature was reviewed continuously as new data was received during the interviews.

The interviews were conducted to obtain participants' perceptions and experiences of AI adoption and customer value creation in emerging market telcos. Furthermore, the interviews were structured to provide insights into the focal research question of how AI adoption can be changed to ensure optimal customer value creation. Additionally, they answered the sub-research questions about the enablers, obstacles, and outcomes of AI adoption for telcos. Finally, how do managers perceive using AI to improve customers' experience and engagement?

The interviews were followed by developing themes of the findings using a coding scheme. This allowed for a structured analysis of the data and an interpretation of the findings. Finally, I could conclude the findings and provide recommendations to emerging market telco business managers and decision-makers on optimally adopting AI for the strategic benefit of customer value creation.

Figure 5 below is a flowchart illustrating the steps in data collection.

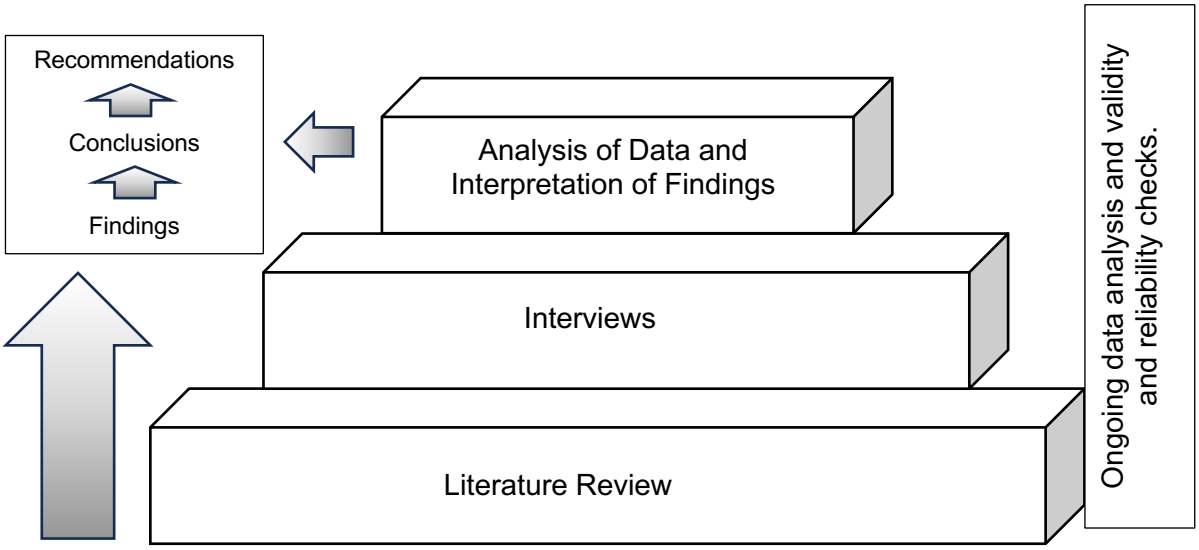


Figure 5 : Data collection steps

Source: Author's own. Adapted from (Dale Bloomberg & Volpe, 2012, p.251)

### 4.2.2. Choice of methodology

Braun and Clarke (2006) posit that the research questions should guide the choice of methodology. Furthermore, Braun and Clarke (2006) identified that the qualitative research approach best responds to research questions that ask “how” a phenomenon appears. Similarly, Hammarberg et al. (2016) state that qualitative methods are often based on the participant's standpoint and answer about perspective, meaning and experience. I used the qualitative research methodology to test the research questions mentioned in Chapter 1. This methodology enabled me to improve my knowledge of the research topic through the discovery and insights of those being studied, as cited by scholars who say, “understanding from the perspectives of those being studied offers the greatest promise of making a difference in people’s lives.” (Merriam & Tisdell, 2016 p.xxx)

The rationale for using a qualitative research methodology is that AI adoption is an evolving technology, thus requiring the understanding of contextual nuances such as varying technological, organisational and environmental landscapes, which quantitative research methods may overlook. Furthermore, a qualitative study allowed me to answer the research questions by obtaining in-depth insights into actual enablers, obstacles, and outcomes of AI adoption in emerging markets in the telecommunications industry. Therefore, this required probing the insights of managers and decision-makers in the telecommunications industry and, additionally, probing managers in emerging markets telecommunications firms about their perceptions on improving customer experience and engagement.

Moreover, AI adoption for customer value creation is more than a one-size-fits-all approach. Matarazzo et al. (2021) posit that customers play an active role in value creation in a digitalised world. Therefore, qualitative research methods enabled me, the researcher, to gain deeper insights into specific customer needs and pain points. Thereby identifying value-creation opportunities from the interviews conducted. Additionally, inductive methods have proven useful when exploring concepts that are difficult to measure (Eisenhardt et al., 2016). According to Crane et al. (2018), qualitative researchers in business and society rely heavily on case studies and interview-based studies, which pose challenges concerning robustness and give dominance to quantitative research methodologies.

Finally, Matarazzo et al. (2021) applied a qualitative research methodology approach to research digital transformation and customer value creation. The study by Matarazzo et al. (2021) examined medium-size firms in Italy that operated in the food, fashion and furniture design industries. The outcomes from the research of Matarazzo et al. (2021) contributed to the existing literature on digital transformation and organisational capability, including the managerial implications thereof. This research will further the work undertaken by Matarazzo et al. (2021) by expanding the literature on the telecommunications industry in emerging markets.

### 4.3. Data collection design

#### 4.3.1. Population, setting and sampling

The research is set in South Africa, one of the global emerging markets. The reason for this setting is that African scholarship has the potential to enrich global scholarship in that Africans have insight into extreme conditions, Africans have different freedoms and opportunities, and lastly, Africans have a different way of seeing the world (Barnard, 2020). Two or three telecommunications firms listed on the Johannesburg Stock Exchange (JSE) will be the population selected for this research. The participants must be decision-makers in their respective organisations and comfortable with the subject of the fourth industrial revolution, and AI in particular. Additionally, consultants with experience in the telecommunications industry in emerging markets and experience with the research topic constructs will be interviewed.

The mobile telecommunications industry was selected because of its importance to the global economy. According to the Global System for Mobile Communication Association (GSMA), mobile connectivity is essential to over five billion people globally. It contributes over five trillion US dollars to the global Gross Domestic Product (GDP) (GSMA, 2024). In the context of the sub-Saharan Africa region, mobile telecommunications contributed 8.1% of GDP or $170bn in 2022 (GSMA, 2023). Moreover, the industry employed 1.4 million jobs directly and supported 2.2 million jobs indirectly (GSMA, 2023). Furthermore, the telecommunications industry is subject to the technological, organisational and environmental enablers and obstacles described in the TOE framework (Wang et al., 2016).

Beyond that, the telecommunications industry provides its products and services to various other sectors, including healthcare, education, transportation and finance, to name a few. The interdependence of the telecommunications industry with other sectors infers that if telecommunication firms can adopt AI to provide improved customer

experience and engagement, different sectors will grow and thus drive economic growth within the territories they operate in. Finally, understanding AI in the telecommunications industry is essential to enable future strategies for AI adoption. The insights and learnings can also be helpful to other sectors.

### 4.3.2. Unit and level of analysis, and sampling frame

The qualitative method's unit of analysis was at the individual level. Interviews were conducted with decision-makers and managers employed in the telecommunications industry in emerging markets and a consultant working in the industry. Various purposeful sampling strategies can be used to conduct qualitative research. Snowball, network, or chain sampling works with a few participants with particular characteristics the researcher seeks. The participants are asked for references with similar traits (Dale Bloomberg & Volpe, 2012). For this research, participants were selected through my professional network using a convenient snowball sample of African telecommunications firms and business advisors to emerging market telecommunication firms.

Borges et al. (2021) identified the gap in how adopting AI technologies enhances customer experience and engagement. Therefore, in interviewing participants, I probed for insights and experiences on the enablers, obstacles, and outcomes of AI adoption and how AI adoption could improve customer experience and engagement.

I had initially selected 16 participants; however, the final sample size was 12. The participant sample size of 12 achieved saturation and provided diverse perspectives from male and female participants and participants from different countries and organisations. Appendix 5 includes a list of participant demographics, and each participant met the following criteria:

- Telecommunications organisations in emerging markets ( three countries)
- Individuals had knowledge and experience with AI adoption

### 4.3.3. Data gathering process

Semi-structured interviews were the primary mechanism for collecting data. Due to some of the participants and the interviewer being in different geographical regions, the data gathering process for the interviews was video conferencing software, Microsoft Teams. Secondly, secondary data in the public domain, such as annual organisational reports, industry reports, websites, and news sources, was reviewed to gain knowledge on current trends for AI use cases and benefit realisation concerning customer value

creation. The secondary data revealed several cases where emerging market telcos have used AI but have yet to have a relation to customer value creation.

The interviews commenced after receiving ethical clearance from the university ethics committee. Interviews were semi-structured, with open-ended questions informed by the literature on AI adoption framework and customer value creation. The interviews took place over several weeks to accommodate the availability of participants. The interviews were recorded and transcribed using video conferencing software backed up by another transcription software available online and on mobile devices. According to Bell et al. (2019), early transcription improves the validity of the research. The interviews were scheduled for 60 minutes, but the average duration was 44 minutes. Before starting the interview, permission to record was obtained from the participants. The research guaranteed confidentiality by not mentioning individual names or company information and anonymising personal identifiers in the transcript.

The data collected was stored in a password-protected cloud environment and on a private personal computer, ensuring that the data can be stored for a minimum of 10 years.

#### 4.3.4. Research instrument

The research interviews will draw from business leaders' and managers' backgrounds and experiences. Therefore, semi-structured interviews were used to collect the primary data. According to Bell et al. (2019), the interviewer has generally worded questions, usually framed in an interview schedule. Still, they have the flexibility to change the order of the presentation of these questions. The interview guide in Appendix X was developed to help them understand the enablers, obstacles, and outcomes of AI adoption regarding improved customer experience and engagement. Finally, a pilot interview was conducted with a relevant participant to test the quality and effectiveness of my developed interview guide. The pilot participant was excluded from the final research analysis and findings.

### 4.4. Data analysis

#### 4.4.1. Data analysis approach

Thematic analysis is a qualitative research analytical method that allows accessibility and flexibility in analysing qualitative data (Braun & Clarke, 2006). Braun and Clarke (2006) have identified six phases of thematic analysis. These are familiarising oneself

with the data, generating initial codes, identifying themes, reviewing the themes, naming and defining the themes, and producing a report (Braun & Clarke, 2006). To provide more detail on the steps of thematic analysis, step one involved familiarising myself with the data. This was achieved by proofreading transcriptions with the transcription software and not recording any observations (Braun & Clarke, 2006). Secondly, initial codes were generated using coding software that analysed the dataset, identified significant segments, and assigned codes to these segments. This was followed by sorting the codes into themes to form overarching themes and reviewing them to ensure their validity and coherence (Braun & Clarke, 2006). Naming and defining the themes involves performing a detailed analysis of each theme concerning the research questions (Braun & Clarke, 2006). Lastly, I produced a report that provided evidence of each theme relating to the research question and literature (Braun & Clarke, 2006).

## 4.5. Quality controls

### 4.5.1. Research quality and rigour

Qualitative researchers often use ethnography, which involves interviews (Bell et al., 2019) and focuses on understanding the culture through observing practices (Eisenhardt et al., 2016). The quality and rigour of research papers are based on a few criteria (Eisenhardt et al., 2016). These include coherence, uncomplicated theory, well-defined concepts, logical arguments, and testable propositions (Eisenhardt et al., 2016). Similarly, Dale Bloomberg and Volpe (2012) posit that validity and reliability are standards that are often used for convincing research. The following sections will illustrate how research quality and rigour were applied to this research.

### 4.5.2. Validity

According to Dale Bloomberg and Volpe (2012, p.112), credibility is similar to validity. Merriam and Tisdell (2016, p.242) contribute by noting that matching reality with the findings provides validity. To measure internal validity, linked to the research aim of exploring the adoption of AI and customer value creation in the emerging market telecommunication industry, this research used firm size and interviewee experience as control variables, in that interviewees must be decision-makers, in essence, middle management or above. The primary data was triangulated using telecommunication firms in different African regions, groups of companies, and reputable consultants with extensive and recent experience with emerging market telecommunications organisations.

Finally, the researcher is a current South African telecommunications organisation employee, a technology enthusiast, and a corporate strategy student. Having yet to observe any perceived strategic benefit to AI adoption in the sector, the researcher may have had certain biases in conducting the study. To ensure that the researcher's biases did not influence participants' perspectives, summaries of the interviews were sent to the participants.

### 4.5.3. Reliability

Tracking the processes and procedures used to collect and interpret the data is what reliability refers to (Dale Bloomberg & Volpe, 2012). To begin with, I ensured that recent, three-and four-star-rated journals were used in the literature review. Additionally, primary data was collected in online interviews that were recorded and transcribed by software (Read.ai and Microsoft Teams). A pilot interview preceded the formal interviews, which was not included in the data set. This process ensured that if another researcher were to study the same phenomenon, they would come up with compatible observations, thus making the research reliable (Dale Bloomberg & Volpe, 2012). Finally, an audit trail and all the data used in the process are available for other researchers to review to demonstrate reliability.

### 4.5.4. Transferability

Transferability refers to the extent to which findings in one research can apply to other situations (Merriam & Tisdell, 2016, p.256). Similarly, Dale Bloomberg & Volpe (2012) state that "it is likely that lessons learned from in one setting might be useful to others." (Dale Bloomberg & Volpe, 2012, p.113). Having interviewed participants employed in various African organisations and following a structured process, the research findings can be considered transferable to other telecommunication organisations in emerging markets.

## 4.6. Ethical considerations

I know the identity of the respondents because, during the research, I interviewed managers and decision-makers with experience in the telecommunications industry using my professional network. To ensure confidentiality, no names of individuals or organisations will be reported, and the data will be stored without identifiers.

The interview required respondents to be familiar with AI adoption and should involve current experience in the telecommunications industry in emerging markets. Participants were not required to be from a particular organisation. The interviews were conducted online using remote meeting software to record the audio and video. The meeting software was used to transcribe the recorded data, which was stored on my personal computer for at least ten years. Finally, in the introduction, I used public non-human data from telecommunications organisations or telecommunication industry websites to set the research context and help solidify the business problem.

### 4.7. Limitations of research design and methods

The main limitation of this research project was that the setting was limited to telecommunications firms in Africa and not all emerging markets. Also, a large population of firms within the telecommunications sector was excluded because the research was limited to two or three firms. Secondly, the researcher was limited to being a student rather than an experienced researcher.

### 4.8. Chapter summary

In summary, this chapter reflects on the integrity and design of the research. Qualitative semi-structured interviews were employed to uncover AI adoption's enablers, obstacles, and outcomes concerning customer value creation in the telecommunications industry. The participant sample of 12 was selected using a convenient snowball from my professional network. Validity, reliability, and transferability were accounted for throughout the process, and the data were reviewed against the literature. Thematic analysis using software allowed critical themes of the findings to be identified from the interviews.

Finally, the study intended to contribute to the literature on AI adoption and customer value creation and provide decision-makers in the emerging market telecommunications industry with a conceptual framework for deriving strategic value from AI adoption.

# 5. FINDINGS

## 5.1. Introduction

This study aimed to explore the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry through the perceptions of a sample group of telecommunications managers and consultants. Similarly to Dale Bloomberg and Volpe, who said that “qualitative research begins with questions, and its ultimate purpose is learning” (Dale Bloomberg & Volpe, p.171, 2012), the obtained insights were hoped to help me better understand the nature of AI adoption in emerging market telecommunications, the enablers, obstacles, and outcomes of AI adoption to enhance customer value creation.

This chapter presents the findings from the 12 semi-structured interviews conducted. Exploratory research requires diverse participants to avoid bias and gain insights from different sources. This research study focuses on emerging market telecommunication firms. Therefore, the participants were from three emerging markets representing five firms. Table 1 below illustrates the diversity of the participant organisations and markets.

Table 1: Participant diversity

| **Description of diversity** | **Count** |
|---|---|
| Unique emerging market telecommunications firms | 5 |
| Unique emerging markets | 3 |
| Unique emerging market telecommunications management consultant | 1 |

Source: Author’s own

Furthermore, the chapter outlines the data analysis techniques employed, provides a detailed account of the analysis process, and discusses how data verification was ensured through methods like triangulation. The findings are presented based on the research questions articulated in Chapter 1 of this study. The themes for each research question are presented within the theoretical frameworks reviewed in Chapter 2 of this study. These are Technology-Organisation-Environment (TOE) framework (Cruz-Jesus et al., 2019), Resource-Based-Theory (RBT) (Barney et al., 2021), and Service-Dominant Logic (SDL) (Sun & Gregor, 2023).

Finally, data triangulations were employed to ensure the credibility and reliability of the findings, which involved cross-verifying information from multiple sources. This

commenced with method triangulation, which combined interviews with company and industry reports to acquire an in-depth and holistic understanding of the phenomenon. This was followed by source triangulation, which involved interviewing participants from different markets, companies and positions to gather diverse perspectives. Appendix 5 provides a list of participant demographics.

Figure 6 below outlines the chapter roadmap, commencing with the overview of the analysis process. For simplicity, the chapter contains further subheadings, which are not included in the diagram.

<table>
<tr><td rowspan="2">Main headings</td><td colspan="6">5.1 Introduction</td></tr>
<tr><td colspan="2">5.2 Analysis process overview</td><td colspan="4">5.3 Sub-research questions</td></tr>
<tr><td>Sub-headings</td><td>5.2.1 Textual data analysis</td><td>5.2.2 Data saturation test</td><td>5.3.1 What is the nature of AI adoption in emerging market telecommunications companies?</td><td>5.3.2 What are AI adoption's enablers, obstacles, and outcomes?</td><td>5.3.3 How do managers percieve the use of AI to improve customers' experience and engagement?</td><td>4.3.4 Research instrument</td></tr>
<tr><td>Main headings</td><td colspan="6">5.4 Chapter conclusion</td></tr>
</table>

Figure 6: Research findings chapter roadmap

Source: Author's own

### 5.2. Analysis process overview

Thematic analysis was the preferred method of analysing the interview data. This method was discovered to be suitable for identifying, analysing, and reporting themes within qualitative data. Braun and Clarke (2006) have identified six phases of thematic analysis.

#### 5.2.1. Textual data analysis

The interview transcripts were uploaded to a computer program, Atlas.ti, that assists qualitative researchers in analysing data. The software for qualitative analysis has been approved and distributed by the University of Pretoria and GIBS. Words or phrases that captured the integrity of the participant responses were captured, removing the irrelevant parts of the response. Figure x below is a word cloud illustrating the beginning of the thematic analysis that highlighted keywords or phrases such as customer product personalisation, chatbot, regulatory, fear of losing jobs, cloud computing, fight fraud and vandalism, skills for AI implementation, seamless customer journey, customer segmentation and data storage availability.


Figure 7: Word cloud

Source: Author's own

### 5.2.2. Data saturation test

According to Saldaña (2016), data saturation occurs when no new information appears in the data, that is, no new properties, interactions, or consequences (Saldaña, 2016). This research tested the saturation by analysing the number of codes generated by each participant interview. Figure 8 below illustrates the results of the data saturation test using Atlas.ti software.

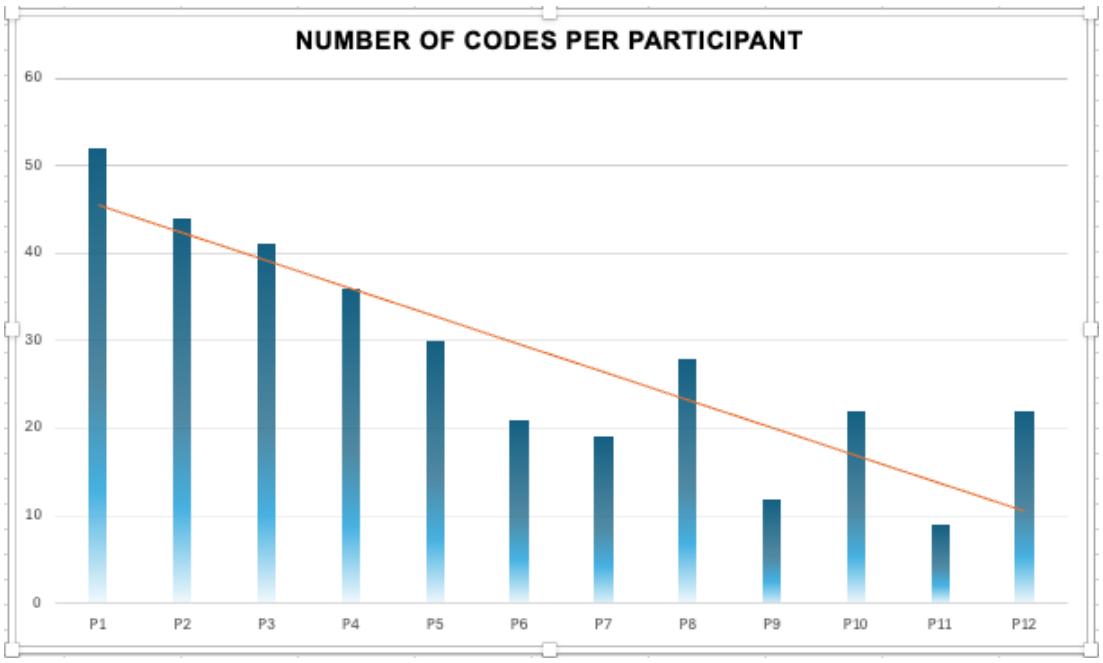


Figure 8: Data saturation test

Source: Author's own

The diversity of the participant firms and emerging market context infers that the saturation analysis will not follow a straight-line reduction outcome from the first participant to the last; therefore, the analysis results can be trusted.

### 5.3. Sub-research questions

This section of the chapter presents the findings of the sub-research questions aimed at responding to the focal research question of how AI adoption can be changed to ensure optimal customer value creation in the context of emerging market telecommunication firms. The four sub-research questions are tabulated and structured to illustrate the analysis alignment between the sub-research questions and the codes generated, categories, and themes. Each theme is then substantiated with discussions of the participant responses. In order to ensure that suitable participants were being interviewed, all participants provided a brief description of their experience in telecommunications and their understanding of AI.

#### 5.3.1. Sub-RQ 1: What is the nature of AI adoption in emerging market telecommunications companies?

This research sub-question explores the strategic integration of AI in emerging market telecommunication. It aims to understand to what extent AI adoption is a priority for their

organisation and develop new insights into the readiness of emerging market telecommunication firms to adopt AI and the current or potential impact AI will make on organisational performance. The participants' responses uncovered one key theme, illustrated in Table 2 below.

Table 2: Sub-research question 1 codes, categories and themes

| Sub-research question 1 | Codes | Categories | Themes |
|---|---|---|---|
| What is the nature of AI adoption in emerging market telecommunications companies? | - Strong intent<br>- Highly prioritised<br>- 56% of CEOs say AI is a priority<br>- Slow adoption | AI adoption priority | **Theme 1:** Strategic intention with a pragmatic approach |
| | - Telco is not ready<br>- No foundation<br>- Partner with tech companies<br>- Experiment | Firm readiness for AI adoption | |
| | - Next level<br>- Significant | AI impact to organisation performance | |

Source: Author's own

#### 5.3.1.1. Discussion theme 1: strategic intention with a pragmatic approach

The participants' responses indicated that some adoption of AI has started or is being experimented with as a proof of concept within their organisations. Some organisations indicated that they have started investing capital expenditure in adopting AI. Other participants differed, however, indicating that the adoption of AI could be faster. A qualitative study would be required as this is purely based on perception.

Participants unified in affirming the need for emerging market telecommunications firms to be more ready to adopt AI technologies. They felt that emerging market telecommunications firms lacked the foundations of adopting AI, which include an AI-skilled workforce, manual business processes, and operating on legacy systems. To

overcome this challenge, participants suggested partnerships with technology companies for their expertise and the need to experiment with AI use cases.

Most participants perceive the impact of adopting AI on organisational performance as significant. AI technologies are perceived as providing optimisation, standardisation, and efficiency benefits to enable customer value creation. Table 3 below presents participants' verbatim quotations as evidence of the strategic intent with a pragmatic approach of emerging telecommunications firms adopting AI for customer value creation.

Table 3: Evidence of strategic intent with a pragmatic approach

| Category | Participant | Quotation |
|---|---|---|
| AI adoption priority | P12 | "Look, we recently did a survey and if my memory serves me right, we did a CEO Outlook survey and that's a global survey that my organisation does. I think 56% of CEOs said it is the right topmost priority for them right now. That's where they're investing their capex into." |
| | P3 | "So I'd like to believe that it's highly prioritized in telecommunications especially because you have high volumes of customers, you need to be able to engage with all those customers and what more if not 24-7 availability of some sort of checkboards or, you know, so highly, highly prioritized." |
| | P1 | "Yeah, I think for telcos, I would say the adoption is a little bit slower than I could imagine in other sectors, but I think we're starting to adopt." |
| Firm readiness for AI adoption | P1 | "Fundamentally we do not have the foundation to adopt AI." |
| | P4 | "Experiment and fail, it's okay. It's okay to fail but fail and fail quickly. That type of attitude, you must fail and fail quickly. I think we fear the unknown." |
| | P1 | "So, we're not thinking like big tech like your Microsoft like your Google. We think OK, let's partner with them or some like your Accenture, and then let's develop something." |

| | | |
|---|---|---|
| AI impact to organisation performance | P1 | “You know this is our next level. This is what we're going to use AI. Everybody is looking for some form of AI or other.” |
| | P3 | “I want to say it's quite significant. And this is because businesses are looking to optimize and improve efficiency and minimize costs. And AI is one of the best ways to go about this, especially in operations.” |

Source: Author’s own

The evidence for the findings relating to the first research question is captured by participant 1, participant 3, participant 4 and participant 12, providing different views and nuances. Responding to whether AI adoption is a priority in their organisation, participant 3 mentioned that AI adoption is a high priority, who mentioned that AI adoption from their perspective should be a priority, but it is currently slow. Regarding emerging market telecommunication firms being ready to adopt AI, participant 1 mentioned that their organisations do not have the foundation to adopt AI and, thus, are not ready. Similarly, participant 4 mentioned that their organisation is not ready due to the fear of the unknown. Finally, in gaining insights into participant perceptions on the impact AI would make on organisational performance, both participants 1 and 3 confirmed a significant impact, with participant 3 mentioning that AI is the best way of optimising and improving efficiencies in operations.

#### 5.3.1.2. Conclusion of findings for sub-research question 1

Considering the human and financial resource constraints, emerging market telecommunication firms are taking a pragmatic approach to adopting AI. The evidence from the interviews provided similarities and differences between participants. Due to the uniqueness of the participants in relation to the emerging market, organisation, and organisational function they represent, their nature of AI adoption may present differences and similarities. The managers in emerging telecommunications firms had similar perceptions: The firms lack the fundamentals to adopt AI. However, the strategic intent is visible in industry reports and participant responses, as there is consensus amongst participants that adopting AI positively impacts organisational performance.

Finally, the findings of this research question contribute to the literature on AI adoption in telecommunications. The findings develop new insights into the nature of AI adoption in emerging market telecommunications firms, where the research did not find any top-

rated literature on this topic. Researchers will benefit from these findings to obtain a deeper understanding of the firms' priority, readiness and impact on organisational performance.

### 5.3.2. Sub-research question 2: What are AI adoption's enablers, obstacles, and outcomes?

This research sub-question is grounded on the TOE framework (Cruz-Jesus et al., 2019), presenting the findings of an in-depth exploration of technology, organisation, and environmental enablers and obstacles to AI adoption in emerging market telecommunication firms. Additionally, this question also explores the perceived outcomes of AI adoption in the emerging market telecommunications industry. The participants' responses uncovered eight key themes illustrated in Table 4 below.

Table 4: Sub-research question 2 codes, categories and themes

| Sub-research question 2 | Codes | Categories | Themes |
|---|---|---|---|
| What are AI adoption's enablers, obstacles, and outcomes? | - IT infrastructure<br>- Cloud computing<br>- Data availability<br>- Data-driven culture<br>- Leadership commitment<br>- Strategy<br>- Ethical and trusted AI<br>- Digital lives and ecosystem<br>- Market dynamics | Enablers of AI adoption | **Theme 2:** Digital IT infrastructure<br>**Theme 3:** AI-driven culture<br>**Theme 4:** Digital economy |
| | - Data privacy concerns<br>- AI implementation costs<br>- Connectivity<br>- Fear of losing jobs<br>- Lack of skills for AI implementations<br>- Lack of organisational change management<br>- Regulatory | Obstacles of AI adoption | **Theme 5:** Data management, connectivity, privacy and cost challenges<br>**Theme 6:** Ineffective management of human resources |

| | | | |
|---|---|---|---|
| | - Energy concerns<br>- Reliance on AI providers | | **Theme 7:** Dependence on big tech, regulatory and energy sustainability concerns |
| | - Customer satisfaction<br>- Solving bad customer experiences<br>- Customer lifetime value or customer loyalty<br>- Fighting fraud and vandalism<br>- Network optimisation<br>- New career opportunities<br>- Reach customers in remote areas | Outcomes of AI adoption | **Theme 8:** Improved customer satisfaction |
| | | | **Theme 9:** Promoting digital inclusion |

Source: Author's own

#### 5.3.2.1. Enablers of AI adoption

##### 5.3.2.1.1. Discussion theme 2: digital IT infrastructure

The enhancement of digital IT infrastructure allows firms to handle large amounts of data generated by users and telecommunications network operations. For this reason, digital IT infrastructure emerged as a crucial enabler of AI adoption in emerging market telecommunication firms. A modern and digital IT infrastructure provides the backbone to support AI technologies. Participants highlighted the need for infrastructure components like cloud computing, high-speed networks and data centres facilitated by integrating AI solutions into their existing systems. Table 5 below presents participants' verbatim quotations as evidence of the digital IT infrastructure as an enabler of the adoption of AI.

Table 5: Evidence of digital IT infrastructure as an enabler

| Theme | Participant | Quotation |
|---|---|---|
| Digital IT infrastructure | P4 | "So, by scalability, meaning that if you implement AI. Next at scale, I mean it demands a lot and it demands a robust IT infrastructure that is very reliable from a connectivity point of view, which honestly can particularly be a challenging a challenge in the in the emerging markets." |
| | P10 | "If you've taken cloud-first approaches, generally it is easier to integrate into AI platforms if you've taken a cloud-first or prioritized cloud deployments." |
| | P3 | "Because it also allows for speed in terms of the computing, scaling up and down in terms of whether there's high demand or there's periods of low demand." |
| | P12 | "I think the first enabler should be How do you make use cases which are actually wider and then you enable it with, you know, with the right set of technology or that technology can be data centre can be availability of data centre, maybe an Antarctica or wherever you would like, you know, the feasible right where the it's environment friendly because it's a huge emitter at the end of the day." |

Source: Author's own

The participants provided different perspectives on why digital IT infrastructure enables AI adoption. Participant 3 mentioned that digital IT infrastructure allows for fast computing speed and scaling up and down based on demand. Similarly, participant 4 discussed scalability, adding that it requires robust IT infrastructure. Participant 10 recommended that a cloud-first approach makes it easier to integrate into AI platforms, and finally, Participant 12 emphasised the availability of data centres as an enabler of AI adoption.

#### 5.3.2.1.2. Discussion theme 3: AI-driven culture

An AI-driven culture empowers employees at all levels to contribute to AI initiatives, fostering cross-functional collaboration and knowledge sharing. Therefore, an organisational culture that embraces AI and fosters innovation is fundamental to AI

adoption in emerging market telecommunication firms. Leadership must play a pivotal role in establishing this culture by setting the tone at the top with a clear AI vision and demonstrating commitment through resource allocation. This type of culture can reduce the internal resistance to change and accelerate the adoption of AI. Table 6 below presents participants' verbatim quotations as evidence that an AI-driven culture is an enabler of the adoption of AI.

Table 6: Evidence of AI-driven culture as an enabler

| Theme | Participant | Quotation |
|---|---|---|
| AI-driven culture | P12 | "I think the first organizational driver is the person leading you. Do they see value in AI? So, if your leader sees a vision, so what we say is traditionally tone at the top, that applies to AI as well. So if the tone at the top is right, do they believe in AI, number one? Do they see value in AI? What do they see AI as? As someone or something which is going to replace your employees or something which is going to increase the productivity of your employees?" |
| | P7 | "So I think for me, I think as professionals, we just need to figure out from a culture perspective and from a strategic perspective, what is the strategic, the strategic view on AI?" |
| | P3 | "I think having a data-driven culture is key. Because AI is data-driven, number one. So having a data-driven culture is very much key to enable AI within an organisation." |

Source: Author's own

Regarding inculcating an AI-driven culture, participant 12 mentioned that the organisation's leader needs to have a vision for AI and set the tone from the top. In contrast, participant 7 emphasised the importance of having a strategic view of AI to support an AI-driven culture.

#### 5.3.2.1.3. Discussion theme 4: digital economy

In a digital economy, there is an increased demand for innovative digital services, pushing emerging market telecommunication firms to adopt AI to meet customer expectations, remain competitive, or even gain a competitive advantage. Additionally, the proliferation of smartphones, e-commerce, and digital payment systems contributes

to large amounts of data, which can be leveraged through AI for insights and service improvements. For these reasons, the broader digital economy is an environmental enabling of AI adoption for telecommunication firms in emerging markets. Participants highlighted that the competitive environment in the emerging market telecommunication industry and society moving towards a digital world necessitated the adoption of AI for emerging market telecommunication firms. Table 7 below presents participants' verbatim quotations as evidence that an AI-driven culture is an enabler of the adoption of AI.

Table 7: Evidence of digital economy as an enabler

| Theme | Participant | Quotation |
|---|---|---|
| Digital economy | P4 | "I mean we are we are in the space where we're moving into digital. So, what does that mean for us? Digital is being creative and innovative and using the technology and because we are in the technology advancement stages of our lives. Is this the world AI being part of that that whether it's machine learning, whether it's AI, but it's things that are in that space." |
| | P10 | "Nobody wants to be left behind. If your competitors are all using it as a force multiplier. If you don't have anything to compete with that, you can rapidly lose touch with your competition in terms of productivity, efficiency, return in investment" |
| | P1 | "Especially now with the tough telco environment because if you look at the telco growth especially in South Africa it's very difficult to achieve over five percent growth year on year." |
| | P12 | "Even World Economic Forum this year had trusted AI or ethical AI as one of the key topics that they discuss along with ESG. So ESG and in the ESG, I think the environment element of that is the most important thing right now. And the second is AI. And it will be interesting to see how those two interlay with each other." |

Source: Author's own

The digital economy consists of various external factors that enable the adoption of AI. Participant 4 mentions that we live in the digital era, while participant 10 mentions looking

at it from a competition perspective: If competitors are adopting AI, you have to follow suit to remain competitive.

#### 5.3.2.2. Obstacles of AI adoption

##### 5.3.2.2.1. Discussion theme 5: data management, connectivity, privacy and costs

The most significant technological obstacle is a multidimensional challenge reflected in ineffective data management, unreliable connectivity that would impede real-time data processing, which is essential for AI-driven services, stringent data protection regulations that require firms to implement high-tech security measures, and pervasive cost challenges. Table 8 below presents participants' verbatim quotations as evidence that data management, connectivity, privacy and AI implementation costs are obstacles to adopting AI.

Table 8: Evidence of data management, connectivity, privacy and costs as an obstacle

| Theme | Participant | Quotation |
|---|---|---|
| Data management, connectivity, privacy and costs | P6 | "It's not easy to implement because, you know, the data is not straightforward or easily available." |
| | P7 | "You see a lot of the data breaches, Xperia and TransUnion, this app has had this leak. So, there's a lot of barriers there around the safety and the protection there." |
| | P3 | "You need connectivity, right? Because you cannot connect without the internet, and everything right now is on the worldwide we need to be able to connect and I'd say internet connectivity or good connectivity is actually a good enabler for technologies or four IR technologies such as AI." |
| | P6 | "I'm actually not aware of how expensive it is to implement models. So I think the costs of the technology might, it might be a barrier. For example, if you're using, if you're implementing your model on the cloud and you're being charged by the amount of space that you're using, you know, and at that time, there are, you know, gallons and gallons of data that you're |

| | | |
|---|---|---|
| | | processing each day, then it becomes expensive and unrealistic to keep that model going." |
| | P4 | "Based on your company goals and also based on the digital capabilities that you have on the ground, because you can have aspirations that you want to do this, but you find that you're going to need billions of to actually pull this phenomenon to fruition." |

Source: Author's own

The elements of technology that are obstacles to emerging markets telecommunications adopting AI were identified as data availability by Participant 6. Participant 3 identified good internet connectivity as an obstacle in emerging markets, whilst Participants 4 and 6 indicated that implementation costs were a barrier.

#### 5.3.2.2.2. Discussion theme 6: ineffective human resource management

Ineffective human resource management emerged as a significant obstacle to AI adoption. Participants noted that while there is a recognised need for skilled AI professionals, there is a fear that AI will replace humans, thus threatening their employment. Furthermore, ongoing training and professional development opportunities are often needed for existing employees. Without proper training, staff may feel ill-equipped to work with new AI technologies, leading to resistance or underutilising AI systems. Finally, Organizational culture also plays a role. Resistance to change, fear of job displacement due to automation, and lack of management support can hinder AI initiatives. Table 9 below presents participants' verbatim quotations as evidence that ineffective human resource management hinders AI adoption.

Table 9: Evidence of ineffective human resource management as an obstacle

| Theme | Participant | Quotation |
|---|---|---|
| Ineffective human resource management | P8 | "Already AI has something that you can give to a customer, and it will take out 40% of our call volumes overnight. Right? Then what? You know, what do I do with 300 people that were there in my call centres before? What does the partner now do with half of their income?" |

| | | |
|---|---|---|
| | P9 | “The bottom line is people see AI as a threat to what they do on a daily basis. They never see it as something that will complement what they do.” |
| | P1 | “So, but for us as an organization to be an AI-driven organization, to be driven from a change management. So, change management in a sense of addressing the mindset issues around, you know, AI will take our jobs.” |
| | P5 | “So, being able to have the right skillset, right? So having an, an IT team, um, that will be able to, um, firstly guide on what, what is the right solution.” |
| | P4 | “And the skills. So, if you don't have the right talent and skills and we know how South Africa is struggling with that, emerging markets in the in the world are struggling with that. And if we are not going to be intentional about upskilling the existing people to make sure that we maximize the AI capability, we'll have a problem.” |

Source: Author’s own

Participants highlighted that people play a critical role in the adoption of AI, stating that there could be resistance to change from people. One of the reasons for resistance mentioned by P8 is the loss of jobs, making an example of how AI could take 40% of the call volumes in a call centre environment, leaving a challenge of how to utilise 300 people. Participants 4 and 5 provide another perspective and emphasise the organisation acquiring or developing the right skills for AI.

#### 5.3.2.2.3. Discussion theme 7: dependence on big tech, regulatory and energy sustainability concerns

Regulatory concerns pose substantial obstacles to AI adoption in emerging markets. The regulatory environment in emerging markets can be complex and uncertain, with rapidly evolving data protection laws and telecommunications operations. Additionally, the dependence on large technology firms (big tech) for AI implementations, with the likes of OpenAI, Microsoft, and Amazon, affects the autonomy of firms. Furthermore, AI technologies consume substantial amounts of energy, leading to energy sustainability concerns. Table 10 below presents participants’ verbatim quotations as evidence that ineffective human resource management hinders AI adoption.

Table 10: Evidence that the dependence on big tech, regulatory, and energy sustainability concerns are obstacles to the adoption of AI.

| Theme | Participant | Quotation |
|---|---|---|
| Dependence on big tech, regulatory, and energy sustainability concerns | P11 | "I think what's also key is the regulations. Maybe from the lack of understanding at this point, I think there is not so much restriction up to now, at least maybe within the context of developing countries. But I would assume as the sophistication around AI grows, probably there is also that might be an issue. But at this point, Also, the regulations are also enabling us playing into the space" |
| | P6 | "So, like I said, in terms of regulation, right, so the telco industry is heavily regulated. So being able to, you might find that certain telco companies might want to go wild in terms of using certain AI capabilities. However, due to regulation, they're not allowed to. I think that'll be an obstacle there." |
| | P10 | "From a governance perspective, companies are at the mercy of a very few AI providers or service providers or companies, whatever you want to call them. And what that means is if an entity decides to govern its AI in a certain way, for example, to say the AI can't give you insights, which can improve your business. As the end user, you might not know that. Meanwhile, you might be expecting that it's giving you a full access to its full range of insights. The governance of it can be, if you're a company in the top 500 globally, you might get the full, raw, unfiltered, full capabilities of AI. Meanwhile, if you come from another region or it's a smaller company, they give you a dumbed down version of the AI. Once again, as the end user, it would be almost impossible to tell." |
| | P10 | "The tech, not technology, the energy consumption of generative AI is astronomical. The data centres for which hosts these large language models are using more electricity than many countries. Like the Microsoft data centres, NVIDIA, OpenAI, they use more electricity on their data centres than about 50 countries or something |

| | | |
|---|---|---|
| | | like that. So, it's massive. So, if you then dump an AI data centre, which is like adding another country worth of energy usage, the infrastructure from an energy perspective is not where it needs to be. |

Source: Author's own

Climate change is a global concern, and Participant 10 provides this perspective. Participant 10 raises a concern that the energy consumption of generative AI is astronomical. Participant 6 looks at environmental obstacles from the perspective of industry regulators and mentions that the industry is heavily regulated. Although there are no current restrictions, concern was raised that this might be in the future.

#### 5.3.2.3. Outcomes of AI adoption

##### 5.3.2.3.1. Discussion of theme 8: improved customer satisfaction

Participants of this study perceive AI adoption as a key strategic initiative to enhance customer satisfaction within the emerging markets telecommunication industry. Participants had similar responses in highlighting AI technologies and providing more personalised products and services for customers, providing standardised responses to customer queries 24/7 across all channels through AI customer service platforms such as chatbots. Furthermore, the theme aligns with the Service-Dominant Logic (SDL) (Sun & Gregor, 2023), emphasising value co-creation through enhanced customer interactions facilitated by AI technologies. By focusing on customer satisfaction, managers perceive AI as a strategic asset that drives business growth and competitive advantage. Table 11 below presents participants' verbatim quotations as evidence that improved customer satisfaction is an outcome of AI adoption.

Table 11: Evidence of improved customer satisfaction as an outcome of AI adoption

| Theme | Participant | Quotation |
|---|---|---|
| Improved customer satisfaction | P2 | "So, if a customer is coming through and is coming through with a complex problem, they might have to speak to three, four, five agents before it actually gets resolved. Or speak to an agent and then a ticket is logged until we get a specialist who knows how to resolve that issue. And that might take three, four days before the customer get their answer." |

| | | |
|---|---|---|
| | P8 | “The fact that people are still getting a million calls in the call centre, the fact that we still have high foot traffic into the stores, into these places where it's a customer that needs to initiate these things, right? So, one of the big metrics for me from a customer perspective is effort” |
| | P12 | “I think the first and foremost is customer satisfaction because an AI can do a tremendous job in sorting out 60 to 70% of your first line problems. So, customer satisfaction and it can do it really, really quickly.” |
| | P5 | “Creating a frictionless experience, right, where there aren’t too many handoffs, where a customer can get a particular product or solution in a quick way, where the customer doesn't feel that they experience any friction or any pain during that journey.” |

Source: Author’s own

The participants had varying views on the outcomes of AI adoption in relation to customer value creation. Participant 2 mentions a bad customer experience where the customer would sometimes talk to five different agents before a query was resolved. An expected outcome of AI is to assist with quicker query resolution. Participant 8 supplements this perspective, mentioning that with AI adoption, there should be less traffic coming to stores and fewer calls to the call centre. Participant 5 provides a different expectation of an outcome, mentioning that AI should create a frictionless customer experience.

#### 5.3.2.3.2. Discussion of theme 9: promoting digital inclusion

During the study, some participants highlighted AI adoption as a means of digital inclusion in emerging markets. Digital inclusion refers to all individuals and communities' access and use of information and communication technologies. Participants highlighted that AI enables telecommunications companies to extend their services to underserved populations, bridging the digital divide. Table 12 below presents participants’ verbatim quotations as evidence that promoting digital inclusion is an outcome of AI adoption.

Table 12: Evidence of promoting digital inclusion as an outcome of AI adoption

| Theme | Participant | Quotation |
|---|---|---|
| Promoting digital inclusion | P5 | "So if they're able to use AI capabilities in order to reach more customers, and also for customers in remote areas to not feel left out, to feel that they can still have the same experience that someone within the city, for example, or within metro areas, you know, experience when it comes to something as simple as having a conversation over the phone with someone. So I think, yeah, maybe that's something as well." |
| | P8 | "There'll be new career opportunities, there'll be even other exciting opportunities that will come up. So my reflection on it is, I think It depends how, as a country, and how people within those countries choose to respond to these things, right?" |

Source: Author's own

From a societal welfare perspective, promoting digital inclusion in emerging markets was discovered to be a key outcome of AI adoption. Participant 5 mentions that using AI technologies to provide services to customers in remote areas gives them the same experience as in urban areas. Participant P8 varies from serving the remote areas and mentions the new career opportunities that come with AI adoption.

#### 5.3.2.4. Conclusion for sub-research question 2

The digital IT infrastructure theme aligns with the technological context of the TOE framework (Cruz-Jesus et al., 2019), emphasising that technology readiness is critical for successful AI technology adoption. Furthermore, the AI-driven culture theme aligns with the organisational context of the TOE framework (Cruz-Jesus et al., 2019) and the RBT (Barney et al., 2021). By developing an AI-driven culture, firms can enhance their intangible assets, such as AI-employee expertise and innovation capabilities, which are critical for sustaining competitive advantage in today's rapidly changing digital economy. The digital economy aligns with the environmental context of the TOE framework (Cruz-Jesus et al., 2019) by exerting external pressures for firms to innovate and adopt AI. Therefore, by adopting AI strategies that align with the dynamics of the digital economy, emerging market telecommunication firms can deliver more excellent value to their customers.

Overcoming the obstacles in section 5.3.2.2.1 of this chapter requires strategic investment in data management and infrastructure linked to the digital IT infrastructure enabler mentioned in section 5.3.2.1.1. Strong data governance practices and careful cost management through possible public-private partnerships are also required. Addressing the ineffective management of human resources requires strategies that include talent development, clear communication on the benefits and implications of AI adoption and fostering an environment that encourages learning and development. Furthermore, the obstacles reflected in section 5.3.2.2.3 of this chapter can be addressed by developing in-house AI capabilities to reduce the reliance on big tech, actively participating in policy discussions with regulatory authorities and exploring renewable energy sources to support the AI adoption to mitigate sustainability concerns.

The findings' theme of promoting digital inclusion aligns with the environmental context of the TOE framework (Cruz-Jesus et al., 2019) by illustrating that external societal factors influence organisational strategies. Some participants perceived AI adoption as a catalyst for social change by contributing positively to social equity. Additionally, the findings align with the principles of service-dominant logic (Sun & Gregor, 2023), where value is co-created with customers and civil society. Therefore, by extending telecommunication services to underserved communities, emerging market telecommunications firms generate economic value and enhance societal well-being.

### 5.3.3. Sub-RQ 3: How do managers perceive the use of AI to improve customer experience and engagement?

This research sub-question aimed to obtain insights into the perception of emerging market telecommunication managers' use of AI to improve customer experience and engagement as part of customer value creation. The study participants were unanimously optimistic about AI's potential yet still cautious about the implementation challenges highlighted in the previous section. They recognise AI as a means to improve customer experience and engagement. The participants' responses uncovered three key themes, illustrated in Table 13 below.

Table 13: Sub-research question 3 codes, categories and themes

| Sub-research question 3 | Codes | Categories | Themes |
|---|---|---|---|
| How do managers perceive the use of AI to improve customers' experience and engagement? | - Customer value management<br>- Next best action<br>- Personalisation<br>- Customer segmentation | Product and service personalisation | **Theme 10:** Enhancing customer-centric strategies |
| | - Customer feedback<br>- Customer acquisition<br>- Customer journey<br>- Communicating to customer<br>- Customer support | Customer engagement | |
| | - Target marketing<br>- Marketing | Marketing optimisation | |
| | - Predict customer complaint<br>- Behavioural analytics<br>- | Behavioural and predictive analytics | |
| | - Authentication<br>- Fight fraud<br>- Vandalism | Customer safety | |
| | - Train internal data<br>- Insights<br>- Smart traffic lights<br>- Decision making | AI-decision making | **Theme 11:** Improved decision-making |
| | - Financial reporting<br>- Auditing<br>- Efficiencies<br>- Gap in operational environment<br>- Knowledge management<br>- Customer churn management | Process optimisation | **Theme 12:** Achieving operational excellence and driving financial performance |
| | - Smart networks<br>- Predict network outages<br>- Network design | Network optimisation | |

| | | | |
|---|---|---|---|
| | - Improve network availability | | |
| | - Revenue diversification<br>- | Improve financial performance | |

Source: Author's own

#### 5.3.3.1.1. Discussion of theme 10: enhancing customer-centric strategies

During the study and through the knowledge and experience of participants, I discovered that AI technologies enable a deeper understanding of customer behaviours and preferences through advanced data analytics, facilitating personalisation. Personalisation enhances customer engagement by making interactions more relevant and meaningful. AI-driven engagement tools like chatbots and virtual assistants provide real-time assistance and support, improving responsiveness and accessibility. Table 14 below presents participants' verbatim quotations as evidence that AI can enhance customer-centric strategies to improve customer experience and engagement.

Table 14: Evidence of enhancing customer-centric strategies using AI improves customer experience and engagement

| Theme | Participant | Quotation |
|---|---|---|
| Enhancing customer centric strategies | P8 | "So what this capability brings for us is a risk indicator around certain categories, and then what are the drivers to those risk levers? So that's the propensity piece. So, when a customer comes in, we put in your number. We're able to see, OK, Sydney is high risk, low risk, medium risk. He has the three drivers of his risk rating or two drivers or one driver. And then below that is where we bring what we call NBX, right? So NBX is next best action, next best offer. So, X basically means anything, right? But it's your next, next best thing in essence. So, if there's a Job to be done around a commercial activity, what's the deal that we should be proposing to the customer or the offer? If there's a job around service, what kind of service instruments should we be using to de-risk the customer from a churn perspective? So that |

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|---|---|---|
| | | then gets presented back to the agent and they can have a meaningful conversation without just throwing away value.” |
| | P1 | “So, I think we can use AI from that point of view to create a much safer environment, or to fight against that vandalism and fraud.” |
| | P2 | “So, from a customer sales perspective, is we're in an industry where things change very quickly. Now getting information and the right information for go to market is very expensive for us. It's limited in how many medias and channels we can therefore disseminate the information, which then means your customer adoption time is quite long. If you have AI, it's quick, it's easy, it's cheap.” |
| | P9 | “We need to start understanding their customers better via AI, each and every one of them, okay? I guess, if you've got 38 million customers, it is difficult for us humans to do that, but AI, I think they can.” |
| | P6 | “I think one of the easiest, I'd say, application would be customer segmentation and marketing, where you can use custom in order to group your customers so that you know what kind of product you'd want to design for your customers.” |
| | P4 | “A lot of emerging markets, they're starting to appreciate the customer service that comes with it, the chatbots. I mean, your virtual assistants. But also, equally the predictive analytics that comes with it, especially if you want to personalize your service.” |
| | P3 | “Looking at customer value management, especially from the area that I work in, these things like your personalised offers, sometimes there is a bit of AI that goes into that in terms of like the optimisation engine that pushes your preferred offers to you as a customer” |
| | P8 | “I think, you know, at the heart of it, what we, what we try and measure is effort, right? So, customer effort. And we've just started measuring that. And ultimately, for me, |

| | | |
|---|---|---|
| | | that will be a true test of whether we are getting these capabilities right. So, when you ask the customer, you know, how much of effort do you have to put in to do business with my organisation? The answer should be low to no effort, right?" |

Source: Author's own

Participants unanimously agreed that AI can improve customer experience and engagement. Some views were similar, but there were varying perspectives. Participant 8 mentioned the use of AI in propensity models to predict what the next best action for a customer should be. Linked to that is the quote from Participant 4, which mentions using AI for customer service. From a different perspective, participant 3 mentions using AI to personalise offers, supplemented by participant 9, who mentions that AI must be used to understand every unique customer as it is difficult for humans to achieve that.

#### 5.3.3.1.2. Discussion of theme 11: improved decision-making

During the study, some participants highlighted that AI facilitates data-driven decision-making by eliminating biases inherent in human judgment. Managers can make more objective decisions by relying on empirical evidence and statistical models. Table 16 below presents participants' verbatim quotations as evidence that AI can be used for improved decision-making.

Table 15: Evidence of using AI for improving decision-making

| Theme | Participant | Quotation |
|---|---|---|
| Improved decision-making | P7 | "I mean, traffic lights, as an example, is something I would do if I was an EBU. I'd get some smart meters and some AI at traffic lights to know you know there's certain points I'm sure you've driven out of our office at a certain time of the day I actually don't leave between four and five because you're just going to get stuck when you it actually can flow if they've got smarter ways of managing the traffic flows right is to say okay at this time of the day you actually can't let this traffic light close because there's still a lot more traffic coming. So how do you build a model where the traffic light just stays |

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|---|---|---|
| | | green because there's actually no cars that are being picked up, right? Because sometimes you get to a traffic light and you're the only person there. But the traffic light is configured that after this time, this one must switch off, this one must start. I'm just giving examples of many different use cases that I think AI could really help us." |
| | P3 | "When I say data-driven culture, I mean creating a space where the decisions within the organization are data-driven. So instead of like thumb sucking or just imagining things and making a decision based on what we think, it becomes vital to use the data that is at our disposal within the organization." |
| | P9 | "Yeah, because you know, we use AI, you know what I mean, sort of data science techniques, so they go hand in hand, you know? Because most of it, the one thing you do, you do to just train a model, okay? And it starts helping you to make decisions." |
| | P2 | "I think more than anything, we're probably using it more for insights because telcos have huge amounts of data." |

Source: Author's own

There were varying comments on the use of AI for decision making; Participant 9 mentioned that AI models could be used to help humans make decisions, and Participant 3 emphasised that decisions should not be thumb sucked, but rather decisions should be based on data.

#### 5.3.3.1.3. Discussion of theme 12: achieving operational excellence and drive financial performance.

Through the experiences and knowledge of participants, I discovered that participants recognise AI adoption as a critical driver of operational excellence and financial performance in emerging market telecommunications firms. AI technologies automate routine tasks, optimise processes, and enhance productivity, leading to significant operational improvements. Operational excellence is achieved by leveraging AI for predictive maintenance, network optimisation, and process automation. Predictive maintenance, for example, uses AI to forecast equipment failures, allowing for timely interventions that minimise downtime. AI also enhances operational excellence by

enhancing audit, billing and collections processes. From a financial perspective, AI drives performance by increasing revenues with new revenue streams and using AI to upsell and cross-sell. Finally, Enhanced customer experiences lead to higher customer retention and acquisition, boosting revenue streams.

However, one participant differed, having not seen any benefit from using AI. Table 16 below presents participants' verbatim quotations as evidence that AI can be used to achieve operational excellence and drive financial performance.

Table 16: Evidence of AI can be used to achieve operational excellence and drive financial performance.

| Theme | Participant | Quotation |
|---|---|---|
| Achieving operational excellence and drive financial performance | P10 | "I'm aware that some organizations, including my organisation, are running POCs or proof of concepts to apply AI to predict network outages. So for example, if you give an AI access to a large enough data set, And it's a self-optimizing or self-learning AI, meaning you give it data, it'll come up with its own insights. You can begin to predict network outages, let's say, based on escalation of traffic, degradation of quality of service, and so on and so forth. And it enables the operations teams to proactively address issues before they become service outages." |
| | P9 | "For my environment, from the way we design and forecasting where the network will be growing. That will result to a customer getting the best experience and it will result to the company effectively utilizing the investment. I think for me, that's win number one for the customer and also for the organization, by the way, okay? That's win number one." |
| | P8 | "So obviously under process optimization, you can look at like time to capture, you know, how speed to get an order speed for fulfilment." |
| | P8 | "We do something like almost a million calls a month. So we speak into every 800,000 customers every single month, of course, postpaid and prepaid. But we do not |

| | | |
|---|---|---|
| | | generate a single set of revenue from that. Right? So, there's opportunities to upsell, cross-sell, package migrate, add new lines, do upgrades, sell VAS, sell digital services, sell you mobile, sell you insurance. There are so many opportunities. I mean, the opportunities are endless, but we are not profiling our customers properly and enabling the agents to have the right conversation because also you can't just sell anything to any customer, you know, when you have them in front of you, you want a more focused kind of conversation." |
| | P7 | "I mean, even I'm not an auditor, I didn't do audit, I did a little bit in my career at some stage, but I'm not an auditor, I don't have an audit background, right? But is it practical to make people go through documents and documents? Or do you want the insights of what's actually coming out of that data? Right? " |
| | P7 | "So, it's around that, around also understanding what devices customers have in those specific areas. So, if you're predominantly a 5G area, how do you smartly make, smart networks is where I'm going, right? Smart networks. I would also look at other new, exciting business opportunities for my organisation, especially in the enterprise business space." |
| | P6 | "And then a branch of AI, which is machine learning as well, you're able to use that to predict churn." |
| | P5 | "So, from a revenue perspective, the way I see it, leveraging AI in order to be able to Firstly, engage your customers in a faster way. So being able to have that competitive advantage where you're able to contact a customer and be able to provide them with the solution that resonates with them." |
| | P4 | "I will enable network optimization which will improve the call quality and the data speeds. And which is the service quality that we all are looking for?" |

| | | |
|---|---|---|
| | P4 | “Revenue diversification or new opportunities of revenue. You need to look at it because with innovation you can innovation that is basically driven by AI like Internet of Things. The smart home solutions and the 5G you know. It opens doors to new business models and services.” |

Source: Author’s own

Another finding was that AI can be used for operational excellence and driving financial performance. The views varied on this theme, where Participant 4 mentioned using AI to diversify revenue by innovating and finding new opportunities. Participant 9 has a perspective on using AI for network design and network usage growth forecasting to give customers a better experience while using the network. Linked to that, Participant 10 mentions that AI can be used to predict network outages and allow the operations teams to service the network before it becomes an outage. Finally, participant 6 mentions the use of AI to predict customer churn.

#### 5.3.3.2. Conclusion for sub-research question 3

The study highlights that managers in emerging market telecommunications firms view AI technologies as an asset that significantly enhances customer experience and engagement across many dimensions. From personalising products and proactive engagement for customer support to optimising marketing campaigns and providing secure services, AI technologies empower emerging market telecommunications firms to meet and exceed customer expectations. Additionally, by improving internal decision-making, various business processes, and network performance, AI ensures that the quality of service delivery is consistently high. Moreover, AI adoption provides financial performance benefits for the organisation and improved customer value creation.

### 5.4. Chapter conclusion

This chapter presented key findings from the 12 interviews, gaining deeper insights into the enablers, obstacles and outcomes of AI adoption in emerging market telecommunications firms. Addressing each research question, the findings contribute theoretically and practically to how AI adoption can be leveraged for customer value creation.

The study participants are managers in emerging market telecommunications firms who perceive AI as a transformative tool for improving customer satisfaction and promoting digital inclusion. AI technologies can deliver personalised, efficient services that enhance customer experiences and expand access to digital technologies for underserved communities. These perceptions highlight the strategic importance of AI adoption in achieving both business objectives and social impact.

The technology obstacles to AI adoption identified during the study include data management, connectivity, privacy, and high implementation cost concerns. Secondly, the organisational obstacles uncovered include ineffective management of human resources, and finally, the environmental obstacles uncovered the dependence on big tech, regulatory, and energy sustainability concerns as crucial. These obstacles underscore the complex interplay of technological, organizational, and environmental factors that hinder AI adoption in emerging market telecommunications firms. These challenges highlight the need for a comprehensive strategy that addresses technical limitations, enhances human resource management, and navigates external dependencies and regulatory landscapes. Overcoming these obstacles is essential for firms leveraging AI technologies to create enhanced customer value.

In conclusion, AI or any technology adoption requires enablers that organisations need to drive. This study identified crucial enablers as implementing a digital IT infrastructure as a foundation, inculcating an AI-driven culture, and keeping abreast of the external digital economy. Additional enablers are mentioned in this chapter, and the findings conclude that these enablers will drive the successful adoption of AI for customer value creation.

# 6. DISCUSSION

## 6.1. Introduction

This study aimed to explore the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry through the perceptions of a sample group of telecommunications managers and consultants. This chapter discusses the findings presented in Chapter 5 concerning the existing literature on AI adoption and customer value creation in the telecommunications industry of emerging markets that was reviewed in Chapter 2. The discussion is structured around the research questions and key themes identified in the findings. Each section compares the study's results with the literature, interprets the similarities and differences, and draws conclusions based on the evidence. The conclusions explicitly state whether the findings are consistent with, extend, or contradict the existing body of knowledge.

The findings in Chapter 5 confirmed the themes of the conceptual framework presented in Figure 3, finding similarities and differences based on contextual nuances. The findings in Chapter 5 also contribute to the conceptual framework with 12 new potential themes presented in Figure 10 in this chapter. For ease of reference, the conceptual framework presented in Chapter 2 is re-confirmed below in Figure 9.

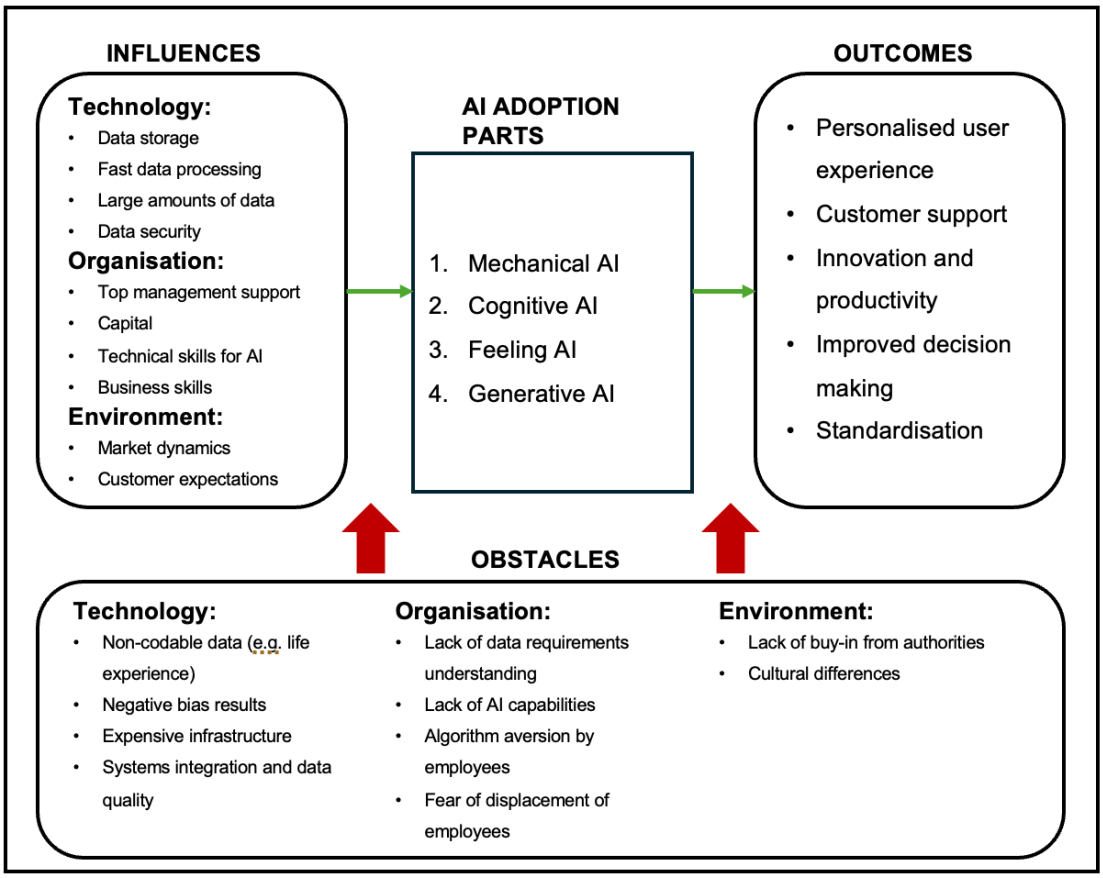


Figure 9: Conceptual framework before interview findings

Source: Author's own

A systematic approach was undertaken to compare and contrast the key findings of the themes with the literature. The first step was to search the existing literature in chapter 2 by keywords, and the second step was to search each keyword within the identified top-rated journal article. The final step was to search for different articles in my Mendeley library to gain additional insights or perspectives. After completing the literature summary on the theme, I completed the summary of the findings. I compared the literature to the study findings with conclusions on each theme.

Table 17 below provides a consistency matrix, presenting the research question, the corresponding theoretical framework, the key literature reviewed and the corresponding themes.

Table 17: Summary of research questions, theoretical framework, key themes and key literature scholars.

| Research question | Primary theoretical framework | Key theme | Key scholars |
|---|---|---|---|
| What is the nature of AI adoption in emerging market telecommunications companies? | Resource – based theory | Strategic intention with a pragmatic approach | - Barney et al., 2021<br>- Krakowski et al., 2023 |
| What are AI adoption's enablers, obstacles, and outcomes? | TOE framework | Digital IT infrastructure | - Cruz-Jesus et al.,2019<br>- Chatterjee et al., 2021<br>- Sepasgozar et al., 2019<br>- Kopalle et al., 2022<br>- Ullah et al., 2021<br>- Ganguly, 2024<br>- Wang et al., 2016<br>- Humeau & Deshpande, 2024<br>- Abraham et al. (2023)<br>- Enholm et al., 2021<br>- Verganti et al., 2020<br>- Mikalef and Gupta, 2021<br>- Bankins et al., 2024 |
| | | AI – driven | |
| | | Digital economy | |
| | | Data management, connectivity, privacy and costs | |
| | | Ineffective human resource management | |
| | | Dependence on big tech, regulatory and energy sustainability concerns | |
| | | Improved customer satisfaction | |
| | | Promoting digital inclusion | |
| How do managers perceive the use of AI to improve | Service – dominant logic | Enhancing customer-centric strategies | - Abraham et al., 2023 |
| | | Improved decision making | |

| | | | |
|---|---|---|---|
| customers' experience and engagement? | | Achieving operational excellence and drive financial performance | - Humeau and Deshpande, 2024<br>- Sun and Gregor, 2023<br>- Vargo and Lusch, 2017<br>- Hoyer et al., 2020<br>- M.H. Huang and Rust, 2021<br>- Bankins et al., 2024<br>- Shrestha et al., 2019<br>- Amin et al., 2019<br>- Balmer et al., 2020<br>- Höppner et al., 2020<br>- Qi et al., 2007 |

Source: Author's own

### 6.2. Sub-research question 1: What is the nature of AI adoption in emerging market telecommunications companies?

This research sub-question explores the strategic integration of AI in emerging market telecommunication. It aims to understand to what extent AI adoption is a priority for their organisation and develop new insights into the readiness of emerging market telecommunication firms to adopt AI and the current or potential impact AI will make on organisational performance. Table 18 below is an extract of Table 17 above, presenting the key themes and academic scholars reviewed for sub-research question 1.

Table 18: Key themes and scholars for sub-research question 1

| Research question | Primary theoretical framework | Key theme | Key scholars |
|---|---|---|---|
| What is the nature of AI adoption in | Resource – based theory | Strategic intention with a pragmatic approach | - Mikalef and Gupta, 2021 |

| | | | |
|---|---|---|---|
| emerging market telecommunications companies? | | | - Krakowski et al., 2023 |

Source: Author's own

### 6.2.1. Strategic intention with a pragmatic approach

#### 6.2.1.1. Summary of key findings

Participants agree on AI's potential benefits. However, readiness challenges hinder its adoption in emerging market telecommunications firms.

The findings reveal that while some emerging market telecommunications firms have begun experimenting with AI or investing capital in its adoption, overall progress could be faster. The slow adoption is attributed to a lack of foundational readiness, including insufficient AI-skilled workforce, reliance on manual business processes, and the use of legacy systems. Participants suggested forming partnerships with technology companies and experimenting with AI use cases to address these challenges.
The participants believe AI can provide optimisation, standardisation, and efficiency benefits that enhance customer value creation.

#### 6.2.1.2. Summary of literature

In section 2.1, Krakowski et al. (2023) provide insights into how AI adoption can change a firm's sources of competitive advantage by triggering heterogeneous resource dynamics. Section 2.2.2 delves into RBT, with Mikalef and Gupta (2021) emphasising that having AI technologies alone is insufficient to gain a competitive advantage and requires a unique mix of physical, human, and organisational resources to build AI capabilities.

#### 6.2.1.3. Comparison of key findings to literature

The literature and this study's key findings share similarities. The literature states that adopting AI can provide a competitive advantage (Krakowski et al., 2023). Participants confirm this, believing that AI can enhance customer value creation, thus providing a competitive advantage.

The literature also suggests that more than AI technology is needed to be competitive as it requires a mix of resources (Mikalef & Gupta, 2021). The study's findings reveal that

emerging market telecommunications providers need the foundations to adopt AI, meaning that the mix of physical, human, and organisational resources is still being prepared to adopt AI.

#### 6.2.1.4. Conclusion on strategic intention with a pragmatic approach

The evidence obtained from the literature and the research findings highlights the importance of AI adoption. Emerging market telecommunication firms that have yet to start the journey to AI adoption should consider making AI adoption a strategic priority. However, this should only be done by following due process. To succeed and reap the benefits of AI technologies, the entire organisation has to be prepared and aligned on the vision and setting a concrete foundation. The findings are consistent with the literature and provide an extension to the literature presenting an argument that emerging market telecommunication firms are not ready for AI adoption.

### 6.2.2. Conclusion of sub-research question 1

This research question explored the strategic integration of AI in emerging market telecommunication. It aimed to understand to what extent AI adoption is a priority for their organisation and develop new insights into the readiness of emerging market telecommunication firms to adopt AI and the current or potential impact AI will make on organisational performance. The study achieved the aim, as the research has understood that AI adoption is a priority in emerging market telecommunications firms and will significantly impact customer value creation. However, the firms must focus on laying the foundation for effective AI adoption.

## 6.3. Sub-research question 2

This research sub-question is grounded on the TOE framework (Cruz-Jesus et al., 2019). It presents the findings of an in-depth exploration of technology, organisation, and environmental enablers and obstacles to AI adoption in emerging market telecommunication firms. This question also explores the perceived outcomes of AI adoption in the emerging market telecommunications industry. Table 19 below is an extract of Table 17 above, presenting the key themes and academic scholars reviewed for sub-research question 2.

Table 19: Key themes and scholars for sub-research question 2

| Research question | Primary theoretical framework | Key theme | Key scholars |
|---|---|---|---|
| What are AI adoption's enablers, obstacles, and outcomes? | TOE framework | Digital IT infrastructure | - Cruz-Jesus et al.,2019<br>- Chatterjee et al., 2021<br>- Sepasgozar et al., 2019<br>- Kopalle et al., 2022<br>- Ullah et al., 2021<br>- Ganguly, 2024<br>- Wang et al., 2016<br>- Humeau & Deshpande(2024)<br>- Abraham et al. (2023)<br>- Enholm et al., 2021<br>- Verganti et al., 2020<br>- Mikalef and Gupta, 2021<br>- Bankins et al., 2024 |
| | | AI – driven | |
| | | Digital economy | |
| | | Data management, connectivity, privacy and costs | |
| | | Ineffective human resource management | |
| | | Dependence on big tech, regulatory and energy sustainability concerns | |
| | | Improved customer satisfaction | |
| | | Promoting digital inclusion | |

Source: Author's own

### 6.3.1. Enablers of AI adoption

#### 6.3.1.1. Digital IT infrastructure

##### 6.3.1.1.1. Summary of key findings

A robust digital IT infrastructure is a critical enabler for AI adoption, as it provides the necessary support for scalability, integrations, and efficient data handling. Participants offered various insights on how digital IT infrastructure enables AI adoption. A modern digital IT infrastructure enables firms to handle large volumes of data generated by users and network operations. Key infrastructure components highlighted include cloud computing, high-speed networks and data centres.

#### 6.3.1.1.2. Summary of literature

In section 2.3.2.1, the influences of AI adoption are discussed. Adopting AI requires large amounts of data and solid infrastructure (Enholm et al., 2021; Verganti et al., 2020), and Mikalef and Gupta (2021) posit that storage infrastructure is crucial. Furthermore, Mikalef and Gupta (2021) emphasise that infrastructure for fast data processing is crucial.

#### 6.3.1.1.3. Comparison of key findings to literature

The literature and findings of the study are similar. Providing large amounts of data supported by robust IT infrastructure enables emerging market telecommunications to adopt AI.

#### 6.3.1.1.4. Conclusion on digital IT infrastructure

The study's findings are consistent with the literature. Digital IT infrastructure that allows for fast data processing and has scalable data storage to support varied volumes of data is a technology enabler for AI adoption.

### 6.3.1.2. AI-driven culture

#### 6.3.1.2.1. Summary of key findings

An organisational culture where the tone is set from the top, AI is embraced, and innovation is cultivated is crucial for adopting AI technologies in emerging market telecommunication firms. An AI-driven culture empowers employees at all levels to contribute to AI initiatives, promoting cross-functional collaboration. Leadership plays a vital role in establishing this culture by setting a clear AI vision and demonstrating commitment through resource allocation. The findings suggest that such a culture can reduce internal resistance and help accelerate AI adoption.

#### 6.3.1.2.2. Summary of literature

In section 2.2.1.1, top management support and the technology team’s readiness are crucial enablers of technology adoption (Chatterjee et al., 2021; Cruz-Jesus et al., 2019). Chatterjee et al. (2021) further state that assessing organisational readiness is essential to enabling AI adoption. Wang et al. (2016) posit that setting a pro-technology environment and technology competence are factors in the firm’s ability to adopt new technologies. Furthermore, RBT (Barney et al., 2021) suggests that intangible assets

such as organisational culture and employee expertise contribute to a firm's competitive advantage (Barney et al., 2021).

#### 6.3.1.2.3. Comparison of key findings to literature

The findings highlight that people matter in the AI adoption journey, with leadership playing a crucial role. The literature is similar to the findings, further stating that culture and people are intangible assets that create a competitive advantage.

#### 6.3.1.2.4. Conclusion on AI-driven culture

The findings potentially extend the literature by providing evidence of an AI-driven culture's critical role in AI adoption within emerging market telecommunications firms. The findings support the extant literature and emphasise the practical importance of cultural transformation in enabling AI adoption.

### 6.3.1.3. Digital economy

#### 6.3.1.3.1. Summary of key findings

External factors within the digital economy, such as increased competition, technological advancements, and the surge in data generation, enable AI adoption in emerging market telecommunication firms. The increased demand for innovative digital services encourages these firms to adopt AI to meet customer expectations and remain competitive. The growth of smartphones, e-commerce, and digital payment systems generates vast amounts of data that AI technologies can use for insights and service improvements. Participants highlighted that the competitive environment and societal shift toward a digital world necessitate the adoption of AI for emerging market telecommunication firms.

Participant 4 mentioned that we live in a digital era, emphasising the inevitability of embracing AI technologies. Additionally, participant 10 viewed it from a competitive perspective, stating that if competitors adopt AI, other firms must follow suit to remain competitive.

#### 6.3.1.3.2. Summary of literature

In section 2.2.1.2, Wang et al. (2016) highlight that competitive pressure may induce firms to adopt innovations, especially if there is a belief that non-adoption will cause a competitive disadvantage. Furthermore, an information-intensive industry will be more

willing to adopt new technologies and meet real-time information requirements (Wang et al., 2016).

#### 6.3.1.3.3. Comparison of key findings to literature

The literature and findings are similar regarding competitive pressures influencing the adoption of AI. Additionally, the literature and findings are similar in acknowledging another enabler: industries with large amounts of data. The findings provide an additional perspective relating to the digital era and increased demand for digital services being an enabler.

#### 6.3.1.3.4. Conclusion on the digital economy

The findings are consistent with the literature, confirming that the digital economy is a significant enabler of AI adoption. Furthermore, the study reinforces that external environmental factors are critical in AI adoption strategies for emerging market telecommunication firms. Finally, AI is an emerging technology. Therefore, the surge in other digital and emerging technologies drives the adoption of AI.

### 6.3.2. Obstacles to AI adoption

#### 6.3.2.1. Data management, connectivity, privacy and cost

#### 6.3.2.1.1. Summary of key findings

Data management, connectivity, privacy regulations and implementation costs are significant obstacles to adopting AI in emerging market telecommunications firms. These technological challenges are multidimensional and include:

- Ineffective data management: Poor data availability and poor data quality hinder the ability to leverage AI effectively.
- Unreliable connectivity: Real-time data processing is essential for AI-driven services. Inconsistent internet connectivity impedes the processing.
- Stringent data protection regulations: Strict privacy laws require emerging market telecommunications firms to implement advanced security measures, adding complexity to AI adoption.
- High implementation costs: The pervasive cost of implementing AI technologies presents a substantial barrier for emerging market telecommunication firms.

#### 6.3.2.1.2. Summary of literature

In section 2.2.1.2, Ganguly (2024) highlights that obstacles to technology adoption include implementation costs and infrastructure capabilities. Additionally, Ganguly (2024) revealed that the compatibility of emerging technologies with legacy systems is a significant obstacle. Furthermore, data quality, availability, and the lack of data privacy and security can impede the adoption of technology (Cruz-Jesus et al., 2019; Ullah et al., 2021).

#### 6.3.2.1.3. Comparison of key findings to literature

The findings and literature are similar in identifying ineffective data management, privacy, and cost as obstacles to AI adoption. The findings differ by identifying unreliable connectivity as an obstacle to AI adoption for emerging market telecommunication firms.

#### 6.3.2.1.4. Conclusion on data management, connectivity, privacy and cost

The findings are consistent with existing literature, affirming that data management challenges, privacy concerns, and high costs are significant obstacles to AI adoption in emerging market telecommunications firms. The findings extend the literature, highlighting connectivity as an obstacle for emerging market telecommunications firms.

### 6.3.2.2. Ineffective human resource management

#### 6.3.2.2.1. Summary of key findings

The study's findings highlight that ineffective human resource management, including fears of job loss, insufficient training, and resistance to change, are significant obstacles to AI adoption in emerging market telecommunication firms. Overcoming these challenges requires a strategic focus on skill development, clear communication about AI's role and benefits, and strong leadership to support employees through the transition.

The Participants highlighted varying human-related challenges that hinder AI initiatives. Participant 8 illustrated this by noting that AI could handle 40% of call volumes in a call centre environment, posing a challenge in utilising the staff that used to handle those call volumes. Participants 4 and 5 emphasised the importance of organisations acquiring or developing the right skills for AI adoption.

#### 6.3.2.2.2. Summary of literature

In section 2.2.1.2, Wang et al. (2016) identified the lack of skilled resources as a primary obstacle. According to Sepasgozar et al. (2019), adopting technology can come with resistance from employees due to fear of job losses. This notion is further supported by Kopalle et al. (2022), who identified that jobs such as call centre agents are likely to be replaced by AI.

#### 6.3.2.2.3. Comparison of key findings to literature

The findings and literature are similar in highlighting the lack of skills and the fear of job losses as obstacles to AI adoption in emerging market telecommunication firms.

#### 6.3.2.2.4. Conclusion on ineffective human resource management

The findings are consistent with the literature, confirming that ineffective human resource management and skills shortages are critical obstacles to AI adoption. The study emphasises the need for strategic human resource development to enable AI integration in emerging market telecommunications firms.

### 6.3.2.3. Dependence on big tech, regulatory and energy sustainability concerns

#### 6.3.2.3.1. Summary of key findings

Emerging market telecommunication firms face significant obstacles to AI adoption related to regulatory complexities, dependence on big tech companies, and environmental sustainability issues, particularly the high energy consumption of AI technologies. These challenges can impact the firms' autonomy, increase operational costs, and necessitate compliance with current and future regulations, thereby hindering the seamless adoption of AI.

The regulatory environment in emerging markets is often complex and uncertain, with rapidly evolving laws relating to data protection and telecommunications operations. The dependence on large technology firms such as OpenAI, Microsoft and Amazon for AI implementations makes the firms reliant on external entities for critical technologies. Furthermore, AI technologies consume significant amounts of energy, leading to sustainability concerns amid global climate change. Participant 10 highlighted that the

energy consumption of generative AI is astronomical, expressing concern over its impact on climate change and sustainability. Participant 6's insights concerning the regulatory aspects noted that the telecommunications industry is heavily regulated. Whilst there are no specific restrictions on AI adoption, there is apprehension that future regulations might impose limitations.

#### 6.3.2.3.2. Summary of literature

In section 2.2.1.2, Wang et al. (2016) revealed that the complexity of the technology is one of the main challenges for organisations to adopt a technology, as highly complex implementations require a skilled workforce. Moreover, Ullah et al. (2021) posit that regulatory environments can impede technology adoption. However, in section 2.2.1, Sepasgozar et al.(2019) provide a view that technology adoption can improve relationships between citizens, businesses and governments.

#### 6.3.2.3.3. Comparison of key findings to literature

The literature and findings are similar to the regulatory concerns. However, Sepasgozar et al.(2019) argue that technology adoption improves relationships between business and government. The findings differ by introducing two environmental obstacles to adopting AI in emerging market telecommunications firms. These are energy sustainability concerns and the dependence on large technology companies.

#### 6.3.2.3.4. Conclusion on dependence on big data, regulatory and energy sustainability

The findings potentially extend the literature by highlighting energy sustainability concerns and the risk of dependence on technology providers as obstacles to AI adoption for emerging market telecommunications firms.

### 6.3.3. Outcomes of AI adoption

#### 6.3.3.1. Improved customer satisfaction

##### 6.3.3.1.1. Summary of key findings

The participants perceive that adopting AI can significantly improve customer satisfaction by streamlining customer service processes, personalising offerings, and enhancing the overall customer experience. They see AI as a strategic tool that meets evolving

customer expectations and provides a competitive edge. They highlighted that AI can offer more personalised products and services and provide standardised, 24/7 support for customer inquiries through AI customer service platforms like chatbots. Furthermore, this aligns with the service-dominant logic (Sun & Gregor, 2023) that emphasises value co-creation through enhanced customer interactions (Sun & Gregor, 2023).

#### 6.3.3.1.2. Summary of literature

Section 2.1 commences with Abraham et al. (2023) and Humeau & Deshpande(2024) articulating that AI can revolutionise the telecommunication industry. AI can assist telecommunication firms with enhancing network optimisation, customer service, predictive maintenance and personalised offerings (Abraham et al., 2023; Humeau & Deshpande, 2024).

#### 6.3.3.1.3. Comparison of key findings to literature

The literature and findings are similar insights concerning AI's impact on emerging market telecommunication firms.

#### 6.3.3.1.4. Conclusion on improved customer satisfaction

The findings are consistent with the literature, affirming that managers view AI as enhancing customer-centric strategies. The study reinforces the established understanding of AI's benefits in improving customer experience.

### 6.3.3.2. Promoting digital inclusion

#### 6.3.3.2.1. Summary of key findings

The adoption of AI in emerging market telecommunications firms is perceived to promote digital inclusion by providing equal access to services and opportunities, thereby contributing to societal welfare. Digital inclusion ensures that all individuals and communities have access to and can effectively use information and communication technologies. Participants highlighted that AI enables emerging market telecommunication firms to extend their services to underserved populations, effectively bridging the digital divide. Moreover, from a societal welfare perspective, promoting digital inclusion was emphasised by Participant 5, mentioning that using AI allows customers in remote areas to have the same experience as those in urban areas. Participant 8 provided a different perspective, adding that AI adoption creates new career opportunities.

#### 6.3.3.2.2. Conclusion on promoting digital inclusion

Promoting digital inclusion was not part of the literature review in Chapter 2. This is potentially an extension to the existing literature on the outcomes of AI adoption in the emerging market telecommunications industry.

### 6.3.4. Conclusion on sub-research question 2

The discussion has integrated the study's findings with the existing literature, revealing that the results are broadly consistent with and potentially extend the current body of knowledge on the enablers, obstacles, and outcomes of AI adoption in emerging market telecommunications firms. This study contributes to the theoretical discourse by validating the applicability of established frameworks and highlighting new dimensions such as energy sustainability and promoting digital inclusion. Table 20 below summarises the themes and whether the findings are consistent with, an extension of or in contradiction to the literature.

Table 20: Summary of themes and findings outcome compared to literature

| Research question | Key theme | Outcome |
|---|---|---|
| What are AI adoption's enablers, obstacles, and outcomes? | Digital IT infrastructure | Consistent |
| | AI – driven culture | Extension |
| | Digital economy | Consistent |
| | Data management, connectivity, privacy and costs | Consistent |
| | Ineffective human resource management | Consistent |
| | Dependence on big tech, regulatory and energy sustainability concerns | Extension |
| | Improved customer satisfaction | Consistent |
| | Promoting digital inclusion | Extension |

Source: Author's own

## 6.4. Sub-research question 3: How do managers perceive the use of AI to improve customers' experience and engagement?

This research sub-question aimed to obtain insights into the perception of emerging market telecommunication managers' use of AI to improve customer experience and engagement as part of customer value creation. Table 21 below is an extract of Table 17 above, presenting the key themes and academic scholars reviewed for sub-research question 3.

Table 21: Key themes and scholars for sub-research question 3

| Research question | Primary theoretical framework | Key theme | Key scholars |
|---|---|---|---|
| How do managers perceive the use of AI to improve customers' experience and engagement? | Service – dominant logic | Enhancing customer-centric strategies<br>Improved decision making<br>Achieving operational excellence and drive financial performance | - Abraham et al., 2023<br>- Humeau and Deshpande, 2024<br>- Sun and Gregor, 2023<br>- Vargo and Lusch, 2017<br>- Hoyer et al., 2020<br>- M.H. Huang and Rust, 2021<br>- Bankins et al., 2024<br>- Shrestha et al., 2019<br>- Amin et al., 2019<br>- Balmer et al., 2020<br>- Höppner et al., 2020<br>- Qi et al., 2007 |

Source: Author's own

### 6.4.1. Enhancing customer-centric strategies

#### 6.4.1.1. Summary of key findings

Participants perceive AI as a powerful tool for enhancing customer-centric strategies by providing personalised experiences and real-time support, which leads to improved customer experience and engagement. Additionally, AI enables a deeper understanding of customer behaviours and preferences through advanced data analytics, facilitating personalisation. AI-driven engagement tools like chatbots and virtual assistants provide real-time assistance and support, enhancing responsiveness and accessibility for customers. Participants shared various perspectives on how AI can improve customer-centric strategies.

#### 6.4.1.2. Summary of literature

In section 2.3.2.3, Verganti et al. (2020) explain that AI algorithms use behaviour data to make decisions about content recommendations, interface design and user experience. Furthermore, mechanical AI excels in standardisation; cognitive AI is adept at personalisation and feeling AI is optimal for rationalisation (M.H. Huang & Rust, 2020).

#### 6.4.1.3. Comparison of key findings to literature

The findings and literature are similar in that outcomes of AI adoption for customer value creation include personalisation through data analytics and the standardisation of business processes.

#### 6.4.1.4. Conclusion on enhancing customer-centric strategies

The study's findings are consistent with the literature reviewed in Chapter 2 of this research. Therefore, emerging market telecommunication firms should adopt all parts of AI, namely mechanical AI, cognitive AI, and feeling AI.

### 6.4.2. Improved decision-making

#### 6.4.2.1. Summary of key findings

The study participants agree that AI enhances decision-making by providing data-driven insights, leading to more effective managerial outcomes. Additionally, data-driven decision-making relies on empirical evidence and statistical models, thus making more informed decisions. Participants made varying comments on the use of AI for decision-making. Participant 9 mentioned that AI models can assist humans in making better decisions, while Participant 3 emphasised that decisions should not be made arbitrarily but should be based on data.

#### 6.4.2.2. Summary of literature

Section 2.3.2.3 reviews the literature on the outcomes of AI adoption. According to Bankins et al. (2024), AI technologies drive data-driven insights and enhance decision-making capabilities (Shrestha et al., 2019).

#### 6.4.2.3. Comparison of key findings to literature

The literature and findings are similar in that AI technologies can assist with decision-making and that decision-making should be based on data-driven.

#### 6.4.2.4. Conclusion on improved decision-making

The study's findings are consistent with the literature in that AI can improve decision-making in emerging market telecommunications firms.

### 6.4.3. Achieving operational excellence and driving financial performance

#### 6.4.3.1. Summary of key findings

Participants generally agree that AI adoption enhances operational efficiency and financial performance by automating tasks, optimising processes, improving network reliability, and increasing revenue through innovative services and improved customer experiences. Additionally, From a financial perspective, AI drives performance by increasing revenues through new revenue streams and enabling upselling and cross-selling opportunities. Enhanced customer experiences increase customer retention and acquisition, boosting revenue streams. However, one participant differed, stating they had not seen any benefit from using AI.

#### 6.4.3.2. Summary of literature

Section 2.3.2.3 reviews the literature on the outcomes of AI adoption. According to M.H. Huang and Rust (2021), cognitive AI predicts industry trends to create new products, services, and advertising. Additionally, mechanical AI produces standardised outcomes in packaging, distribution, and service delivery. When reviewing the literature on AI adoption in telecommunications specifically, AI is used for network management, customer relationship management and customer churn prediction (Amin et al., 2019; Balmer et al., 2020; Höppner et al., 2020; Qi et al., 2007).

#### 6.4.3.3. Comparison of key findings to literature

The findings and literature on the outcomes of AI adoption for customer value creation in the telecommunications industry are similar.

#### 6.4.3.4. Conclusion on operational excellence and driving financial performance

Telecommunication firms in emerging markets should adopt AI as the benefit of these technologies can drive operational excellence and financial performance. Additionally, the findings are consistent with the literature.

### 6.4.4. Conclusion on sub-research 3

The discussion has integrated the study's findings with the existing literature, revealing that the results are broadly consistent with the current knowledge on using AI to improve customer experience and engagement in emerging market telecommunications firms. This study contributes to the theoretical discourse by validating the applicability of established literature. Table 22 below summarises the themes and whether the findings are consistent with, an extension of or in contradiction to the literature.

Table 22: Summary of themes and findings outcome compared to literature

| Research question | Key theme | Outcome |
|---|---|---|
| How do managers perceive the use of AI to improve customers' experience and engagement? | Enhancing customer-centric strategies | Consistent |
| | Improved decision making | Consistent |
| | Achieving operational excellence and drive financial performance | Consistent |

Source: Author's own

## 6.5. Chapter conclusion

This chapter integrates the study's findings with the existing literature, revealing that the results are broadly consistent with and extend current knowledge on AI adoption and customer value creation in emerging market telecommunications firms. The study confirms that enablers such as digital IT infrastructure, AI-driven culture, and a supportive digital economy are critical for successful AI adoption. The findings are consistent with the TOE framework (Cruz-Jesus et al., 2019) and the RBT (Barney et al., 2021).

Significant barriers to adopting AI include data management challenges, connectivity issues, privacy concerns, high implementation costs, ineffective human resource management, dependence on big tech, regulatory hurdles, and energy sustainability concerns. While most of these obstacles are consistent with the literature, the emphasis on energy sustainability and reliable internet connectivity potentially extends the current body of knowledge.

Managers perceive AI as a transformative tool for enhancing customer experience and engagement through personalisation, improved decision-making, operational excellence, and driving financial performance. These perceptions align with the Service-Dominant Logic (Sun & Gregor, 2023), emphasising value co-creating with customers. Furthermore, the nature of AI adoption in emerging market telecommunications firms is in its infancy, requiring adaptation to local contexts.

Based on the findings and their alignment with the extant literature, there are various recommendations for emerging market telecommunications firms. Firstly, investment in a robust digital infrastructure is essential for handling data-intensive environments and ensuring scalability. Secondly, cultivating an AI-driven culture that embraces innovation and builds internal AI capabilities. Thirdly, the human resource challenges and fears must be addressed through communication regarding the benefits of AI and change management. Additionally, proactive engagement with regulatory bodies to alleviate concerns on data privacy issues and AI ethics. Furthermore, monitoring the energy consumption of AI technologies and investing in energy-efficient solutions. Finally, AI solutions need to be customer-centric; thus, customer feedback is essential to ensure that the adoption of AI meets their needs and enhances their experiences.

Figure 10 below presents an updated conceptual framework, first presented in chapter 2 of this study. The updated framework identified seven new themes, depicted below in green text.

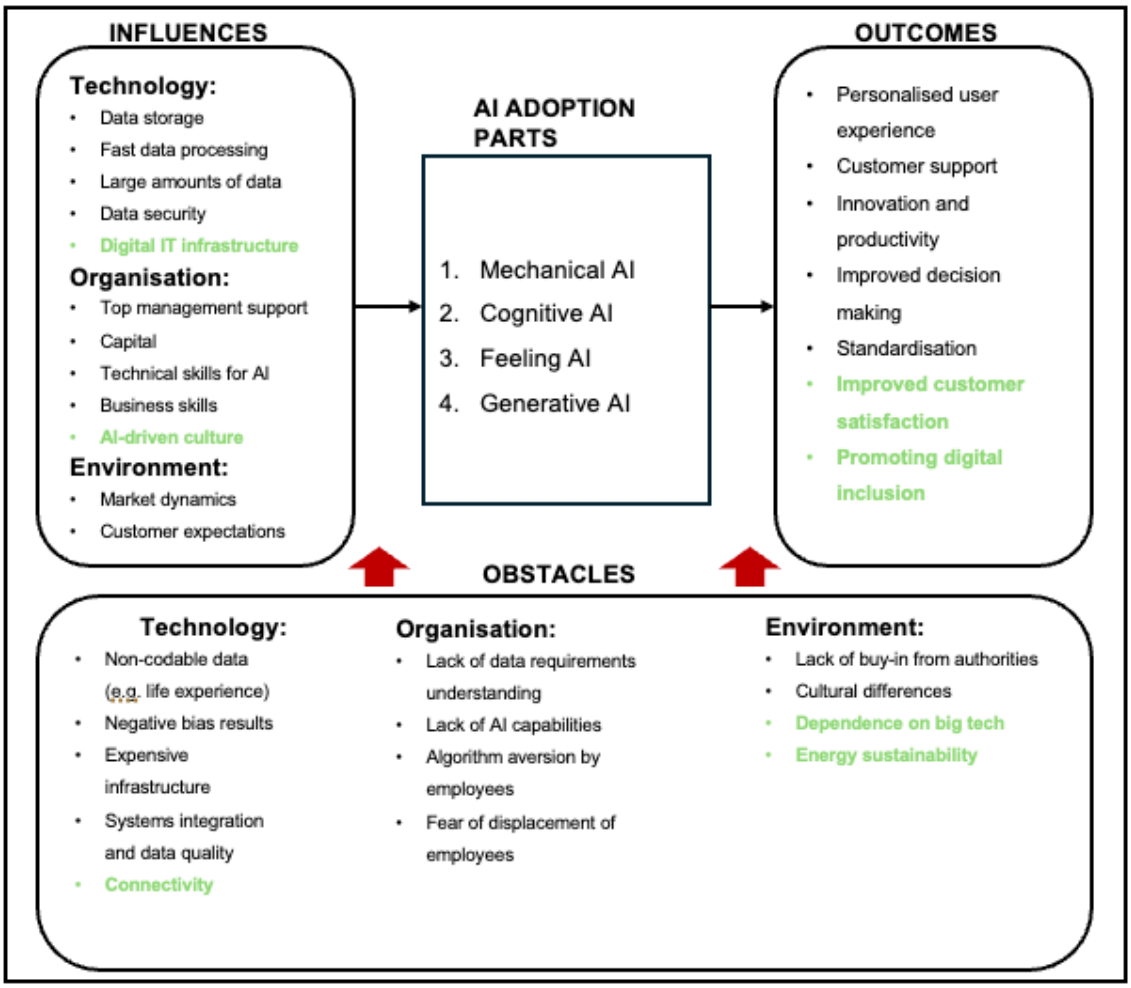


Figure 10: Themes from the literature review and new themes identified

Source: Author's own

# 7. CONCLUSION

## 7.1. Introduction

This study aimed to explore the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry. While adopting AI in the emerging market telecommunications industry presents the potential for significant strategic benefits in customer value creation, numerous complex challenges must be addressed to realise these benefits. Anchored by the TOE framework (Cruz-Jesus et al., 2019), RBT (Barney et al., 2021), and service-dominant logic (Sun & Gregor, 2023), the conclusion of the study offers several vital outcomes and contributions. Exploring these theoretical frameworks provided experiential insights into the enablers, obstacles, and outcomes of AI adoption in emerging market telecommunications.

The following conclusions combine the principle theoretical insights and address this study's research questions. Additionally, I offer practical recommendations for management, acknowledge the study's limitations, and provide suggestions for future research.

## 7.2. Principal theoretical conclusion

This study aimed to explore the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry. Grounded on the TOE framework (Cruz-Jesus et al., 2019), RBT (Barney et al.,2021), and service-dominant logic (Sun & Gregor, 2023), the conclusions below enhance our understanding by providing deeper insights into the dynamics of AI adoption and its impact on customer value creation in emerging market telecommunications firms.

This chapter's principal theoretical conclusions section is structured to answer the focal research question of how AI adoption can be changed to ensure optimal customer value creation. Three sub-research questions are discussed in this section to support this response.

### 7.2.1. Conclusion on sub-research question 1: What is the nature of AI adoption in emerging market telecommunication companies?

This research sub-question explores the strategic integration of AI in emerging market telecommunication. It aims to understand to what extent AI adoption is a priority for their organisation and develop new insights into the readiness of emerging market telecommunication firms to adopt AI, as well as the current or potential impact AI will make on organisational performance.

The study confirms that emerging market telecommunication firms have adopted AI for customer value creation. Additionally, the priority of AI adoption is high due to the potential benefits of creating a sustainable competitive advantage. The sustainable competitive advantage is realised through tangible and intangible resources that are valuable, rare and inimitable (Barney et al., 2021). The tangible benefits are the digital infrastructure, AI algorithms, and other technological assets that result from the AI implementation. The intangible assets are related to the AI-driven organisational culture, which fosters innovation and develops AI skills. Tangible and intangible assets are essential for a sustained competitive advantage (Barney et al., 2021).

Furthermore, the study showed that emerging market telecommunication firms need more time to adopt AI due to the foundations needing to be there. This aligns with the TOE framework (Cruz-Jesus et al., 2019), which emphasises the importance of technology readiness and organisational capabilities to adopt a technology (Chatterjee et al., 2021). Finally, what is new in the research is that emerging market telecommunication firms treat AI adoption as a priority; however, they require time to lay the foundation for successful AI adoption to create customer value.

### 7.2.2. Conclusion of sub-research question 2: What are AI adoption's enablers, obstacles and outcomes?

This research sub-question is grounded on the TOE framework (Cruz-Jesus et al., 2019). It presents the findings of an in-depth exploration of technology, organisation, and environmental enablers and obstacles to AI adoption in emerging market telecommunication firms. Additionally, this question explores the perceived outcomes of AI adoption in the emerging market telecommunications industry.

The enablers, obstacles, and outcomes identified are broadly consistent with the extant literature validating the TOE framework (Cruz-Jesus et al., 2019), posing that technological, organisational, and environmental factors are crucial to technology adoption. This study identified digital IT infrastructure, an AI-driven culture, and the digital

economy as enablers. Furthermore, the study identified data management challenges, connectivity, privacy concerns, high implementation costs, ineffective human resources management, dependence on large technology companies, strict regulatory environment and energy sustainability concerns as obstacles. Finally, the study identified improved customer satisfaction and the promotion of digital inclusion as outcomes of AI adoption.

Dependence on large technology companies such as OpenAI, Amazon, and Microsoft and energy sustainability concerns are identified as obstacles to adopting AI in emerging market telecommunication firms, which is new to the research as it differs from the literature. Additionally, the promotion of digital inclusion as an outcome of AI adoption in emerging market telecommunication firms is observed as different from the literature.

### 7.2.3. Conclusion on the sub-research question 3: How do managers perceive the use of AI to improve customers' experience and engagement?

This research sub-question aimed to obtain insights into the perception of emerging market telecommunication managers' use of AI to improve customer experience and engagement as part of customer value creation.

The study determined that managers in emerging market telecommunication firms perceive AI as a technology that can significantly enhance customer experience and engagement. These findings are consistent with the service-dormant logic that emphasises value co-creation with the customer (Sun & Gregor, 2023) through AI. Furthermore, the perceptions of using AI to improve customer experience and engagement are consistent with the literature on adopting AI in telecommunications. The aligned uses include improving decision-making, product and service personalisation, network optimisation, and financial performance (Bankins et al., 2024; Shrestha et al., 2019; Verganti et al., 2020).

## 7.3. Research contributions

Krakwoski et al. (2023) pointed to the need for further research on AI in specific industries, and decision-making and problem-solving domains are required. This research has explored the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry. It has contributed by executing the theoretical application of the TOE framework (Cruz-Jesus et al., 2019), RBT (Barney et al., 2021), and service-dominant logic (Sun & Gregor, 2023) in the telecommunications

industry in emerging markets. The research outcomes contribute to the existing literature on AI adoption in emerging market telecommunications.

### 7.4. Management implications

This study developed a conceptual framework to help telecommunication firms in emerging markets navigate the complexities of AI implementations and effectively adopt AI to enhance customer value creation. The framework's constructs provide an in-depth understanding of AI adoption's enablers, obstacles, and outcomes to incumbent firm managers, local and regulatory authorities, and other stakeholders. I have identified several recommendations that can enhance the effectiveness of AI adoption, overcome obstacles, and realise the full potential of AI in creating customer value.

Firstly, organisational strategic alignment is essential. Where the organisation has established specific goals for AI adoption that align with the firm’s overall strategic purpose, this will allow for seamless integration and encourage collaboration between departments to ensure a cohesive AI implementation. Secondly, Mikalef and Gupta (2021) posit that AI adoption requires new skills. Therefore, the investment in human capital for skills development and recruitment needs to align with the AI strategy. Organisations must provide training and development programs to build internal AI expertise, ensuring talent is retained. Where there is a gap in human capital, recruitment strategies need to be aligned with the AI strategy to attract skilled professionals.

Continuing from an organisational perspective, organisational culture needs to be changed and managed to promote the adoption of AI. Verganti et al. (2020) provide examples of Netflix and Airbnb as having AI-powered innovation practices. Similarly, telecommunication firms need to value innovation and experiment with AI. Supporting this new culture will be change management initiatives that provide clear communication about the benefits of AI adoption to manage the resistance to change.

Furthermore, from a technological perspective, a solid foundational technology stack is needed. This may require investments in modernising the current technological infrastructure to support AI adoption endeavours. This includes data storage, availability, security, quality, and network capabilities, allowing AI adoption to scale as telecommunication firms grow and adapt to changing market environments. According to (Krammer, 2019), a firm’s innovative performance and quality improvements are increased with technological alliances with foreign partners. Therefore with the rapidly

changing environments, emerging market telecommunication firms should collaborate and partner with AI vendors and research institutions to access expertise from developed markets.

When market environments change, so do customer expectations. Therefore, there needs to be a focus on customer engagement. Customer feedback mechanisms are required to assess satisfaction with the decision-making process, satisfaction with the transaction outcomes, and customer engagement (Hoyer et al., 2020). Therefore, managers in emerging market telecommunications firms must establish channels for customers to provide input on AI-driven services and use the feedback to refine the offerings for enhanced customer value creation.

Lastly, there are significant regulatory compliance and ethical considerations related to the adoption of AI in the emerging market telecommunications industry. The recent introduction of the General Data Protection Regulation (GDPR) and Protection of Personal Information Act (POPIA) – for South Africa emphasises the need for firms that process personal information to protect it. Managers in emerging market telecommunications firms must ensure that the AI adoption initiatives comply with data protection regulations and ethical standards. Furthermore, adopting transparent AI algorithms to address potential biases will build trust with customers and stakeholders.

### 7.5. Limitations of research

This research aimed to explore the adoption of artificial intelligence and customer value creation in the emerging market telecommunications industry. Therefore, the scope of the study focuses on telecommunications firms in emerging markets, and the findings thereof are not directly applicable to other industries or developed markets. Furthermore, the second limitation is that the insights into managerial perceptions are drawn from 12 participants representing six firms. Therefore, the insights only capture the views across some emerging market telecommunications firms.

Additionally, the study explored only one strategic benefit: customer value creation. However, emerging market telecommunications providers could realise other strategic benefits from adopting AI. The final identified limitation of this study is that it did not include any empirical testing of hypotheses or quantitative measurement of the positive or negative impacts of AI adoption.

### 7.6. Suggestions for future research

AI adoption in emerging market telecommunications can transform the industry and society. Should telecommunications firms embrace AI strategically and intentionally, they can improve customer experience and engagement. Additionally, firms can improve operational efficiencies and drive innovation to address the digital divide. The journey towards realising the benefits of AI adoption is complex and requires commitment from all stakeholders: firms, customers, policymakers, and researchers. The insights developed from this study will provide some guidance on this journey. Furthermore, this study provides a foundation for continued exploratory and explanatory advancements. Four areas for future research were identified.

Firstly, additional quantitative empirical studies need to be conducted using statistical methods to measure the impact of AI adoption on customer value creation. This could be in the form of customer surveys to gather data on customer experiences and satisfaction with AI-driven services to understand the effectiveness of AI from the customer's perspective. The participants in this survey highlighted the use of AI chatbots for customer support and engagement; therefore, this is one such AI-driven service that could be surveyed in the telecommunications industry.

Secondly, participants identified policy and regulatory impact in the emerging market telecommunications industry as a critical obstacle to AI adoption if not proactively addressed. Future research could investigate how different regulatory environments affect AI adoption implementations.

Thirdly, AI adoption has significant implications for ethics, society and organisations. Minimising the potentially harmful outcomes of automated decision-making systems requires ethical consideration at every stage of their development, including setting algorithmic objectives, data collection, processing, feature selection, simulating algorithm behaviour, and data representation (Shrestha et al., 2019b). For example, personalisation algorithms curate and filter content in ways that expose users to less diverse options (Shrestha et al., 2019b). Therefore, future studies can explore ethical considerations related to AI adoption, including bias from algorithms, data privacy and the impact on society.

Finally, the participants in this study highlighted the fear of job displacement due to AI adoption as a significant obstacle to AI adoption. Future studies can focus on workforce

implications by studying the effects of AI adoption on employment within the telecommunications industry, including job displacement and new skill requirements.

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# APPENDICES

## Appendix 1 – Interview protocol

| INTERVIEW GUIDE | | |
|---|---|---|
| **Research Question** | **Section** | **Interview Question** |
| Background | Introduction | 1. Please tell me about your role in your organisation |
| | | 2. Please tell me about your experience in the telecommunications industry in emerging markets/developing countries |
| | | 3. Could you tell me about your understanding of AI technologies |
| **Main Research Question:** How can AI adoption can be changed to ensure optimal customer value creation | AI Adoption | 4. To your knowledge, can you tell how telecommunication organisations have adopted AI? |
| | | 5. To what extend is AI adoption a priority for telecommunication organisations? |
| **Sub Research Question 1:** What are the AI adoption enablers, obstacles and outcomes? | AI adoption (TOE Framework) - The outcomes of AI adoption | 6. What are the outcomes telecommunications organisations should expect to achieve by adopting AI for customer value creation? |
| | AI adoption (TOE Framework) - The enablers and drivers of AI adoption | 7. The next set of question relates to the drivers/enabler that are moving telecommunication organisations towards AI adoption in 3parts: |
| | | 7a. Firstly, what are the technological drivers for AI adoption? |
| | | 7b. Secondly, what are the organisational drivers for AI adoption? |
| | | 7c. Lastly, what are the environmental drivers for AI adoption? |
| | AI adoption (TOE Framework) - The obstacles of AI adoption | 8. The next set of question relates to the obstacles of that are moving telecommunication organisations towards AI adoption in 3parts: |
| | | 8a. Firstly, what are the technological obstacles/barriers for AI adoption? |
| | | 8b. Secondly, what are the organisational obstacles/barriers for AI adoption? |
| | | 8c. Lastly, what are the environmental obsctacles/barriers for AI adoption? |
| **Sub Research Question 2:** How do managers perceive the use of AI to improve customer experience and engagement? | Strategic value - Customer value creation | 9. In your expereince, in what ways have customers of mobile telecommunication organisations realised benefits from telecommunication organisations adoption of AI? |
| **End** | Conclusion | 10. Going forward, how can AI be used to improve customer experience and engagement? |
| **Interview guidance** | Probing questions | If the interviewee uses acronyms, clarifying questions will be ised to understand the meaning of the acronyms |
| | | Probing questions to get more indepth insights will be used: |
| | | - Could you please tell me more about that? |
| | | - Could you please give me an example of that? |
| | | - Could you thing about a particular time you had a challenge and what was the outcome |

Source: Author's own

## Appendix 2 – Codes

| 1 | Code |
|---|---|
| 2 | 24/7 customer support |
| 3 | 56% of CEOs say AI a priority |
| 4 | Accurate billing |
| 5 | Address queries quickly |
| 6 | Africa getting left behind |
| 7 | AI Adoption in Telco |
| 8 | AI with drones to fix faults |
| 9 | Architecutre not fit for purpose |
| 10 | Are all the systems in sync |
| 11 | Auditing |
| 12 | Automation |
| 13 | Availability of data centers |
| 14 | Availability of the internet |
| 15 | Bad data quality |
| 16 | Bad internal systems |
| 17 | Baseline architecture |
| 18 | Benefit of AI implementation as a customer |
| 19 | Bias on AI adoption |
| 20 | Billing and collections processes |
| 21 | Business process optimization |
| 22 | Can emoployees adopt / change |
| 23 | Carve out resources |
| 24 | Change mangement for AI-driven organisation |
| 25 | Chatbot |
| 26 | Chatbot solving queries |
| 27 | Climate change and sustainability |
| 28 | Cloud computing |
| 29 | Collaboration amongst partners |
| 30 | Communicating to customers |
| 31 | Competitors adopting AI |
| 32 | Connectivity |
| 33 | Cost savings for reducing customer complaints |
| 34 | Cost savings through proper analysis |
| 35 | Current challenges of humans - non standardisation of quality |
| 36 | Customer aquisition |
| 37 | Customer authentication |
| 38 | Customer behavioural analytics |
| 39 | Customer campaigns |
| 40 | Customer churn management |
| 41 | Customer engagement |
| 42 | Customer experience |
| 43 | Customer feedback |
| 44 | Customer life time value or customer loyalty |
| 45 | Customer product personalisation |
| 46 | Customer satisfaction |
| 47 | Customer segmentation |
| 48 | Customer sentiment analysis |
| 49 | Customer support |
| 50 | Customer troubleshooting |
| 51 | Customer value creation |
| 52 | Customer value management |
| 53 | Customisation of products |
| 54 | Customised pricing for products and services |
| 55 | Data availability |
| 56 | Data governance |
| 57 | Data inconsistencies |
| 58 | Data not easily available |
| 59 | Data privacy concerns |
| 60 | Data storage availabilty |

## Appendix 2 – Codes (Continued)

| 1 | Code |
|---|---|
| 61 | Data-driven culture |
| 62 | Decision making |
| 63 | Digital lives & ecosystem |
| 64 | Digtial transformation |
| 65 | Do more for the customer |
| 66 | Don't know who your customer is |
| 67 | Downside of AI |
| 68 | Efficiencies |
| 69 | Emissions |
| 70 | Employee attitudes |
| 71 | Employee awareness to drive adoption |
| 72 | Employment |
| 73 | Enable staff to service customer quicker in any channel |
| 74 | Energy concerns |
| 75 | Enviromental enabler of AI adoption in Telco |
| 76 | Enviromental obstacle of AI adoption in Telco |
| 77 | Ethical & trusted AI |
| 78 | Ethical behavior of AI |
| 79 | Experiment |
| 80 | Extreme weather affecting infrastructure |
| 81 | Failure to show value from AI experiments |
| 82 | Faster resolution of queries |
| 83 | Fear of losing jobs |
| 84 | Fight fraud and vandilism |
| 85 | Finance reporting |
| 86 | Foundation of AI |
| 87 | Frequency of data availability |
| 88 | Happy customer |
| 89 | Highly prioritized |
| 90 | Implementation cost as a barrier |
| 91 | Improve customer journey |
| 92 | Improved customer experience & engagement |
| 93 | Improved decision-making |
| 94 | Improved financial performance |
| 95 | Improved network availability |
| 96 | Inclusive of people |
| 97 | Increase revenues and decrease costs |
| 98 | Infrastructure |
| 99 | Infrastructure expansion |
| 100 | Insights |
| 101 | Internet availability |
| 102 | Internet of Things |
| 103 | Is education preparing for evolution |
| 104 | Is the voice of the employee positive |
| 105 | IT infrastructure |
| 106 | Knowledege of data architecture |
| 107 | Knowledge management |
| 108 | Labour laws |
| 109 | Leadership commitment |
| 110 | Learning and development |
| 111 | Legacy systems |
| 112 | Less calls and traffic to stores |
| 113 | Limitiations of AI |
| 114 | Little to no effort customer journey |
| 115 | Make customers and agents live easier |
| 116 | Manual processes |
| 117 | Market expectations |
| 118 | Marketing |

## Appendix 2 – Codes (Continued)

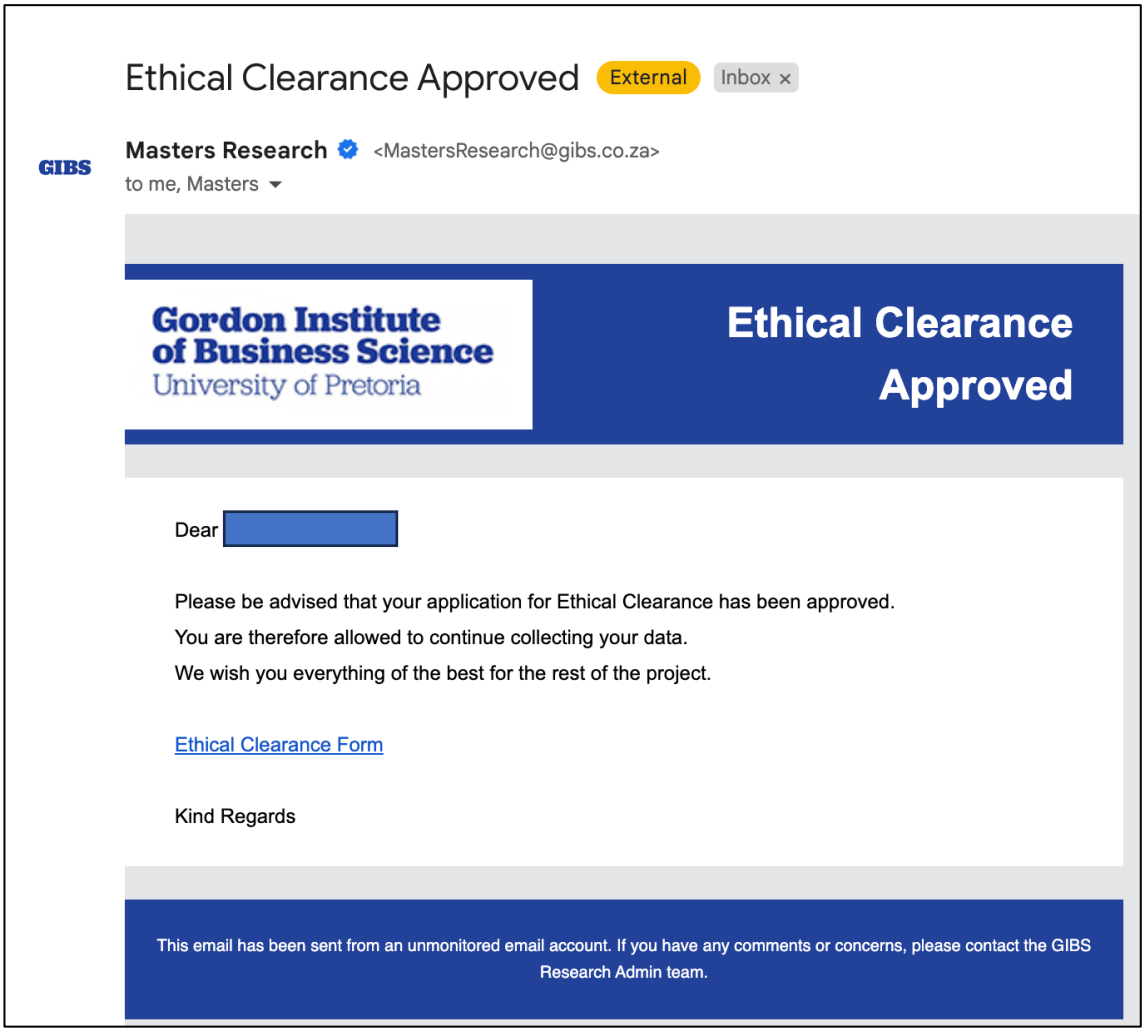
| 1 | Code |
|---|---|
| 119 | Natural disasters affecting infrastructure |
| 120 | Natural language processing |
| 121 | Nature of AI adoption in general |
| 122 | Network deisgn and forecasting |
| 123 | Network design |
| 124 | Network optimization |
| 125 | New career opportunities |
| 126 | Next best action (NBx) |
| 127 | Next level |
| 128 | No foundation |
| 129 | No technology roadmaps form AI providers |
| 130 | Not a priority at the moment |
| 131 | Not knowing what to do with AI |
| 132 | Operations and maintenance |
| 133 | Organisational AI policy |
| 134 | Organisational change, people and technology |
| 135 | Organisational obstacle of AI adoption in Telco |
| 136 | Organisations at the mercy of AI providers |
| 137 | Part of company strategy |
| 138 | Part of strategy and integrated reports |
| 139 | Partner with tech companies |
| 140 | Permission/Intrusiveness |
| 141 | Personalisation |
| 142 | Personalised experiences |
| 143 | Predict customer complaint |
| 144 | Predict network outages |
| 145 | Predictive analytics |
| 146 | Priorty and cautious |
| 147 | Privatisation of the internet |
| 148 | Process of adopting AI |
| 149 | Process of adopting AI - showcase to C-suite |
| 150 | Process optimization |
| 151 | Product design |
| 152 | Prohibitive organisational policies |
| 153 | Propensirity models in data analytics |
| 154 | Provide AI as a service |
| 155 | Public-private partnerships |
| 156 | Reach customers in remote areas |
| 157 | Reduced wait times for customer support |
| 158 | Regulatory |
| 159 | Return on Investment |
| 160 | Return on investment not visible |
| 161 | Revenue diversification |
| 162 | Revolutionize |
| 163 | Risk avoidance of using AI |
| 164 | Risk tolerance to implement AI |
| 165 | Same message with same quality |
| 166 | Seamless customer journey |
| 167 | Show value to the business |
| 168 | Significant |
| 169 | Skills for AI implementation |
| 170 | Slow adoption |
| 171 | Smart networks |
| 172 | smart traffic lights |
| 173 | Solving bad customer experiences |
| 174 | Speed of computing and scaling |
| 175 | Speed of deployment |
| 176 | Strategic view on AI needed |

**Appendix 2 – Codes (Continued)**

| 1 | Code |
|---|---|
| 177 | Strong intent |
| 178 | Supports mental health initiatives |
| 179 | System integrations with legacy systems |
| 180 | System malfunction |
| 181 | Targeted marketing |
| 182 | Targeted value propostion |
| 183 | Technological enabler of AI adoption in Telco |
| 184 | Technological obstacle of AI adoption in Telco |
| 185 | Telco is not ready |
| 186 | Telco market dynamics |
| 187 | Telco role in economy |
| 188 | Telecoms evolution |
| 189 | The gap in operational environment |
| 190 | Tone at the top |
| 191 | Top management support |
| 192 | Training of internal data, know what happened 2 years ago in 30seconds |
| 193 | Trust of AI |
| 194 | Types of AI |
| 195 | Types of AI - Supervised learning |
| 196 | Understanding strategy |
| 197 | Unions |
| 198 | Unsupervised learning |
| 199 | Upsell and cross sell |
| 200 | Upskilling people |
| 201 | Use of AI in telco |
| 202 | Uses of AI in general |
| 203 | Uses of AI in telco |
| 204 | Weaponisation of AI |

Source: Author's own

## Appendix 3 – Ethical clearance approval



Ethical Clearance Approved External Inbox ×

GIBS

Masters Research <MastersResearch@gibs.co.za>

to me, Masters

Gordon Institute of Business Science
University of Pretoria

Ethical Clearance Approved

Dear [redacted]

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.

## Appendix 4 – Informed consent form (Pro Forma)

Gordon Institute
of Business Science
University of Pretoria

**Informed consent for interview**

Dear Participant

I am a student at the University of Pretoria's Gordon Institute of Business Science conducting a master's research on **the adoption of artificial intelligence (AI) and customer value creation in the emerging market telecommunications industry** as part of my MPHIL degree with a specialisation in Corporate Strategy.

Part of the research requires me to interview managers and/or decision-makers who are involved or have knowledge/experience in the topic mentioned above, and it is for this reason that I would like to invite you to take part.

The interview will be recorded and take 45-60 minutes. During this time, you will be asked questions about the outcomes, enablers, and obstacles to AI adoption and customer value creation. You are free not to answer any questions or withdraw from the study at any time. Finally, the data will be kept securely, and your identity and the organisation you work for will always remain confidential.

Please indicate your acceptance by signing below, and should you need further clarification about the research project, please contact me or my supervisor. Our details are below:

Researcher: [redacted]
Email: 23023482@mygibs.co.za

Supervisor: [redacted]
Email: [redacted]

Signature of participant: _____ Date: _____

Signature of researcher: _____ Date: _____

**Appendix 5 – List of participant demographics**

| **Number of total participants** | **12** |
|---|---|
| Female | 5 |
| Male | 7 |
| # of participants in customer services | 3 |
| # of participants in customer value management | 2 |
| # of participants in risk management | 3 |
| # of participants in technology strategy | 1 |
| # of participants in network planning | 1 |
| # of participants in information security | 1 |
| # of participants in telco management consulting | 1 |
| Emerging market telecommunication firms | 5 |
| Consultant firm | 1 |

Source: Author's own