Graduate School of BUSINESS UNIVERSITY OF CAPE TOWN | MPhil

Exploring Inclusive Innovation: Factors Influencing Interoperability Adoption in South Africa's Mobile Money Service Provider Sector

A Dissertation
presented to

The **Master of Philosophy (MPhil)**
Graduate School of Business (GSB)
University of Cape Town (UCT)

In fulfilment
of the requirements of the Degree of
Master of Philosophy in Inclusive Innovation

by

Wenbo Zheng (郑文博)
ZHNWEN003

January, 2025

***Supervisor*: Associate Professor Camaren Peter**

Word count: 49004

Financial assistance provided by:
Bertha Centre for Social Innovation and Entrepreneurship

Plagiarism Declaration

This dissertation is a product of my own work, in which I am fully aware of and have adhered to the ethical principles surrounding plagiarism. I understand that plagiarism involves using another person's work and presenting it as my own, and I have taken all necessary steps to avoid this. I have diligently followed conventions for citation and referencing throughout, properly attributing all contributions and quotations from others, with appropriate citations and references.

This work has not been previously submitted, in whole or in part, for any degree at this or any other university. It has been submitted to Turnitin, and any concerns raised were addressed with my supervisor. Furthermore, I have received Ethics approval from the Commerce Ethics Committee. Each significant contribution or quotation from others' work has been cited and referenced, affirming that this dissertation is an original work

Signature: Signed by candidate
Student number: ZHNWEN003
Date: 2025 January 27

Acknowledgements

This dissertation has been a journey of growth, patience, and resilience, and it is with deep gratitude that I acknowledge the incredible people who supported me along the way. I am equally grateful to the Bertha Centre for its financial support, which allowed me to pursue this study and realise its possibilities fully.

First and foremost, I owe a profound debt of gratitude to my supervisor, Camaren Peter. Your wisdom, encouragement, and steady guidance transformed this experience. Through every insightful suggestion and each patient conversation, you inspired me to see beyond my limitations, helping me to structure my thoughts and reconnect ideas that felt lost. Thank you for believing in me and nurturing my confidence to take on this challenge.

To Jess Auerbach Jahajeeah, our program director, my heartfelt thanks for opening my eyes to the vast potential of inclusive innovation. Your unwavering encouragement in our first year laid the foundation for my work. I am immensely thankful to Mary Lister and her wonderful library team, especially Matthew Van Der Westhuizen, for always going the extra mile to find readings, verify references, and make the entire research process just a bit easier. A special thank you to Orrie Staschen from the Writing Centre; your expertise in structure and editing and kindness brought comfort and clarity to a process that often felt overwhelming.

To my remarkable MPhil 2023 cohort: each of you brought something truly unique, and together, we created a community that enriched this journey in ways I could never have anticipated. Thank you for being my accountability partners and my friends. The laughter we shared, our gatherings, and the deep, thought-provoking conversations will always hold a special place in my heart.

Finally, to my family and support structure at home, whose sacrifices and encouragement carried me through these past two years: my husband, Nathan Ravens, who read every word, stayed up with me on countless nights and cheered me on with unwavering patience and love. Thank you for being my safe harbour, the one who believes in me even when I doubted myself. And to my parents, 崔俭 (Cui Jian) and 郑志 (Zheng Zhi), whose quiet strength and steadfast faith held me up throughout this journey, your love has been my greatest source of resilience. Thank you unconditionally and wholeheartedly.

This dissertation is as much yours as it is mine. Thank you for every moment, every word, and every reassurance. I could not have done this without you.

Contents

Abstract

This study investigates the factors influencing the adoption of interoperability among Mobile Money Service Providers (MMSPs) in South Africa, focusing on the implications for financial inclusion and barriers to business-to-business collaboration. Despite the rapid expansion of mobile money platforms, the need for interconnectedness among these services hampers seamless transactions, thereby limiting the overall efficacy of mobile money systems.

Using an interpretive philosophy, this research adopts an inductive approach utilising qualitative methodology. A single case study method was implemented, comprising twenty in-depth interviews organised into three distinct cohorts to enhance the credibility of the findings. The analysis identified five prominent themes that significantly impact interoperability adoption: Size of the Footprint, User Needs, Degree of Risk and Control, Level of Strategy and Timing, and Profitability. Each theme was critically evaluated for its implications on decision-making processes within the MMSP sector, revealing that profitability is a primary motivator for co-opetition among service providers.

The findings indicate that although mobile money has the potential to catalyse inclusive innovation, there must be greater clarity between provider priorities and user needs. As such, this research underscores the necessity for greater alignment between academic insights and practical applications in fostering inclusive innovation within the sector. This study developed an inclusive innovation concept model as a potential tool to help refocus inclusive innovation towards a sustainability model.

Key Words

Inclusive Innovation, Mobile Money, Mobile Money Interoperability, Mobile Money Services Provider, Co-opetition Decision Factors

List of Figures

List of Tables

List of abbreviations

API	Application Programming Interface
APP	Application (typically referring to mobile applications in this paper)
DSTV	Digital Satellite Television
GSMA	Groupe Speciale Mobile Association
MMA	Mobile Money Agent
MMSP	Mobile Money Services Provider
SARB	South African Reserve Bank
SASSA	South African Social Security Agency
Stats SA	Statistics South Africa
SMEs	Small and Medium-sized Enterprises
RPP	Rapid Payments Program

Chapter 1: Introduction

We live in an era of unprecedented technological advancements, where innovation acts as both a catalyst and a response to complex societal needs (Unger, 2015). This dynamic interaction has stimulated the growth of inclusive innovation, which seeks to bridge existing inequalities by integrating marginalised groups into mainstream development and empowering them through access to essential services and opportunities (Heeks et al., 2013). The significant gap between societal needs and available solutions is particularly evident in developing countries such as South Africa, underscoring the urgent need for innovative, inclusive methods to tackle social and economic challenges (Mulgan 2006).

Social innovation has a strong tradition of prioritising collaboration, social change, and transforming power relations (Ayob et al., 2016; Mulgan, 2006; Nilsson, 2019; Peter, 2021). Accordingly, social innovation is becoming a global movement that can achieve much more in practice than previously imagined. The aim is to integrate marginalised groups excluded from mainstream development efforts (Heeks et al., 2013), thereby promoting inclusive innovation. Rooted in technological advancements, inclusive innovation can be pivotal in fostering financial inclusion (Dodgson et al., 2013; Agola & Hunter, 2016). One such technological advance is mobile money, which, when enhanced through interoperability, can transform financial ecosystems and create seamless access for underserved communities (Foster & Heeks, 2013; GSMA, 2022). Understanding how these innovations can be leveraged to promote broader participation and inclusion is key to fostering equitable progress and sustainable development. Social innovation has the potential to alleviate not just the inequalities experienced by marginalised groups. As stated by Unger (2015):

> *The purpose is not simply an attenuation of inequalities. It is the enactment of experiments that show how we can move towards giving the ordinary man and woman a better opportunity to live a larger life, with greater intensity, broader scope and stronger capabilities* (p. 248).

This study was undertaken in this spirit. It aimed to address the financial needs of marginalised groups through inclusive innovation. This topic is further discussed in the literature review, Chapter 2. The focus was on mobile money as a pathway to financial inclusion, seen as an inclusive innovation product. Additionally, mobile money services are reviewed in Chapter 3 as the research context to illustrate how and why they are essential tools

for financial inclusion. This study explores mobile money by identifying the key considerations for scaling innovation for a more significant impact. It is based on the assumption that by examining the role of Mobile Money Service Providers (MMSPs) in enhancing accessibility for underserved populations, we can better understand how to optimise their potential to drive financial inclusion.

1.1 Background

Financial inclusion stands at the forefront of social and inclusive innovation, representing a transformative force in today's society (Heeks et al., 2013). Money serves as the lifeblood of the financial sector, which is considered the heart of the economy (Adrian & Griffoli, 2023). It permeates every aspect of people's lives, influencing their daily activities and long-term prospects. Ensuring inclusive access to financial services is crucial for the development and progress of the financial sector for all sectors of society. Despite South Africa's status as one of the most developed economies on the continent (BBC News, 2023), many individuals still face difficulties when accessing financial services. Specifically, marginalised communities and small businesses operating in the informal economy encounter significant challenges in obtaining essential financial services (FinMark Trust, 2017; National Treasury, 2021; Stats SA, 2023).

Many people in the informal sector do not have or actively use formal bank accounts due to inconvenience, cost, lack of trust, and cultural factors (Chen, 2007; Aron, 2018; Alcock, 2018; Ozili, 2021). The informal economy, which includes informal trade, service provision, agriculture, and the provision of employment, plays a significant role in the country's economy (Chen, 2007; Neves & Du Toit, 2012; Alcock, 2018). According to Stats SA[1]'s 2024 survey results, the informal economy represents approximately 18.4% of total employment and around 12.3% of housing within informal dwellings (Centre for Affordable Housing Finance in Africa, 2024). Addressing the financial inclusion challenges people face in the informal economy is crucial for the sustainability of informal sector businesses. By providing accessible and tailored financial services, the informal financial service sector can unlock their economic potential and improve livelihoods (Aron, 2017). Enhancing financial literacy, such as establishing mobile banking solutions, can bridge the financial services gap and promote greater financial inclusion (Okello et al., 2018; Burn, 2015). This is particularly true when considering Sub-Saharan Africa, where informality is typically the majority condition.

[1] Statistics South Africa (Stats SA) is the national statistical agency of South Africa. It is tasked with collecting, analysing, and disseminating official statistics to support decision-making by the government, businesses, and the general public.

The informal sector has traditionally operated on a cash-based economy, primarily due to its convenience, affordability, and tax advantages (Seeking & Nattrass, 2005; Ozili, 2021). However, with the onset of the COVID-19 pandemic, there has been a notable shift towards digitalisation and the integration of banking services (GSMA, 2023). This transformation has been driven by various factors, including the increased use by the government and social grant system (Rogerwilco, 2022). Mobile payments have gained significant traction within the informal sector (GSMA, 2022; Rogerwilco, 2022). This phenomenon has resulted in a substantial adoption of mobile payment methods, providing individuals in the informal sector with greater convenience and financial inclusivity.

Mobile money refers to a digital payment system that enables financial transactions through a mobile device, such as a smartphone or basic mobile phone (Suri, 2017). It allows individuals to store, send, and receive money securely and conveniently without a traditional bank account (Suri, 2017). The mobile money industry has experienced significant growth globally, particularly since the COVID-19 pandemic (GSMA, 2022). This has created opportunities for innovation and transformation in the financial sector, leading to increased competition, especially in the advancement of the mobile money sector to provide an expanded range of services for its users (GSMA, 2022; Rogerwilco, 2022).

Unlike formal banks, mobile money has a broader reach into the informal sector, offering a more convenient way for people to make and receive payments (Rogerwilco, 2023; Kodom et al, 2022; Burn, 2015). Mobile money is an innovation that merges societal needs with technological advancement as a financial service solution that bridges accessibility gaps. It can be regarded as a social innovation that "*combines with both financial and technological innovations in producing and reproducing its offering*" (Peter, 2021, p. 7). Mobile money is an innovative product that explicitly serves those with the lowest incomes (Foster & Heek, 2013), which is typically the objective of inclusive innovation (Heek. et al, 2013). Mobile money addresses the issue of the underbanked or unbanked. It has been well adopted and utilised, positively impacting the underserved informal sector (Foster & Heek, 2013) by providing access to financial services that meet their needs.

1.2 Rationale for the Study

There are various types of sectors and key players that operate in the mobile money space, such as telecommunications companies functioning as mobile money network

operators[2], banks that provide mobile money wallets linked to their accounts, and MMSPs that operate without a bank account and are not affiliated with a single telecommunications network (Suri, 2017). Mobile money service users are primarily in the informal sector, the underbanked or unbanked informal traders (agents) or individuals. MMSP's business model mainly focuses on the agent base in South Africa, further empowering the micro, small, and medium-sized businesses operating in the informal markets. This has been further addressed and discussed in the literature review Section 4.2 for financial inclusion and the informal sector in South Africa.

However, most mobile money platforms in South Africa still run as a closed-loop ecosystem[3] (Nomanini, 2018). This means that account users can only conduct transactions with individuals using the same service provider's system (Nomanini, 2018). Such limitations result in inefficiencies for users, as the lack of interoperability between platforms prevents systems from communicating, transacting, or sharing data (Pelletier et al., 2020). These service providers often lock users into their closed ecosystem to secure market share. As a result, they can enjoy a monopoly over market prices (Aron, 2017) and claim ownership of any unused cash remaining in their ecosystem (Dargahwala & Riedl, 2021). This potentially creates challenges for consumers who may struggle to access the services they need or end up being charged higher fees by their providers. For example, a person may have a mobile money wallet account, but they cannot transfer money to someone with a different mobile money wallet account (Suri 2017). Once the money is received in the mobile wallet, it cannot be readily cashed out and can only be used for the services provided by the same provider. Most of these providers offer similar services but charge different transaction fees. Consequently, mobile money users may find themselves opening multiple wallets to access benefits or paying high transaction fees to utilise the funds they have deposited into their mobile wallet account.

To overcome the challenges mobile money users face in South Africa, there is a need to explore the barriers to greater business-to-business collaboration and interoperability among mobile money service providers. Interoperability refers to the ability of different mobile platforms to connect and enable seamless transactions between users, regardless of their service providers (Nomanini, 2018). Research on the experiences of other developing countries provides an overview of successful mobile money adoption that has enhanced financial

[2] Mobile money network operators are telecommunication network providers, major players are MTN, Vodacom, Telkom and CellC in South Africa

[3] Moore (1996) defined the business ecosystem as supported by a foundation of interacting organisations and individuals that is made up of the suppliers, customers, partners, competitors, and other stakeholders. The mobile ecosystem is often referred to as the business ecosystem but integrates the equipment, systems, and services into its network to serve its uses with mobile applications or software platforms (Zhang & Liang; 2011; Maréchal, 2016)).

inclusion through various levels of interoperability (GSMA, 2023). This raises the question of whether interoperability in the South African mobile money industry could unlock new opportunities to promote a more stable and transparent financial system. Interoperability requires a shift from closed ecosystems to an open and collaborative approach through enhanced interoperability that can lead to numerous benefits in the South African mobile money sector (Ahmad et al., 2020). This could reduce inefficiencies, eliminate barriers, increase financial stability, enhance consumer protection, and ultimately make financial services more affordable and convenient for users (Suri, 2017; Aker et al., 2016; Dargahwala & Riedl, 2021). Moreover, it can enhance the reach and relevance of the financial sector, particularly for underserved populations, making mobile money more accessible and convenient for the agents to provide services to its users (Aron, 2018; Bourreau & Valletti, 2015). This, in turn, can contribute to sustainable economic growth and greater financial inclusion (Avom et al., 2023). Embracing interoperability creates an open and scalable environment that can adapt to market demand, ensuring sustainability and long-term growth of mobile money services (Nomanini, 2018). By enabling interoperability, mobile money can become a key method of payment transactions, providing a reliable and efficient solution for individuals and businesses across all sectors. This move towards interoperability can promote a more inclusive and resilient mobile money industry in South Africa.

1.3 Research Objective, Aim and Research Question

The research objective is to explore the challenge of interoperability in the mobile money sector. This study aims to investigate the adoption of interoperability within the mobile money sector in South Africa, highlighting the factors influencing its adoption. Specifically, it addresses the following overarching research question:

What are the factors influencing interoperability adoption in South Africa's MMSP sector?

The research sub-questions flowing from the overarching research question are as follows:

1. **What are the challenges and potential benefits for MMSPs associated with implementing interoperability in South Africa?**
2. **What are the key considerations for interoperability adoption by stakeholders with decision-making influence within the MMSP sector?**

The abovementioned questions will guide this study toward achieving its research objectives. The research questions were deliberately phrased in more general terms to allow the inductive approach to yield unbiased insights. This study aims to contribute to the existing

knowledge gap by providing valuable insights into the factors and considerations MMSPs consider when deciding whether to adopt interoperability in their service offerings.

1.4 Research Approach

A literature review was conducted on financial inclusion and mobile money to address the research question, focusing on the benefits of interoperability and how this could advance financial inclusion through digitalisation. A single case study was designed to focus on the MMSP sector in South Africa to explore this further by identifying the various perspectives and factors influencing the adoption of interoperability. Primary data gathered through semi-structured interviews was analysed, and themes were developed to address the research questions.

1.5 Research Findings

This study identified four key findings that addressed the research question regarding factors influencing interoperability adoption in the South African MMSP sector. These are:

1. The key factors influencing interoperability adoption are the Size of the Footprint, User Needs, Degree of Risk and Control, Level of Strategy and Timing, and Profitability.
2. These factors are interrelated, and their impact on interoperability adoption varies depending on an MMSP's position and business focus in the sector. Here, profitability emerged as a key driver.
3. While mobile money was designed with inclusivity in mind, a gap remains between its intended goals and its ability to meet user needs consistently. Furthermore, this study highlights transaction speed as a key priority for mobile money users, a factor that has received limited attention in existing literature.
4. Lastly, this study developed an inclusive innovation conceptual model as a potential tool to help refocus inclusive innovation towards greater sustainability.

Understanding the factors influencing the adoption of interoperability among MMSPs is crucial for overcoming barriers to collaboration and advancing financial inclusion. This research uses a qualitative case study approach to bridge the gap between theoretical insights and practical implementation. The study identifies key factors affecting interoperability adoption in the South African MMSP sector, emphasising profitability and the necessity of win-win strategies from a decision-maker's perspective. Additionally, the analysis underscores the

misalignment between the inclusive objectives of mobile money services and the actual engagement user needs. These findings contribute to academic literature, practical applications, and future research directions, ultimately fostering a more interconnected and user-centred mobile money ecosystem.

1.6 Structure of the Dissertation

This chapter has provided a broad overview of the study. It introduced the research background to establish context and discussed the significance of the research topic. A research question was formulated to address the overall aim, which is to understand the factors influencing interoperability adoption within the MMSP sector of South Africa.

Chapters 2 to 6 presents the literature review, focusing on the literature on inclusive innovation, mobile money and the theory around decision factors that influence collaboration with competitors.

Chapter 7 focuses on the research design, utilising qualitative research through a single case study of the MMSP sector in South Africa. This chapter also discusses ethical considerations and the researcher's positionality. Chapter 8 presents the data analysis and findings, highlighting the themes and insights derived from the semi-structured interviews. Chapter 9 discusses contributions to the existing literature, including developing an inclusive innovation model, its limitations, and identifying potential areas for future research.

Chapter 10 documents the concluding remarks for this study.

Chapter 2: Introduction to Social Innovation and Inclusive Innovation

This chapter reviews the literature on social innovation, leading to a more defined concept of inclusive innovation. Inclusive Innovation is a fundamental theoretical framework supporting this study, making it essential to explore and comprehend this concept first. By examining what inclusive innovation entails and discussing its broader significance, we lay the foundation for the following chapters to build the necessity of studying mobile money interoperability in South Africa.

2.1 Social Innovation in Review

Social innovation is argued by Phills et al. (2008) as being,

> *A novel solution to a social problem that is more effective, efficient, sustainable, or just [more] than [an] existing solution and for which the value created accrues primarily to society as a whole rather than private individuals* (p. 36).

Social innovation originated in the late 19th century (Ayob et al., 2016) and has since evolved into a widely recognised approach for developing collaborative and innovative solutions with positive social impacts. (Ayob et al., 2016; Phillips et al., 2015; Reyner & Bonnici, 2022; Malhotra, 2022). The mainstream literature on social innovation focuses on key themes such as social impact and technological innovation, along with the interplay between social relations and these central themes (Ayob et al., 2016). Social impact and social relations have been described as social collaboration and collective action, which are central processes in social innovation, making the concept particularly attractive to policymakers (Ayob et al., 2016). In turn, greater emphasis on co-creation and co-development facilitates the development of effective social innovation processes and leads to outcomes that are becoming highly relevant and beneficial for society (Phillips et al., 2015; Windrum et al., 2016; Reyner & Bonnici, 2022; Malhotra, 2022).

Additionally, social innovation plays a crucial role not only in empowering communities but also in enhancing the capabilities of companies operating in challenging markets (Mortazavi et al., 2021; Malhotra, 2022). To manage social relations, businesses have increasingly adopted social impact to create social value by balancing social impact and profitability (Phillips et al., 2015; Menghwar &Daood, 2021). This approach aligns business strategies and practices with the goals of generating shareholder value while contributing to a

more positive impact (Phillips et al., 2015; Menghwar & Daood, 2021; Porter & Kramer, 2011). Technological innovation, in turn, emerges as a process when there are changes in routines, resources, policy and systemic flows driven by collaborative interests to address the needs of society (van Wijk et al., 2018; Phills et al., 2008; Porter & Kramer, 2011). Other than process innovation, the other stream of innovation refers to outcomes where new products or services have been delivered (Phills et al., 2008). An innovation must either be new or an improvement, i.e. to be more effective, efficient and long-lasting than the existing alternatives (Phills et al., 2008). As a result, social innovation contributes to companies further achieving market value and market share while securing a sustainable competitive advantage (Mortazavi et al., 2021; Malhotra, 2022).

Therefore, to effectively drive the social innovation process, a firm "top-down" vision is essential (van Wijk et al., 2018), as it typically refers to the role of experts, decision-makers, or policymakers (Manzini, 2014). However, this approach often lacks significant "bottom-up" engagement, critical for ensuring broad participation and inclusivity (van Wijk et al., 2018; Reyner & Bonnici, 2022). The "bottom-up" perspective involves the active participation of users directly impacted by the innovation (Manzini, 2014; Reyner & Bonnici, 2022). This dynamic aligns with the broader definition of inclusive innovation and may contribute to a more significant impact on the needs of a marginalised society that inclusive innovation aims to address.

2.2 Inclusive Innovation in Review

Inclusivity involves bringing marginalised groups into the fold, making social and economic opportunities more accessible, and paving the way to reduce inequality (George et al., 2019). Inclusive innovation refers explicitly to the development of new goods, services, or processes designed for and by marginalised groups (Heeks et al., 2013). The mainstream literature primarily focuses on lower-income populations (Heeks et al., 2013; Mortazavi et al., 2021). Moreover, Schillo and Robinson (2017) emphasise that inclusive innovation also focuses on improving the system and all livelihoods in a suitable way, in that *"…inclusivity is not simply a matter of selling innovation products to socially excluded groups or integrating small numbers of individuals from excluded groups within dominant innovation structures and processes*" (p. 42). This view was endorsed by Mortazavi et al. (2021), who performed a bibliometric analysis of 293 core and relevant journal articles on inclusive innovation from 2000 to 2019. Their study identified five critical aspects of innovation: "*(1) innovation as a tool for affordability, (2) innovation as a tool for inclusion, (3) the development of capabilities*

through innovation, (4) constraints related to social empowerment, and (5) innovation as an inclusive system" (Mortazavi et al., 2021, p. 736). The study underlined that inclusive innovation can only be effective when all these elements function optimally (Mortazavi et al., 2021). This further highlighted that inclusive innovation goes beyond offering affordable solutions. It is a system that aims to build capabilities and improve livelihood opportunities for lower-income individuals (Heeks et al., 2013; Mortazavi et al., 2021).

Like Mortazavi et al.'s study, the "*ladder of inclusive innovation*" (Heeks et al., 2013, p. 4) provides a conceptual framework that outlines progressive inclusion levels. This model systematically summarises how inclusivity can be deepened at each stage, advancing toward greater accessibility and participation. Heeks et al. (2013) outline six levels of inclusivity in innovation, from least to most inclusive and can be summarised as below:

- **Level 1 / Intention**: Innovators aim to benefit excluded groups.
- **Level 2 / Consumption**: Excluded groups consume the innovation.
- **Level 3 / Impact**: The innovation positively impacts their livelihoods.
- **Level 4 / Process**: Excluded groups participate in the innovation process.
- **Level 5/ Structure**: They help shape the innovation structures.
- **Level 6 / Post-structure**: Excluded groups fully included it the innovation process and outcomes. (Heeks et al., 2013)

The levels of inclusion are reflected in the supply-focused "top-down" approach to becoming a "bottom-up" collaboration in innovation. To achieve full inclusion, it is essential to foster collaboration among all relevant actors, concentrating on building capacity and empowering growth within marginalised communities and among those driving the innovation (Heeks et al., 2013; Mortazavi et al., 2021). Strengthening and advancing these innovation providers can help ensure that innovation remains viable and sustainable, ultimately allowing it to reach its full potential as inclusive innovation (Mortazavi et al., 2021).

2.3 Inclusive Innovation and Technology

The importance of innovation extends beyond economic success and should be viewed through the lens of inclusive development (Agola & Hunter, 2016). Economic development is closely tied to technological innovation, as "*technology transforms the way we live*" (Dodgson, 2013, p. 5). The growth of technological capabilities has played an increasingly significant role in integrating low-income consumers into the accessible mass market (Agola & Hunter, 2016). Kenya's mobile technologies are a prime example, becoming a global benchmark for inclusive

innovation (Agola & Hunter, 2016; Foster & Heeks, 2013). It has not only improved the financial inclusion of the unbanked but also transformed their social relations and positively impacted their livelihood (Ayob et al., 2016; Foster & Heeks, 2013).

Technological development has shown that inclusiveness can rapidly increase, mainly through mobile money. As an innovative product, mobile money is specifically designed to address the financial needs of marginalised groups, thereby improving their socioeconomic activity (Foster & Heeks, 2013; Molla & Heeks, 2007; Agola & Hunter, 2016; Jacolin et al., 2021; Fabregas & Yokossi, 2022). As inclusive innovation continues to develop, it is essential to study mobile money and its impact on financial inclusion. While much of the existing research has focused on the consumer side, there is limited research on the innovator's perspective and how this can lead to an inclusive system. This gap underscores the importance of studying mobile money from the service provider's perspective, which is the focus of this study. Understanding the role of mobile money providers is crucial for ensuring that these innovations reach marginalised populations and achieve their full potential in sustainably driving inclusive economic growth (Mortazavi et al., 2021).

2.4 Chapter Conclusion

In this chapter, we reviewed the literature on social innovation and inclusive innovation and the levels of inclusion, highlighting the critical role of technological advancements in fostering inclusiveness. The following three chapters will focus on mobile money and explore how it can better address the financial needs of the marginalised and promote inclusive economic development in South Africa.

Chapter 3: Mobile Money as an Inclusive Innovation Product through Technology

This chapter provides the essential research context for understanding mobile money in South Africa. It outlines mobile money, identifies its users, and explains its transaction flow. By delving into these aspects through a literature review, the chapter establishes a comprehensive foundation for understanding the operational mechanics of mobile money and its significance in financial inclusion.

The insights gained from this chapter are crucial for exploring how mobile money can be optimised and scaled to drive greater financial inclusion as an inclusive product that ultimately benefits underserved populations.

3.1 Mobile Money as Research Context

Based on a review of mobile money that spanned a decade (i.e. between 2001 and 2011) Diniz et al. (2011) define mobile money as,

> *Electronic money – being essentially digital – has attributes related to mobility and portability... It can be differentiated from other means of electronic payment…because of its ability to replicate the essential attributes of traditional money, such as: liquidity, acceptability and anonymity. Mobile money may be related to mobile wallet, which refers to a digital repository of electronic money developed and implemented on mobile devices, allowing peer-to-peer transactions (P2P) between mobile devices (M2M) from users of the same service. It is similar to a normal physical wallet and is able to store money and credit and debit cards* (p. 5).

Mobile money is different from mobile banking, where customers access their bank accounts through their phones (Ahmad et al., 2020; Suri, 2017). Rather, as pointed out by Suri (2017), "*mobile money is an application in the true sense of the word because it operates via software that is installed on a SIM card*" (p. 498). With the increasing affordability and accessibility of mobile phones, coupled with the expansion of mobile network coverage, a significant portion of the African population now has access to this technology (Beuermann et al., 2012; GSMA, 2022; Aron, 2018). The World Bank's report on the Global Findex database

further supported digital financial services in general and mobile money in particular, promoting financial inclusion (Ahmad et al., 2020; Jacolin et al., 2021).

Mobile money is also acknowledged by the World Bank as an integral component of the financial inclusion journey of underserved, marginalised or excluded individuals and communities (see Appendix A). Mobile money is now a mainstream financial service in many countries (GSMA, 2023). Thirty-three per cent of adults in Sub-Saharan Africa have a mobile money account, the largest share of any region in the world (The Global Findex Database, 2021). Globally, there are 1.6 billion registered mobile money accounts, and twenty-five per cent of the user accounts were added throughout the pandemic (GSMA, 2023). As the COVID-19 pandemic eased, mobile money still grew faster than before the pandemic period, as there was a change in consumer behaviour toward digital payment (GSMA, 2023).

The widespread adoption and usage of mobile phones in Africa have revolutionised how people communicate and access information (Aron, 2018), making them essential tools in today's society (GSMA, 2022). Several theories of financial inclusion have been examined by Ozili (2020), who highlighted that digital finance and financial innovation are instrumental in achieving financial inclusion. Numerous empirical studies investigated mobile money and concluded that benefits were in terms of encouraging saving behaviour, reduction in transaction costs, improvements in convenience, security (Lwanga & Adong, 2016; Aker et al., 2016; Ky et al., 2018) and time taken for the transactions (Jack & Suri, 2011). Other studies focused on the potential economic impact of mobile money, especially its role in contributing to financial inclusion (Ahmad et al., 2020; Molla and Heeks, 2007; Shaikh, et al., 2019; Okello et al., 2018; Kodom et al., 2022; Jacolin et al., 2021) and indicated that it could lead to a positive economic impact (Aron, 2017; Jacolin et al., 2021; Fabregas & Yokossi, 2022).

Mobile money is an innovative product designed to address the financial needs of marginalised groups (Foster & Heeks, 2013; Molla & Heeks, 2007). It has been adopted and used extensively by the informal sector, positively impacting the livelihoods of its users (Foster & Heeks, 2013; Molla & Heeks, 2007). Given the growing interest in this area, studying the stakeholders, systems, and processes involved in mobile money as a practical, inclusive innovation product is crucial. Understanding how users navigate mobile money and the transaction flow is essential for this research context.

3.2 Characteristics of Mobile Money Users and Transaction Flows

Typically, there are two main types of users: Mobile Money Agents (MMAs) and end consumers. MMAs are individuals or businesses that act as intermediaries between consumers

and the mobile money system (Aron, 2018). They are responsible for facilitating transactions on behalf of consumers and earn a commission from MMSPs. In addition, merchants and formal retailers facilitate mobile money transactions by offering devices and voucher top-ups as part of their services. While they contribute to expanding the reach of the mobile money market, they are not considered mobile money users themselves. MMAs and end consumers will be discussed separately below, with an example of a transaction and its flow for clarity.

MMAs are crucial in enabling unbanked and underbanked individuals to access financial services through mobile money in the informal economy (GSMA, 2023; Eijkman, 2010). MMAs can be banked or unbanked with a mobile phone or device subscription and still meet the MMSP's registration procedures (Aron, 2017; Shaikh et al., 2023). In the South African context, an MMA is often a trader who operates one or more shops in the informal sector. Mobile money systems rely on a network of agents (GSMA, 2023) linked with MMSPs under various contractual arrangements (Aron, 2018). The MMAs need to ensure that they have enough stock of e-money[4] in their e-wallet[5] to sell the requested service to the consumer (Suri, 2017; Eijkman, 2010). Typically, these agents will operate with multiple MMSPs and switch between the devices or systems based on their e-wallet balance, the commission that can be earned, and the network's connectivity.

Figure 1 below illustrates the process for carrying out a typical transaction in which a consumer requests a service, such as a Digital Satellite Television (DSTV) top-up, and pays the MMA in cash:

The following steps are involved in the process:

1. MMA uses the mobile application (App) or device to enter the request into the mobile money system.
2. Mobile (money) devices receive the order and check the MMA's e-wallet balance to confirm sufficient funds to complete the transaction.
3. The mobile device then instructs the application programming interface (API)[6] connection of the MMSP's system to connect to the third-party DSTV service to request the top-up.
4. The API confirms the successful top-up with the DSTV service provider.

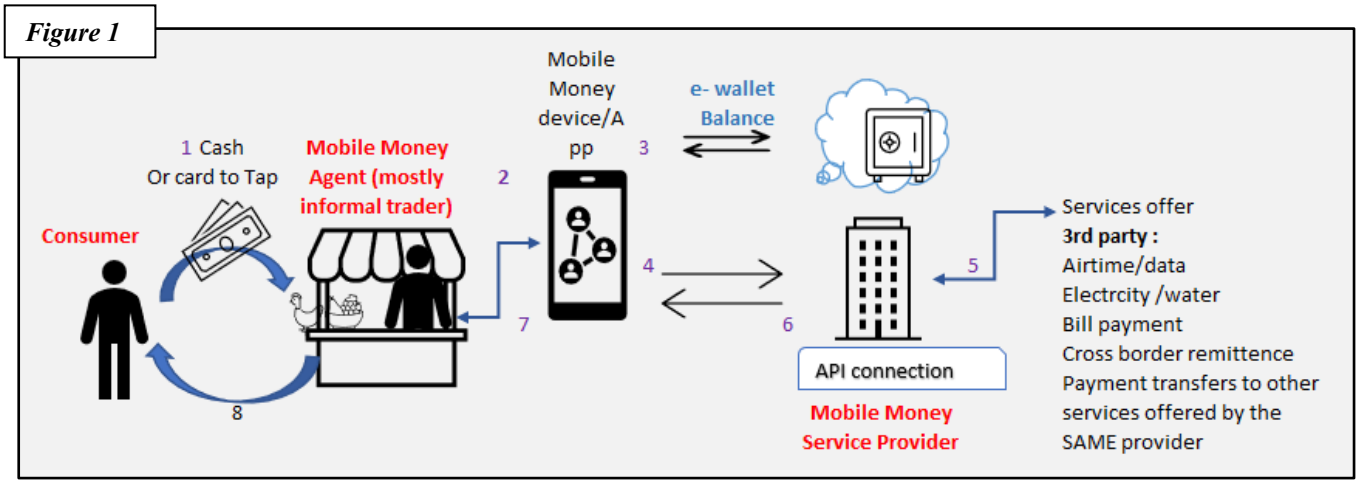
[4] Short for "electronic money", is stored value held in accounts of users, agents and the provider of mobile money services (GSMA, 2022).

[5] Short for "digital wallet or electronic wallet" is mirrored as a bank account, where users could store and manage their e-money (GSMA, 2022).

[6] As defined by Wikipedia: "API stands for Application Programming Interface. It is a set of rules that allows different software applications to communicate and interact with each other. APIs enable developers to access and use the functionalities of existing applications or services in their own software solutions".

5. The API confirms the successful top-up back to the mobile device.
6. The mobile device screen displays the confirmation of the DSTV subscription payment.
7. The MMA prints out a receipt for the consumer to confirm the transaction.

Figure 1: Typical Mobile Money Transaction Flow Through MMA



(Source: Author)

Other than MMAs, direct end users are another type of mobile money user. These customers download the mobile money application directly onto their mobile phones and directly stock the e-money in their e-wallet. Mobile applications require money to be deposited through a bank account or e-money vouchers purchased from a formal retail store or MMA. It is more convenient for the consumer as they can transact at any time, but an upfront deposit into the e-wallet is required to have an available balance when transacting (Aron, 2018). Users may conduct transactions anytime and anywhere if they have their phone and internet connectivity. These users will be able to perform transactions without any physical interaction. Refer to Appendix B for an illustration of a typical mobile money transaction flow directly with a consumer.

Mobile money users in Africa often transact exclusively through Mobile Money Agents (MMAs) rather than opening accounts and becoming direct users (GSMA, 2023). This preference is influenced by several challenges: poor network coverage in the informal sector, high data costs, difficulties in navigating mobile applications, language barriers, trust issues and concerns about fraud, and a preference for human interaction (Mogaji & Nguyen, 2022; Bizah, 2017; FinDev Gateway, 2024). Therefore, the success of mobile money relies heavily on the MMA network (Lonie, 2023; GSMA, 2023).

MMAs are both mobile money users and mobile money service business providers. Many MMAs are small and medium-sized enterprises (SMEs) that operate informally. In South Africa, 95 percent of SMEs have fewer than ten employees, and more than 80 percent are informal or unregistered micro businesses, according to McKinsey and Company (2022). While banks are limited by regulation and cost, mobile money provides a good opportunity to bypass these limitations, given that mobile money does not require linking with a bank account (Tengeh & Gahapa Talom, 2020; McKinsey & Company, 2022). This provides convenience and cheaper financial services to the informal sector in South Africa.

Although mobile money is an innovative product that paves the way to enhance financial inclusion for the informal sector, it has limitations. MMA performance represents a critical mass and constitutes a crucial income stream from the MMSPs' perspective (Lonie, 2023). Furthermore, a study conducted in Niger by Aker and Blumenthal (2015) concluded that regulatory barriers, lack of literacy, and limited agent networks were significant constraints to the adoption of nascent mobile money systems in developing countries. Similarly, creating a supportive environment for mobile money development in South Africa can effectively tackle proximity barriers (Simatele & Maciko, 2022). MMAs can be essential actors in bridging these gaps for consumers and providing a more enabling environment (Eijkman,2010). It has been demonstrated that MMAs are the key driver of the transformation to mobile money services in Ghana (Shaikh et al., 2023). MMA credibility and service quality stimulate customer empowerment, enhancing the use of mobile money services (Shaikh et al., 2023), which helps bridge the gap in financial literacy barriers and can be supported by trusted MMAs. Thus, building community trust is crucial for successful operations within the informal sector (GSMA, 2023). Front-line knowledge about customer preferences and requirements (Kramer et al., 2007) enhances customer trust (Eijkman, 2010). Additionally, efficient service delivery through agents is vital in ensuring timely and effective transactions (Eijkman, 2010).

However, being among the most critical players in digital inclusion, MMAs cannot transfer their float balance from one mobile money account to another (Haule, 2022). The agents are motivated to earn commissions using mobile money devices for transactions. It is very common to see an MMA with a few different types of mobile devices, smartphones and non-smartphones from different mobile money services and switching between them to trade (Haule, 2022). MMSPs intentionally limit their API ecosystem to be closed or make it difficult for users to switch to other MMSPs, making it difficult to move their money to competitors. MMSPs aim to lock their users within their ecosystem, resulting in the users frequently switching between MMSPs to save money (Donovan, 2012) based on the MMSPs' product

offerings. There is a need for MMAs to manage and transact their floats freely to serve any customer from any mobile money wallet (Haule, 2022). It becomes inconvenient for the users, resulting in the high cost of changing mobile money accounts (Bourreau & Valletti, 2015). There is a limitation on mobile money services due to their closed ecosystem. MMSP's business model aims to expand its footprint over competitors, seizing the opportunity to cross-sell services to existing users and creating "some stickiness" with them. (Mas & Sullivan, 2011, p. 23). However, this approach potentially diminishes the benefits of using mobile money and restricts the scale of digitalisation. As a result, mobile money may reduce monetary value and influence inflation (Suri, 2018).

3.3 Chapter Conclusion

This chapter has presented the essential research context needed to understand mobile money, its users, and its transaction flow. It provides a comprehensive foundation that elucidates the operational mechanics of mobile money. It also highlights how the closed mobile money system creates limitations in transfer capabilities, ultimately reducing the full benefit of the system. These insights gained are crucial for exploring how mobile money can be optimised and scaled to drive greater financial inclusion, particularly benefiting underserved populations.

By highlighting mobile money as an inclusive innovation serving the informal sector, its current limitations have been brought to light. By addressing these limitations, mobile money can better serve its purpose. To enhance its effectiveness and success, further exploration and optimisation are necessary. The subsequent chapter will delve deeper into these aspects, aiming to identify strategies and enhancements to improve the service and amplify its impact.

Chapter 4: Mobile Money Interoperability as Inclusive Innovation Through Process

Chapter 3 lays the groundwork for understanding mobile money and its limitations. This chapter delves into the critical need for interoperability within the mobile money sector to address its existing limitations. Interoperability, the ability for different mobile money platforms to seamlessly communicate and transact with each other, has the potential to transform the current mobile money transaction flow significantly. The importance and necessity of interoperability in the South African economy will be highlighted by exploring this potential transformation.

Additionally, this review will highlight how introducing mobile money interoperability can benefit users, enhancing their financial inclusion and overall experience with mobile money services. From the global experience to South Africa's unique situation, this chapter aims to provide a comprehensive understanding of how interoperability can act as a catalyst for optimising mobile money operations. Expanding mobile money's reach through interoperability may better serve underserved populations and improve financial inclusion. Mobile money interoperability is a truly inclusive innovation that enhances mobile money usage through process improvement.

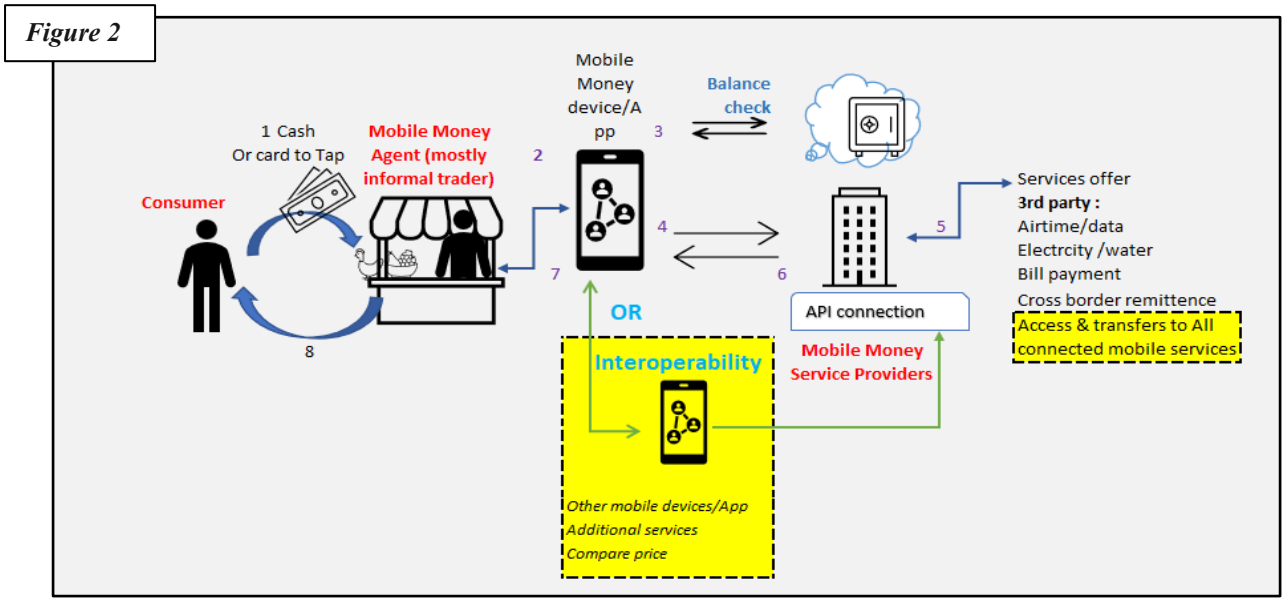
4.1 Mobile Money Interoperability as Research Context

Mobile Money needs to be more successful than in its current form to advance digitalisation and financial inclusion in South Africa. Creating a framework that encourages innovation while fostering competition and safeguarding all stakeholders' interests is essential. This is required "*... to balance the encouragement of innovation with the promotion of competition and protection of customers. In due course, account-to-account interoperability will need to be implemented to achieve the full potential for the digital transaction*" (Aron, 2017, p. 6). Interoperability at the platform level is necessary, "*allowing customers or agents of different services to send mobile money to each other, respectively*" (Suri, 2017, p. 10). This refers to the capability of MMSPs to interact with various technologies and platforms, enabling users to easily transfer money between accounts within mobile money schemes and banks (Suri, 2017; Scharwatt et al., 2015). The MMSP's platform thus becomes an intermediary bridge to allow others to integrate (Donovan, 2012).

Figure 2 illustrates a possible mobile money transaction that includes interoperability, enabling mobile money users' freedom to transact between different platforms. The yellow box highlights the interoperability between other MMSP platforms so that users can freely choose and transfer with the mobile money application. This can be explained with an example of a theoretical flow based on Figure 1 (refer to Section 3.2), a transaction with interoperability through an MMA:

1. The consumer requests a service, such as a DSTV top-up, and pays the MMA in cash.
2. The MMA uses the mobile application or device to enter the request into the mobile money system.
3. Mobile (money) devices receive the order and check the MMA's e-wallet balance to confirm sufficient funds to complete the transaction.
4. The MMA then decides which mobile application to select through the interoperability function, as highlighted in the yellow blocks. The mobile device then instructs the API connection of the selected MMSP system to connect to the third-party DSTV service to request the top-up.
5. The API confirms the successful top-up with the DSTV service provider.
6. The API confirms the successful top-up back to the mobile device.
7. The mobile device screen displays the confirmation of the DSTV subscription payment.
8. The MMA prints out a receipt for the consumer to confirm the transaction.

Figure 2: Possible Interoperability Transaction Flow



(Source: Author)

The Global System for Mobile Communication (GSMA) 2023 annual mobile money industry report suggests that interoperability is becoming increasingly relevant in international mobile ecosystems as the key to meeting economic incentives and financial inclusion. Unlike in South Africa, new partnerships have been introduced internationally between MMSPs and the global payment processing systems since the COVID-19 pandemic, such as Visa and Mastercard, to enable mobile money users to access virtual and physical payment services (GSMA, 2023). For example, Visa and Mastercard have established a dominant position in the global financial sector, forming a duopoly (Lim, 2016). Their success can be attributed to the creation of an open system emphasising cooperation and seamless fund transfers across different accounts (FinMark Trust, 2017). Despite being competitors, these card schemes collaborated to ensure the widespread acceptance of their payment methods (Nomanini, 2018). It was not solely the physical card but the interoperable ecosystem surrounding it that led to its remarkable success (FinMark Trust, 2017; Nomanini, 2018). The open card ecosystem led to economies of scale and the creation of the network (Lim, 2016). Applying this concept to mobile money, interoperability may be a crucial factor for mobile money to be more successful (Nomanini, 2018).

A digital payments ecosystem can be established to promote collaboration and seamless fund transfers by fostering interoperability in mobile money systems, akin to the achievements of Visa and Mastercard (Nomanini, 2018). This will ultimately benefit consumers, enabling them to enjoy the convenience and flexibility of mobile money services across various service providers. Tsanga (2018) conducted a study on the situation in Cameroon and further emphasised interoperability as a contributing factor in improving mobile money (Tsanga, 2018). Enabling mobile money interoperability would empower MMAs to efficiently manage and transact their floats across various mobile money wallets, addressing the current limitations in digital inclusion efforts. Mobile money could achieve greater success than it currently offers by improving its users' experience. Baptista and Heitmann (2010) emphasised that "*True scale is marked by integrating the entire mobile money ecosystem*," (p. 12), enabling users to spend money anywhere on anything they want. GSMA (2016) explored insights from Tanzania, stating that "interoperability was the only way to create a truly inclusive financial ecosystem" (p. 13). They discovered that customers were more engaged, adding value to the mobile money ecosystem through industry collaboration and shifting the competition among service providers from customer acquisition to service quality (GSMA, 2016).

There is literature and numerous success stories specifically related to mobile money and its positive impact on financial inclusion in Africa. (GSMA, 2016; GMSA, 20220; GSMA,

2023; Tsanga, 2018; Bahia & Rattel, 2024; Dargahwala & Riedl, 2021; Davidson & Keishman, 2012; Bianchi et al., 2022; Brunnermeier et al., 2023). However, there is a paucity of literature analysing mobile money in South Africa, particularly on interoperability. Therefore, in the next section, the features of South Africa's mobile money industry and unique dual economy will be explored in more detail to understand the research background and why it is essential to have interoperability in South Africa's environment.

4.2 Characteristics of the Dual Economy and Opportunities for Enhancing Financial Inclusion in South Africa

The first mobile money system was launched in the Philippines in 2001 (Suri, 2017), and the first South African mobile money license was issued in 2004 (Ahmad et al., 2020). The success story of mobile money awareness can be attributed to the remarkable growth of Kenya's M-Pesa system since 2007 (Aron, 2017; Ahmad et al., 2020), which boosted the economy through mobile money services (Burns, 2015). Since COVID-19, growth on the African continent has dominated the global rise (GSMA, 2022) of mobile money services, but South African adoption has been relatively slow in comparison (Airvantage, 2024).

South Africa is uniquely positioned in its dual economy, with a well-established formal sector operating parallel to an underdeveloped informal economy. Chen (2007) opposed the perspective that the informal economy should not be seen as harming economic growth. The informal economy exists and will continue to grow globally, as it represents a distinct market and is becoming a regular way of life for many and should, therefore, be accepted. Neuwirth (2011) conducted a comprehensive review of the global rise of the informal economy, highlighting its significance as a major source of employment. It has expanded not only in the Global South but has also gained increasing relevance in the developed countries of the Global North due to its capacity to meet global demand. (Neuwirth, 2011). Additionally, Alcock (2018) conducted an interview-based study that further confirmed that societies should foster the development and sustainability of these micro-businesses in the informal sector (Alcock, 2018; National Treasury, 2021). Stats SA (2023) reported that, in 2021, these micro-businesses employed approximately one in every six individuals in South Africa in the informal sector. This highlights diverse economic realities in South Africa, reflecting the rapid growth of the informal economy (Mahajan, 2014).

In the formal economy, South Africa has a highly developed and resilient financial sector (The International Monetary Fund (IMF), 2020). The formal banking infrastructure in South Africa has a massive landscape compared to the rest of the continent (FinMark Trust,

2017; Mhlanga et al., 2021). As reported by the Financial Sector Conduct Authority in 2021, 81% of the population have a bank account in South Africa and only 76% globally (The Global Findex database, 2021). However, South Africa's inequality is the highest globally (FinMark Trust, 2017; National Treasury, 2019) according to the Gini coefficient[7] based on 2023 index results (Statista, 2025), with a 32.9% unemployment rate representing those who are actively searching for work in the labour force in the first quarter of 2024 (Stats SA, 2024). The unemployment rate, according to the expanded definition[8] is at 41.9%, as reported by Stats SA (2024). This includes people not actively looking for employment or are self-employed four weeks before an interview. Many individuals receive social grant benefits from the government that are paid into bank accounts at the banking institutions. If the social grant beneficiaries are excluded, only 68% of adults are considered banked (National Treasury, 2021). It is interesting to note that a significant number of individuals withdraw their cash immediately upon receipt and effectively use their bank accounts as "mailboxes" (FinMark Trust, 2017; National Treasury, 2021). This behaviour indicates that these banked individuals are not fully utilising the banking functions available through their accounts, highlighting the need for financial inclusion among underbanked individuals in the dual economy. Financial inclusion projects have explored formal channels, particularly low-cost financial inclusion accounts. Kostov et al. (2015) examined low-cost, basic bank account initiatives in South Africa, specifically focusing on Mzansi[9] bank accounts. Surprisingly, the experiment did not lead to a one-way flow toward

[7] Gini co-efficient, measures income distribution across a population. Developed by Italian statistician Corrado Gini in 1912, it often serves as a gauge of economic inequality, measuring income distribution or, less commonly, wealth distribution among a population. https://www.census.gov/topics/income-poverty/income-inequality/about/metrics/gini-index.html. South Africa entered the 1990s with already high levels of inequality, largely a result of apartheid policies that excluded a significant portion of the population from economic opportunities. The country's Gini coefficient, a measure of inequality, increased further in the early 2000s and has remained persistently high ever since.

[8] In South Africa, the unemployment rate is defined as those people within the economically active population who:
"(a) did not work during the seven days prior to the interview,
(b) want to work and are available to start work within a week of the interview, and
(c) have taken active steps to look for work or to start some form of self-employment in the four weeks prior to the interview."
The expanded definition include the above (a) and (b).
https://apps.statssa.gov.za/census01/census96/html/CIB/Introduction.htm

[9] "In South Africa, the four largest commercial banks, all privately owned, collaboratively launched the Mzansi account (sometimes referred to herein simply as "Mzansi")1 in October 2004. The Mzansi account is a particularly interesting example of an entry-level bank account offering since South African banks were not then and are not now required by law to do so. However, the Financial Sector Charter – a social compact voluntarily entered into by the country's financial sector as a whole in 2003 – provided a framework with incentives for them to do so. Even without being part of the Charter, the state-owned Postbank enthusiastically joined the big banks in the Mzansi Initiative; but several smaller privately owned banks, already focused on serving lower income markets, chose not to participate and continued to promote their own competitive offering. Among the basic bank account offerings worldwide, the Mzansi Initiative is so far unique in that competing commercial banks collaborated with each other and a state retail bank to create and market a new product with certain common standards at the same time as other contending offerings were available in the marketplace. In the process, they explored the limits of what they considered collaborative space; and they discovered the costs and benefits of such collaboration in advancing access to basic financial services." (FinMark Trust, 2009, p. 12).

formal accounts; instead, there was a significant increase in dormant accounts after the initial adoption. FinMark Trust (2009) conducted a comprehensive study, revealing a strong demand for basic bank accounts and emphasising the need for safe, convenient, and affordable platforms. Mzansi accounts then served as a stepping stone to other types of bank accounts and encouraged greater adoption of informal savings formats (FinMark Trust, 2009). While financial literacy and education contribute to informal savings channels, they don't necessarily translate into broader formal financial inclusion (Kostov et al., 2015).

The degree of financial inclusion in South Africa remains debatable. While 81% of the population is banked, only 52% of total consumer transactions were carried out in cash in 2021 (National Treasury, 2021). Simatele and Maciko (2022) found that informal savings are increasing more rapidly than formal savings and that transaction cost and trust are the major reasons for selecting the informal channel. As highlighted by the National Treasury (2021), approximately 61% of people in the financial sector are using informal channels. It can be argued, therefore, that a significant proportion of South Africans are underserved or underbanked as they may be banked but unable to access or use financial services (FinMark Trust, 2017; National Treasury, 2021; Aron, 2018) in the informal economy. As a result, the informal economy makes a notable contribution to the status of financial inclusion in South Africa. For this reason, reviewing the informal channels for financial activities is essential.

Despite South Africa's highly developed and established formal banking sector, the country has struggled with adopting mobile money as an effective means of promoting financial inclusion (Ahmad et al., 2020; FinMark Trust, 2017; National Treasury, 2021). This struggle is mainly due to stringent requirements, guidelines, and compliance regulations, such as the Banking Act and the National Credit Act, which mandate licensing for deposit-taking and credit issuance (FinMark Trust, 2017; National Treasury, 2021; Airvantage, 2024). Additional regulations combating crimes like money laundering and cybercrimes further complicate the mobile banking landscape and hinder financial inclusion efforts in South Africa (Ahmad et al., 2020; FinMark Trust, 2017; National Treasury, 2021).

In contrast to the above, Brunnermeier et al. (2023) conducted policy research examining the introduction of mobile money interoperability in twenty African countries as of March 2023. The study analysed the impact of interoperability before and after its implementation and found that each country had different outcomes, both positive and negative (Brunnermeier et al., 2023). The research indicated that, overall, interoperability positively affected mobile usage and transaction counts (Brunnermeier et al., 2023). However, there were challenges, such as additional fees imposed by MMSPs for connectivity and potential issues

related to infrastructure maintenance, which could impact efficiency. The analysis also suggested that it might be more optimal to introduce interoperability in markets where the financial sector is already well-developed, regulated and consolidated (Brunnermeier et al., 2023), such as in South Africa. Given South Africa's well-structured and developed financial sector, interoperability has the potential to accelerate development and reach a critical mass of users. Studies also highlighted the importance of network connectivity and infrastructure as necessary conditions for introducing interoperability to balance competition and financial inclusion (Brunnermeier et al., 2023; Maune et al., 2022).

Understanding the financial inclusion status and the dual economy of South Africa is fundamental for this study. Financial inclusion through mobile money services is a prime example of inclusive innovation, as it leverages technology to provide financial services to populations traditionally excluded from the formal banking sector (Foster & Heeks, 2013). Given the unique characteristics of South Africa's inequality and dual economy, coupled with its well-developed banking sector and infrastructure, it may be time for the South African MMSP sector to consider embracing interoperability. Such a move could advance financial inclusion, reduce inequality, and accelerate South Africa's digital transformation, promoting economic growth that benefits all segments of society.

4.3 Addressing Users' Needs for Financial Inclusion through Mobile Money and Interoperability

Inclusive innovation focuses on creating and implementing solutions that address the needs of all segments of society, particularly those that are underserved or marginalised (Heeks et al., 2013). Therefore, understanding financial needs is crucial. When reviewing financial inclusion, we must begin by examining the reasons behind financial exclusion and ensure that all relevant needs are considered.

The goal of mainstream financial inclusion theory focuses on everyone having the opportunity to participate in the formal financial sector regarding access or usage of financial services (Ozili, 2020). Mas and Porteous (2015) challenge the bias of the financial inclusion theory and argue against the inherent focus on formality in the definition of financial inclusion. Ozili (2021) proposes financial inclusion should focus on removing barriers and improving the supply of financial access. This section reviews financial inclusion alongside both voluntary and involuntary financial exclusion (Ozili, 2021).

Voluntary exclusion occurs when individuals choose not to access financial services for cultural and religious reasons, the cost of banking, tax savings, and other personal reasons

(Ozili, 2021). Conversely, involuntary exclusion refers to the lack of access caused by various factors, which may include individuals being deemed unbankable due to their inability (Carbo et al., 2007; Ozili, 2021) to participate. There are substantial works of literature that examine financial inclusion and exclusion through cross-section or single-country studies that found that the main barriers were related to legal and formal documentation requirements (Chinn & Ito, 2006; De Koker & Jentzsch, 2013; Beck et al., 2008; Sinclair, 2001), income, cost and inequality, age and education level (Dabla-Norris et al., 2015; Fungáčová & Weill, 2015; Zins & Weill, 2016; Akudugu, 2013; Nanziri, 2015).

A survey study in Ghana's mobile money ecosystem suggested a key positive relationship between benefits and mobile money services (Senyo & Osabutey, 2020). The study identifies performance expectation as the most significant antecedent, indicating that individuals will use and continue to use mobile money services when these services provide needed benefits (Senyo & Osabutey, 2020). In other words, it highlighted that mobile money could fulfil consumers' financial needs and cultural and customs beliefs.

The use of mobile money is influenced by various factors, including institutional differences, financial literacy, inequality, income dispersion, available alternative payment methods, transaction sizes, and security concerns (Aron, 2017). International studies in developing countries have shown that mobile money is not merely a tool for financial inclusion; it also enhances user satisfaction by addressing needs (Slade et al., 2013). This is highlighted by Waris et al. (2024), based on their study in Ghana regarding the accessibility of financial services, noting that "*money transfers may now be done quickly and easily thanks to the speed and security of mobile money services*" (p. 541). Mobile money provides convenient financial services that save on costs and effort while offering a safer way to transact, reducing security risks (Suri, 2017). A study in Cameroon found that accessibility, safety, and convenience were fundamental motivators for adopting mobile money platforms (Tengeh & Gahapa Talom, 2020). Similarly, Olaleye et al. (2017) found that privacy, security, convenience, and user-friendliness significantly enhance Nigeria's mobile money user experience. Research by Kumar and Palanisamy (2019) emphasised, in the Indian context, that ease of use and security are the most important factors for mobile money consumers. However, these preferences are influenced by age, education, occupation, and income profile. Trust is also a critical factor, as found in the mobile money usage study in Tanzania, significantly impacting users' continued use of mobile money services (Koloseni & Mandari, 2017). Furthermore, efficiency and reliability contribute significantly to mobile money usage in sub-Saharan Africa (Weber et al., 2021; Slade et al., 2013). Overall, these empirical studies demonstrate that the adoption of mobile money is driven

by accessibility, safety, convenience, security, ease of use, and trust, all of which enhance the overall user experience and satisfaction.

The use of mobile money in South Africa is unlike other African countries, as noted by the National Treasury (2021), as South Africa is inherently a cash-driven economy and "*more can and should be done to reverse this trend*" (Mas & Sullivan, 2011, p. 24) by advancing mobile payment. People's preferences and behaviours shift in response as they gain a deeper understanding of the technology and its perceived benefits. As noted by Mas and Sullivan (2011), "*People love cash because they are conditioned to use it. They used to love cowrie shells and dogs' teeth too, but their preferences evolved as new forms of payment came along*" (p. 24). This evolution highlights the importance of educating consumers about the advantages of Mobile Money. By showcasing advantages such as convenience, security, and accessibility, a shift from traditional cash to more innovative financial solutions can be realised. Mobile money can potentially gain more market footprint if it addresses users' needs further. Mobile money users' behaviours and demands are key considerations for mobile money to be successful. As with inequality, a significant issue in South Africa, contributes to the high crime rate (Mashapha & Mukonza, 2024), thereby increasing the need for safer money management methods, particularly in the informal sector, which is more vulnerable to crime (FinMark Trust, 2017; National treasury, 2021).

International studies show significant benefits of mobile money that have led to increased financial inclusion. Moreover, based on research, interoperability has lowered mobile money fees across Africa (Brunnermeier et al., 2023). In Tanzania, price was the primary factor influencing mobile money adoption. Interoperability integration reduced costs and provided convenience without limitations to service providers (Mswahili, 2022). By enabling interoperability, mobile money has the potential to become a primary method of payment for transactions, offering a reliable and efficient solution to eliminate the barriers related to financial needs. It can enhance the financial sector, particularly for underserved populations, making mobile money more accessible and convenient for its users. This shift towards interoperability has the potential to foster a more inclusive and robust mobile money industry in South Africa, thereby contributing to the financial needs of the underserved or unbanked.

4.4 Chapter Conclusion

This chapter demonstrates the critical need for openness, collaboration, and innovation to promote interoperability within the mobile money sector. The existing literature emphasises the benefits of mobile money and mobile money with interoperability, providing valuable

insights from underserved users and the informal economy. It highlights how adopting interoperable mobile money systems can contribute to financial inclusion and improve the lives of the impoverished.

Interoperability is an inclusive innovation process with the potential to significantly enhance financial inclusion in South Africa, mainly benefiting the financial needs of the underserved populations in the informal sector. The literature also suggests that it is more optimal to introduce interoperability in markets where the financial sector is already well-developed (Brunnermeier et al., 2023). Enabling interoperability will enhance digital market efficiency, potentially reaching marginalised consumers through integrating emerging technological capabilities (Foster & Heeks, 2023; Agola & Hunter, 2016).

The significance of interoperability extends beyond technological innovation; it embodies a profound commitment to enhancing human livelihoods (Heeks et al., 2013). This transformative response through digital innovation aims to improve the well-being of marginalised sectors of society (Foster & Heeks, 2013; Nilsson, 2019; Nicholl et al., 2015; Ayob et al., 2016). The growth of new technologies further emphasises the potential for interoperability to drive inclusive growth and social equity (Kaplinsky, 2011; Cozzens & Sutz, 2012; Foster & Heeks, 2013).

Why have mobile money service providers yet to implement interoperability? Existing literature tends to focus on downstream issues and post-adoption benefits, overlooking upstream factors influencing MMSPs' decisions regarding adopting interoperability (Molla & Heeks, 2007). This research aims to bridge that gap by investigating the influencing factors that the MMSP sector should consider when adopting interoperability. The next chapter will explore the challenges and barriers that have hindered the adoption of interoperability in the mobile money sector.

Chapter 5: Challenges and Barriers to Implement Interoperability by MMSP

Inclusive innovation, as defined by Heeks et al. (2013), encompasses economic development and the production of goods and services for low-income groups, focusing on social good and economic growth (Heeks et al., 2013; Schillo & Robinson, 2017). It is essential to recognise that true inclusivity goes beyond research and development, encompassing practical social and business innovation across various dimensions, such as organisational, social, and financial inclusion (Paunov, 2013; Schillo & Robinson, 2017).

This research explores the existing literature on real-life settings within South Africa's MMSP sector. MMSPs are crucial in shaping the range of mobile money offerings and service designs (Burns, 2015). MMSPs, as sector providers, experts and decision-makers, are critical to driving the innovation vision (van Wijk et al., 2018; Manzini, 2014). Therefore, it is essential to study the factors influencing the actions of MMSPs to identify ways to enhance the effectiveness of mobile money platforms and improve financial inclusion. Despite the critical role of MMSPs, scant attention has been given to exploring their function in South Africa. There is a notable lack of empirical studies exploring business strategies to foster interoperability. Thus, it is vital to understand the relationship between MMSPs and the factors influencing their decision-making regarding interoperability adoption.

This chapter will examine the operational models of MMSPs and discuss the impact of interoperability within the MMSP's environment. It will also explore the possible decision factors that MMSPs consider when adopting interoperability, providing insights into enhancing the effectiveness of mobile money platforms and promoting greater financial inclusion.

5.1 Interoperability of Mobile Money Platforms and Regulation of MMSP

This section critically examines the introduction of interoperability from the perspective of MMSPs. It evaluates the advantages of interoperability for mobile money platforms and considers the regulatory factors that shape this strategic decision. By understanding the pivotal role interoperability plays for MMSPs, we gain insights into its impact on operational efficiency, market competitiveness, and compliance with financial regulations. This analysis underscores how interoperability can enhance the effectiveness, scalability, and inclusiveness of mobile money services, benefiting both users, as discussed in Chapter 3 and providers, as detailed in

this chapter. As demonstrated, promoting interoperability ultimately contributes to the mobile money sector's growth and long-term viability.

Mobile money services depend on a reliable and accessible platform to facilitate transactions effectively. Building a mobile money platform requires a significant investment in infrastructure and API development, which can result in high startup costs and create a barrier for others to enter the market (Bourreau & Valletti, 2015). APIs are ideally well-designed and standardised within their ecosystem to minimise future modifications to create a secure architectural environment (Bourreau & Valletti, 2015). However, most MMSPs prioritise building a closed-loop ecosystem and view the objective of interconnecting with other MMSPs as a future concern. Their business model focuses on market expansion through strategic customer acquisition within their ecosystem. This involves attracting users from competitors, capitalising on cross-selling opportunities among existing users, and fostering relationships by creating a closed ecosystem that promotes user dependency (Mas & Sullivan, 2011).

This perspective leads to the belief that delayed interoperability adoption occurs because "*early movers do not see much benefit in sharing their hard work*" (Mas & Sullivan, 2011, p. 23). As a result, they may be hesitant to introduce additional complexity by engaging in negotiation with their competitors (Mas & Sullivan, 2011). If users can easily transfer digital cash between e-wallets and ecosystems, the MMSPs will not be able to charge premium fees for their products (Dargahwala & Riedl, 2021). Also, the MMSP's income from entitled uncashed-out deposits may no longer be available, as money will be freely transferred from their previously closed-loop ecosystem. Furthermore, the MMSPs might struggle to protect their target segments and ensure data privacy, which could deter them from investing in interoperability (Davidson & Keishman, 2012). According to a report by Mastercard (2021), this lack of motivation and investment in upgrading the closed MMSP ecosystem may hinder the scaling of financial inclusion (Dargahwala & Riedl, 2021).

However, with the rapid growth and complexity of technology and the maintenance and upgrades of the closed MMSP ecosystem, significant attention is required to keep pace with competitors. If the MMSP's platforms cannot meet all consumers' needs with their current offerings, they will need to be enhanced through future investments; otherwise, the customer base may diminish (Bourreau & Valletti, 2015; Iheanachor et al., 2021).

Crucial to achieving "*scale*" requires a substantial investment for MMSPs in the MMA networks (Aron, 2018, p. 182) to expand their footprint and market share. Aron (2018) highlighted that MMSPs invest significantly in training, support, and monitoring to expand their geographical reach of services to compete with other MMSPs. With interoperability,

MMSPs could service additional areas where they previously had no footprint, reducing the need for further infrastructure deployment or the duplicate development of APIs already on other MMSPs' platforms. MMAs can benefit from providing a greater variety of products and service options, unlocking more business opportunities with reduced costs and less maintenance for multi-mobile money accounts or devices (Dargahwala & Riedl, 2021). This will likely enhance overall economic efficiency and fully promote the benefits of operating cashless. This understanding supports the argument that interoperability will benefit MMSPs by expanding the pool of customers (Donovan, 2012), leading to further financial inclusion.

In a nutshell, collaboration offers significant advantages for MMSPs. By working together, MMSPs can leverage sector efficiency and economies of scale, ultimately benefiting from a more mature and prosperous ecosystem. This collaborative approach, facilitated by platform connections, presents a promising path forward.

While collaboration presents considerable advantages, it is equally important to ensure a fair and competitive environment that complies with regulatory requirements. This requires reviewing the existing regulations to ensure they align with the realities of a potentially interoperated MMSP sector.

A review of the literature on mobile money interoperability regulation found that South Africa lacks specific mobile money policies and regulations, including requirements for interoperability (Anderson & Reynolds, 2015). Globally, the adoption of interoperability showcases diverse regulatory approaches. Some countries enforce strict compliance deadlines for interoperability implementation, while others allow MMSPs the freedom to lead the transition without fixed timelines (Anderson & Reynolds, 2015). Certain nations mandate technical capacity for interoperability or require plans for integrating with the broader financial ecosystem (Anderson & Reynolds, 2015).

It is possible that interoperability will become a regulated requirement in South Africa, and MMSPs should assess the potential adoption of interoperability to mitigate future risks and issues proactively. The South African Reserve Bank (SARB) issued a directive in 2015 for electronic payments and real-time services. In 2021, SARB introduced the Rapid Payment Project (RPP) to connect all South Africans in the formal and informal sectors, offering banked and underbanked customers new payment options. On 13 March 2023, SARB rolled out PayShap as a mobile payment platform to major banks, providing consumers instant access to real-time payments across participating banks using a mobile phone number to connect with bank accounts (Itzikowitz, & Gunning, 2021). According to SARB, "*the introduction of PayShap, driven by SARB and the Payments Association of South Africa (PASA), is an*

important step on this modernization journey and will support innovation and enhance interoperability" (Itzikowitz, & Gunning, 2021, p. 1). Banks and mobile payments are already interconnected, and SARB may mandate mobile money or non-bank interconnections to build an inclusive financial sector. This indicates that South Africa has a well-regulated financial sector and that there may be a consideration for introducing mobile money platform regulation for interoperability in the near future (National Treasury, 2019).

Therefore, MMSPs should actively consider innovation and collaboration in interoperability to respond to widespread digitalisation and the provision of standardised mobile money services on a large scale (Mas & Sullivan, 2012; De et al., 2013). By doing so, they can position themselves as leaders on the digitalisation curve, being proactive rather than reactive. MMSPs should explore innovative approaches such as shared economic strategy. It can potentially reduce the cost of providing their services, expand access to underserved populations, and promote the growth of economic offerings (Peter, 2019). By leveraging the potential of a shared, inclusive, and accessible mobile money financial ecosystem, MMSPs can stimulate their growth and expand their customer base. Consequently, this study aims to explore the key decision factors that may influence the MMSP sector's interoperability considerations. Specifically, to understand the benefits and challenges of implementing interoperability by MMSPs.

5.2 Key Considerations by MMSP for Interoperability Adoption

Mobile money interoperability offers advantages for MMSPs, but South African MMSPs still need to implement it to fully capitalise on innovation. This indicates the need for a deeper exploration of innovative considerations and business decision factors that may impact financial inclusion with mobile money interoperability.

Decision-making is the most common approach to problem-solving. It involves carefully selecting one or more favourable options for consideration (Jonassen, 2012). SWOT is one of the widely used analysis tools in business decisions, as defined by Armstrong in 1982 (Jonassen, 2012), which assesses internal strengths and weaknesses and external opportunities and threats (Jonassen, 2012). The strategic consideration in terms of interoperability adoption can be effectively evaluated by combining SWOT with cost-benefit analysis and risk assessment. It is essential to recognise that decision-makers are not always entirely rational or unbiased (Altman, 2017) in their decision-making processes with respect to weighing all options systematically. They often exhibit biases influenced by factors such as personal identification, value proposition and emotions (Jonassen, 2012; Altman, 2017). Decisions are

nearly always embedded in contexts rich in values, beliefs, and non-rational criteria (Jonassen, 2012). This implies that decision-making is a complex process that can be influenced by subjective factors beyond purely rational consideration. The following text focuses on objective criteria that can be widely applied in the context of decision-making factors regarding interoperability.

5.2.1 Internal Strength and Weakness Factors Influencing Decisions

An innovative model has been proposed that draws on insights from technology innovation management and social movements (Hargrave & Van de Ven, 2006). This model highlights the significance of various stages in the innovation process, serving as a valuable framework for understanding and enhancing collective action. It emphasises the importance of conflict, power, and politics (Hargrave & Van de Ven, 2006), which can be applied and reviewed in the MMSP sector regarding interoperability and collaboration. The FinMark Trust (2009) study notes that during the major bank's collaboration for promoting Mzansi accounts in South Africa, there was a significant increase in general banking awareness amongst low-income segments. However, the banks' collaboration proved challenging as they endeavoured to reach agreement on standard features and pricing. The pricing structure evolved as the results from collaborative spaces diminished, leading to inactivity accounts. This situation underscored the necessity of fostering a win-win mindset, which became essential for effectively navigating obstacles. As Gnyawali and Park (2011) emphasised, "*a win-win approach of open-minded executives was critical for the success … If we put up barriers, they'll close up too*" (p. 657).

A reasonable sharing of resources and income creates a win-win for all parties (Zhong, 2016). "*Co-operation between leading firms often helps the firms to achieve better outcomes in terms of market shares, technologic development, and technologic standards of the industry*" (Gnyawali & Park, 2011, p. 650). This mutually beneficial strategy could address the conflicts, power dynamics, and political issues to promote collaboration among the parties (Hagedoorn, 1993). Gaining new technologies or knowledge, which improves the capacity of each partner, is key to successful collaboration (Hamel et al., 1989; Hagedoorn, 1993). Furthermore, competitive parties will likely continue to engage in mutual dependence if they believe an equitable opportunity exists for gains (Hamel et al., 1989). Therefore, internal strategy and capabilities play a significant role in terms of the drivers of cooperation (Hambrick, 1983).

The primary factors influencing business collaboration include internal firm-specific elements and external environments affecting the extent of collaboration and innovation

(Hambrick, 1983). Market dynamics and competitive threats affect the degrees of collaboration, as unpredictable demand leads companies to unlock opportunities to become more profitable (Carrilo & Franza, 2006; Chesbrough, 2003; Grindley & Teece, 1997; Lichtenthaler, 2005; Drechsler & Natter, 2012). Literature suggests that competition fosters innovation (Fuentelsaz et al., 2003; Kimberly & Evanisko, 1981) but decreases the willingness to collaborate (Kline, 2003; Lichtenthaler, 2007), which is variable depending on internal strategy, the size of the firm and the number of competitors (Drechsler & Natter, 2012).

Challenges often revolve around questions such as "*Should we collaborate?*", "*Who should we collaborate with?*" and "*How do we maintain our advantages?*" as highlighted by Hamel et al. (1989, p. 135). This reflects the importance of the size and market power of the parties involved, which is critical, particularly in enhancing their competitive positions. In Tanzania, three operators have joined forces to combat the dominant provider in their country by embracing interoperability as a competitive strategic approach driven by market value and its potential advantages (Bourreau & Valletti, 2015). Therefore, interoperability is more likely to occur voluntarily when businesses are relatively similar in size ((González-Benitoet al., 2016). Large companies may face negative incentives for interoperability in the short run. However, the market may have significant growth potential over an extended period (González-Benitoet al., 2016).

Shared market knowledge may create value for the consumers and the business. A business might be less likely to collaborate because it lacks the expertise to assess the opportunities with its internal knowledge gaps (Dahlander & Gann, 2010; Drechsler & Natter, 2012; Nalmpanti et al., 2024). As a result, they become unattractive to potential collaboration parties (Dahlander & Gann, 2010; Drechsler & Natter, 2012). On the other hand, businesses are generally more attracted to collaboration opportunities if they are aware of their resource or capacity constraints (Nalmpanti et al., 2024). As a result, businesses could leverage their resources or knowledge more efficiently with the competitors in the sector (Nalmpanti et al., 2024). Market knowledge and awareness of a business, beyond macro business and business environment data, and their first-hand, on-the-ground experience regarding the sector may also be essential (Kramer et al., 2007) for consideration. By embracing external knowledge and innovative ideas, businesses can accelerate their operational processes and achieve enhanced efficiency (Drechsler & Natter, 2012).

Incorporating robust Intellectual Property (IP) protection enables companies to enhance their IP management, resulting in potential advantages through increased transparency (Aloini et al., 2017; Drechsler & Natter, 2012). Businesses can improve consumer experiences by

utilising their platforms when they lead in technology. Collaboration allows businesses to reach more consumers. However, a company that focuses heavily on developing radical innovation and is highly specialised in research and development tends to be less open to collaboration, as noted by Lichtenthaler and Holger (2009). Enterprises with higher levels of performance and innovation may not benefit equally from openness, leading to negativity toward collaboration (Nalmpanti et al., 2024). This confirms that the position of entities and their internal strengths play a significant role in considering the competitive environment. Moreover, Davidson and Leishman (2012) proposed that there are significant benefits to scaling up nationally, but it takes time. The strategic plan and practical demands on the time of senior management and professionals, which may involve new hires to implement and develop the technology, business rules, and agreements (Davidson & Leishman, 2012), will most certainly result in significant costs. MMSPs are likely to recoup these costs from the users through new revenue streams (Davidson & Leishman, 2012; Bourreau & Verdier, 2010), such as switching service charges, which may increase the cost for users and lead to a lack of interest in the use of mobile money. Bourreau and Verdier (2010) support the view that an appropriate price structure will attract more users, and more MMSPs will be willing to upgrade their system, and vice versa. Accordingly, as Chakravorti and Kobor (2005) noted, user retention and acquisition are essential innovative incentives for the payment system. Hence, investing in interoperability may only be commercially viable once a significant volume has been achieved. The potential benefits may not outweigh the costs until the scale of adoption has reached a broader level. Therefore, profitability for this investment holds significant weight for the interoperability consideration of MMSPs.

Internal factors influencing innovation collaboration include the size of the business, sector knowledge awareness, technological capability, and competitive positioning. In the MMSP sector, the size of a MMSP, its value proposition, understanding of user needs, and internal business strategy are crucial for effective collaboration. These elements determine how well an MMSP can leverage interoperability to enhance financial inclusion and expand market presence. Collaboration focusing on mutual benefit and commercial gain underscores the importance of these factors in fostering successful partnerships within the mobile money industry.

5.2.2 External Opportunities and Threats Directing Decisions

Having examined how internal factors influence decision-making, it is crucial to consider the effects of external factors on these considerations. External factors or policies may

affect the competitive landscape, such as the proposal for an open banking policy that suggests regulating third-party payment providers. The policy proposal suggested that banks should focus on providing access to safe API development to enable the sharing of customer data (Itzikowitz & Gunning, 2021). The regulators have recognised the significance of interoperability, particularly in East African countries. These Central Banks have introduced or issued a directive for all mobile money payments to be seamless across different providers and networks. As a result, government intervention has accelerated critical digital transformation. It fosters the economy to unlock new avenues via the use of mobile devices and connected technologies that can be rapidly absorbed by entire societies (Jackson & Dunn-Jensen, 2020), as seen in Kenya, Tanzania and Uganda's examples (Cook, 2018). Furthermore, it has been reported that the Central Bank of Nigeria (2023) invested approximately US$3 million to establish a national switch, enabling banks to operate in real-time and facilitating high-volume and highly reliable transactions. Therefore, in South Africa, MMSPs may need to rethink their business model and its impact, especially given the potential threat that banks could be catching up, policymakers might invest in the sector, and other players may work together to create a large acceptance network (Bourreau & Verdier, 2010).

Potential data privacy and security risks must be considered (GSMA, 2024). Cooperation may also lead to regulatory compliance risk without complete control over the competitor's operation in the same ecosystem (Odorović, 2023). It is complex and costly to modernise the infrastructure and create APIs to connect to third-party access (Odorović, 2023). Moreover, the interoperability of API standards across the industry must ensure a robust and secure data exchange system that includes consumer protection; consequently, additional licences and costs may be necessary for participation. (Odorović, 2023; GSMA, 2024). As a result, it may lead to more expensive transactions and "*it may end up being shunned by customers*" (Maune, et al., 2022, p. 351)

In addition to the regulation and technical issues, South Africa has a unique dual economy and informal sector, where underbanked or unbanked individuals may voluntarily choose to be excluded from financial services due to cultural and religious reasons, the cost of banking, tax savings and other personal reasons (Ozili, 2021). With interoperability, users of these mobile money services may opt not to utilise the mobile services, as they would be connected with the formal channels.

Therefore, as organisations embark on this transformation journey, a crucial aspect involves how entities strategically consider the decision-making process. It needs to organise and align talent, timing, and positioning (Jackson & Dunn-Jensen, 2020). Each firm's

collaboration has its own values, including unique sector position and awareness, internal capabilities, technological strengths, and external variable considerations.

Opening up to collaboration with different external parties and internalising their knowledge can harvest ideas that had never been thought of previously (Drechsler & Natter, 2012). The cooperative effort of developing knowledge and fostering relationships with external parties, including competitors (Drechsler & Natter, 2012), could result in collaboration that involves establishing stable and widespread connections with a shared commitment to a common mission (Drechsler & Natter, 2012). This approach enables them to explore new possibilities and enhance collaborative efforts for mutual growth and success (Nilsson, 2019). Empirical evidence shows that collaboration positively impacts individual firms and the entire industry: "*value creation occurs through cost sharing, economies of scale, standard setting and the use of relational-specific routines*" (Gnyawali & Park, 2011, p. 652). The study noted that firms engaged in "co-opetition", combining the words cooperation and competition to describe when it is better for competitors to use their advantage and work together, to "*get more opportunities to create greater common value and benefit from it when industry or the business segment is growing*" (Gnyawali & Park, 2011, p. 652). Furthermore, Gnyawali and Park (2011) concluded that a "*co-opetition mindset of executives was critical for the formation of co-opetition*" (p. 658). Driving innovation to achieve interoperability can potentially lead to the efficiency and effectiveness of the mobile money sector, helping it scale and fast-track digital transformation (Mas & Sullivan, 2011).

5.3 Chapter Conclusion

There is a pressing need for MMSPs to implement interoperability. However, the decision factors that influence MMSPs are under-researched. Understanding these factors is crucial for effectively navigating the complexities of an inclusive innovation. Based on this review, the literature has identified key factors affecting innovation and a "co-opetition" strategy. The factors can be summarised as the size of the business, sector knowledge awareness, technological capability, and a company's competitive positioning for a win-win collaboration that may result in commercial benefit. At the same time, external variables may have a significant influence on opportunities and threats. These factors could explain why MMSPs are not yet collaborating. This situation could be attributed to their inherent complexity and dynamism within the sector, as well as a focus on business operational strategies aimed at scaling and profiting rather than prioritising financial inclusion (Mas & Sullivan; 2011) or collective collaboration for value creation (Gnyawali & Park, 2011). By exploring these

internal and external decision factors that affect mobile money interoperability adoption, this study aims to understand how MMSPs can better collaborate and innovate to achieve greater financial inclusion in South Africa.

Chapter 6: Literature Review Summary

In this chapter, the literature covered in Chapters 2 to 5 is summarised, reviewed and presented in a schematic diagram (Figure 3) to illustrate the flow of the reviewed literature. This summary chapter synthesises the significance of the preceding chapters, providing a cohesive understanding of mobile money as an inclusive innovation product that can be more advanced with interoperability implementation. Each chapter builds upon the last, highlighting the critical connections between social innovation, research context, and the practical challenges faced in achieving interoperability from the MMSP perspective.

Chapter 2 served as the fundamental theory focus. In this chapter, foundational social and inclusive innovation theories were introduced. We reviewed existing literature on social innovation, emphasising its role in addressing societal challenges through collaborative efforts. Inclusive innovation was explored, particularly its relationship with technology and the need for inclusive integration toward social empowerment. This theoretical framework set the stage for understanding mobile money not just as an innovation finance tool but as a means of fostering social change and inclusion.

Chapter 3 set the scene for this research. It focused on establishing mobile money as a key product of inclusive innovation. It provided the research content to contextualise mobile money within the broader landscape of technological advancement and its implications for financial inclusion. By examining the characteristics of mobile money users and their transaction flows, we highlighted the diverse demographics benefiting from this innovation. This chapter underscored the significance of mobile money as a transformative force in expanding access to financial services, particularly in underserved populations.

Chapter 4 focused on the need for interoperability in South Africa as the research background. This chapter explored the necessity for research on mobile money interoperability. Mobile money interoperability was articulated as a crucial process for enhancing financial inclusion, particularly in South Africa's dual economy. By addressing user needs and identifying gaps in service, interoperability was framed as essential for maximising the benefits of mobile money. This chapter reinforced the urgency of investigating the systemic barriers to interoperability and the opportunities for leveraging technology to meet user demands.

Chapter 5 reviewed the challenges, opportunities, and strategic insights from the MMSP's perspective. This final chapter focused on the challenges and opportunities of

implementing interoperability in mobile money platforms. Critical barriers such as regulatory constraints and technological limitations were identified while exploring the strategic considerations for adoption. Internal strengths and weaknesses, along with external opportunities and threats, were analysed to provide a comprehensive view of the landscape for mobile money interoperability. This analysis emphasised the need for strategic insights to navigate the complexities of fostering an interconnected mobile money ecosystem.

Throughout the roadmap, a clear narrative emerges that mobile money is a vital instrument for inclusive innovation, yet interoperability challenges hinder its potential. The insights from the fundamental theory inform the research context, while the challenges identified pave the way for strategic opportunities. By interlinking these chapters, it has been demonstrated that addressing interoperability is not merely a technical challenge but a pivotal step towards achieving broader financial inclusion and social equity. Refer to Figure 3 overleaf for a summary of the literature review, which summarises the core themes of each literature chapter points.

Figure 3: Literature Review Summary

Figure 3:

Chapter 2	***Fundamental theory***	**Introduction to Social Innovation and Inclusive Innovation** 2.1 Social Innovation in Review 2.2 Inclusive Innovation in Review 2.3 Inclusive Innovation and Technology
Chapter 3	***Set the scene for research context understanding***	**Mobile Money as Inclusive Innovation Product through Technology** 3.1 Mobile Money as Research Context 3.2 Characteristics of Mobile Money Users and Transaction flows
Chapter 4	***Research background and need for this study***	**Mobile Money Interoperability as Inclusive Innovation through Process** 4.1 Mobile Money Interoperability as Research Context 4.2 Characteristics of the Dual Economy and Opportunities for enhancing Financial Inclusion in South Africa 4.3 Addressing Users' Needs for Financial Inclusion through Mobile Money and Interoperability
Chapter 5	***Challenges, Opportunities and Strategic Insights***	**MMSP: Challenges and Barriers to Implement Interoperability** 5.1 Interoperability of Mobile Money Platforms and Regulation of MMSP 5.2 Key Consideration by MMSP for Interoperability Adoption 5.2.1 Internal Strength and Weakness Factors Influencing Decisions 5.2.2 External Opportunities and Threats Directing Decisions

(Source: Author)

This summary encapsulates the journey of understanding mobile money as a transformative innovation and underscores the importance of stakeholder collaboration to overcome barriers and maximise impact. The insights gained from this research roadmap will guide this empirical study in exploring the factors influencing the adoption of interoperability in South Africa's MMSP sector. This research seeks to understand the challenges and benefits for MMSPs in implementing interoperability and identify the key considerations that influence mobile money interoperability adoption in the MMSP sector. This study aims to review the

decision factors employed by MMSPs when considering improved system capability and fostering innovation in their operations (Nisson, 2019). Through investigation, this study may provide insights into the strategic considerations to advance inclusive innovation through fostering a more connected and efficient mobile money ecosystem.

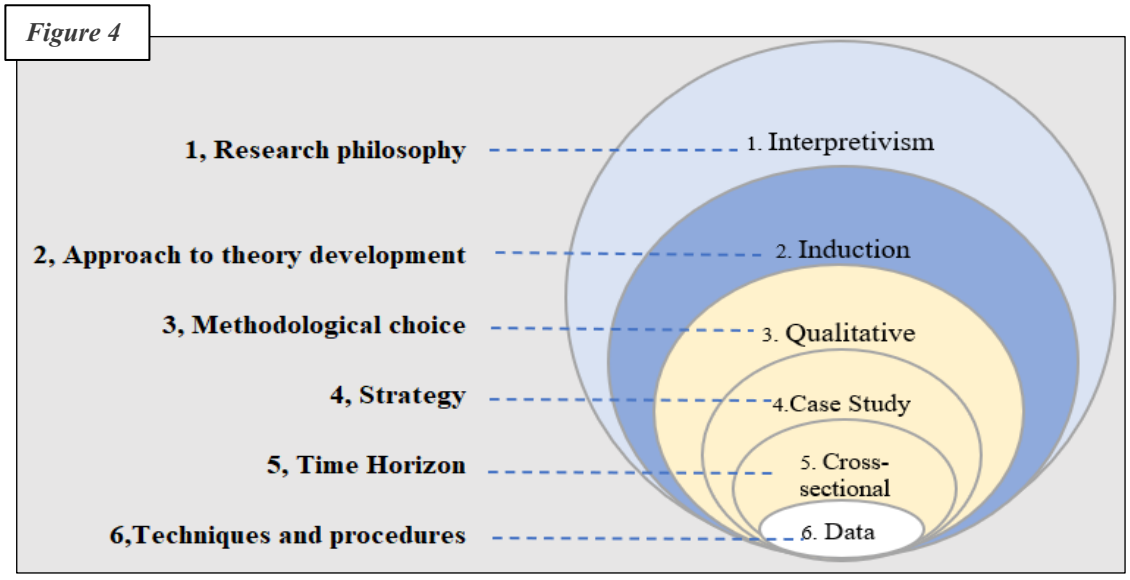
Chapter 7: Research Methodology

This chapter provides an in-depth discussion of the methodology utilised in addressing the research question: **What are the factors influencing interoperability adoption in South Africa's MMSP sector?** The sub-questions guiding this exploration delve into the challenges, benefits, and decision-making factors among key stakeholders.

Qualitative data collection was utilised, facilitated by semi-structured interviews within the framework of Yin's case study strategy (Yin, 2004). The research was guided by an interpretive philosophy and an inductive approach, aiming to uncover nuanced insights.

To explain the process, the "*Research process onion*" model proposed by Saunders et al. (2019) has been adopted (refer to Figure 5 in Section 7.1 for further details). This model conceptualises the research process as layers of an onion, progressing from the outer to the inner layers. Each step in the research process is represented as a layer guiding the journey. The research onion adopted for this study has been summarised in Figure 4, where the layers of an onion represent the research approach. Refer to Figure 4, which illustrates the methodological choices made within the generalised research onion framework. Further elaboration on these layers is provided in Section 7.2.

Figure 4: The Research Onion Adopted for This Study



(Source: Saunders et al., 2019, p. 128, modified by the Author for this study)

Following the discourse on research rationale, approach, data collection and data analysis, this chapter focuses on ethical considerations and acknowledges potential research limitations, including researcher bias. This is done to enhance the appropriateness of the research methodology and strengthen the credibility of the study.

7.1 Research Paradigm

A paradigm is a framework for examining social phenomena (Saunders et al., 2019). It essentially reflects the researcher's fundamental perspective and guides the approach taken in conducting the research (Rahi, 2017). A paradigm underpins the belief system of a research study, encompassing assumptions about ontology, epistemology and methodology (Guba & Lincoln, 1994).

Ontology refers to the nature of reality as perceived by the research (Saunders et al., 2019; Rehman & Alharthi, 2016). In this study, the decision-making factors that affect the interoperability of collaboration among MMSPs are reflected. This is aligned with a constructivist ontology, which holds that "*the social phenomena are created through the perceptions and consequent actions of affected social actors*" (Saunders et al., 2019, p. 131). It is essential to study the details of the situation to understand what is happening. A constructivist ontology emphasises how individuals construct their notions of reality through cognition, resulting in the coexistence of multiple realities (Shannon-Baker, 2022). This holistic approach to interoperability strategy considers the broader social, political and economic factors that shape the decision-making process, including the interactions and power dynamics between different stakeholders. This approach highlights a situation's contextual and relationship-specific nature. Rather than adhering to an absolutist view of the world (Saunders et al., 2019), this research aims to understand the actions and intentions of stakeholders in a way that makes meaningful sense (Saunders et al., 2019; Rehman & Alharthi, 2016).

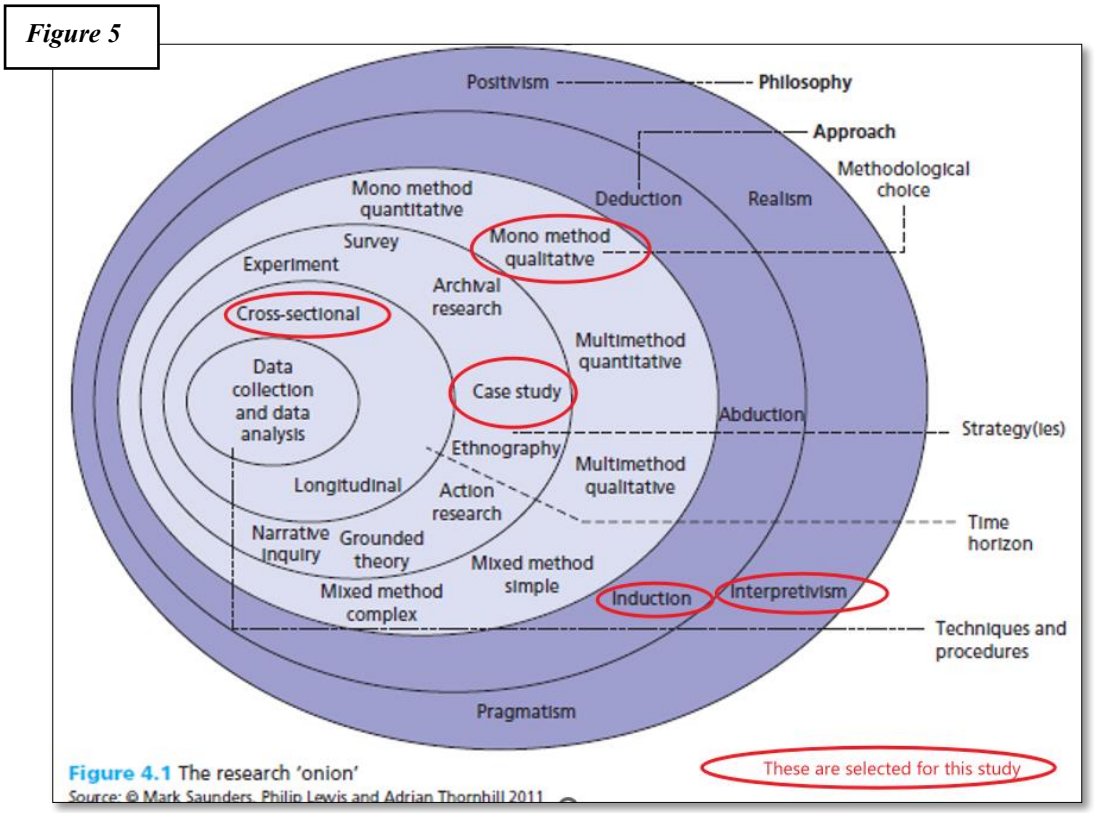
Adhering to an ontological belief system guides specific epistemological assumptions (Rehman & Alharthi, 2016). Epistemology focuses on discovering "*how things really are*" and "*how things really work*" (Guba & Lincoln, 1994, p. 108). Reality is constructed through people as they "*make sense of their world and their experiences in this world*" (Yazan, 2015, p. 137). The research findings are "*yet another interpretation by the research of others' view filtered through his or hers*" (Merriam, 1998, p. 22). Cunliffe (2022) suggests that "*we live life in present moments embedded in a past and anticipating a future*" (p. 14). This perspective shapes a researcher's epistemological approach. It means "*being open to what's happening around us by embracing surprising narratives, doubts, idiosyncrasies and emotions – features the*

resonate, may lead to new questions and ideas, and provoke us to rethink our ways of being, doing and relating… our ways of being human" (Cunliffe, 2022, p. 5). Therefore, this study is epistemologically more aligned with seeking interpretations of the social world, given that people's experience influences their decisions. Furthermore, Yin (2002) suggests that researchers' epistemic commitments or preferences emphasise that it is important to "*maximise four conditions related to design quality: construct validity, internal validity, external validity and reliability*" (p. 19). It highlights the need to embrace the instrumentality of the sets of quality controls and strive for findings that are "*as close to established fact as research has enabled to reach*", ultimately determined for "*objectivity, validity and generalisability*" (Yazan, 2015, p. 136). The validity of a research finding is not defined by its alignment with a specific theory or ideology but rather by addressing the real-world problems in the sense that the paradigm adopted is realistic and practical (Saunders et al., 2019). This is further discussed in Section 7.8 regarding issues of credibility.

This research adopts an interpretive approach, recognising that people understand the world in various ways and that these interpretations are shaped by social constructs (Saunders et al., 2019). The expressed realities are shaped to fit the imposed meaning on the world and are interpreted in a way that makes sense of the research topic, reflecting a subjectivist epistemology. The research methods are primarily selected to best meet the needs of the researcher in their attempts to answer their research questions best and fulfil their aims, generating the most valuable data to address these. Research methods can be understood through the metaphor of a research onion (Saunders et al., 2019), as shown in Figure 5, where each layer represents a distinct level of analysis.

The following sections present an adapted illustration of the research onion layers applicable to this study, as illustrated in Figure 4, circled in red in Figure 5 below. The rationale for selecting each layer is discussed in the subsequent sections. Please refer to Figure 5 for the chosen research methods and layers according to the research onion framework.

Figure 5: The Research Onion Layers and Selection for This Study



(Source: Saunders et al., 2019, p. 128)

7.2 Research Philosophy

Refer to research onion: 1, Research Philosophy

Interpretivism, as a reflective process (Maxwell, 2012), offers a valuable approach to understanding the socially constructed meanings associated with the phenomenon of mobile money interoperability (Saunders et al., 2019). The philosophy recognises that "*humans are different from physical phenomena because they create meanings*" (Saunders et al., 2019, p. 148). Interpretive research aims to cultivate a fresh and comprehensive understanding of social contexts and realities. (Saunders et al., 2019). Rehman and Alharthi (2016) suggest that "*truth and reality are created, not discovered*" (p. 55) and are inherent traits of interpretive ontology. This implies that no single interpretation is considered inherently superior or "correct" over others (Rehman & Alharthi, 2016). Instead, multiple perspectives and knowledge are valued, recognising that different researchers bring unique lenses to the same issue. Interpretive research aims not to uncover universal, context-independent truths but to delve into the interpretations held by individuals about the social phenomena they encounter (Rehman & Alharthi, 2016).

Interpretive research requires understanding the phenomena "*through the eyes of the participants rather than the researcher*" (Cohen et al., 2002, p. 21). Interpretive methodology aims to understand social phenomena in context (Rehman & Alharthi, 2016) and is commonly used in information systems and technology (Adaba & Ayoung, 2017). In mobile money and interoperability, interpretivism provides valuable insights from MMSP's perspective of the interoperability implementation considerations factors. By exploring the cultural and societal influences on people's perceptions, interests and behaviours regarding interoperability, this research sheds light on the reasons behind its adoption or resistance. Alternative methods would have been inappropriate or not applicable in terms of the exploratory outlook of the study (Adaba & Ayoung, 2017). Embracing the subjective nature of these phenomena and capturing the viewpoints of decision-makers in the mobile money sector, the study explores diverse interactions and perspectives, fostering deeper insights and informed decision-making (Saunders et al., 2019; Adaba & Ayoung 2017).

7.3 Research Approach

Refer to research onion: 2, Approach to Theory Development

Research employing an inductive approach focuses on understanding the context in which events occur (Saunders et al., 2019). This approach is more suitable for studying a small sample of subjects than the large-scale samples typically used in the deductive approach (Saunders et al., 2019). Inductive research aims to uncover patterns in the data, which are consolidated under broader themes to gain a deeper understanding of the phenomenon and generate theory (Rehman & Alharthi, 2016). This contrasts with the deductive approach, which begins with pre-identified patterns and themes before data collection (Rehman & Alharthi, 2016).

This study adopted an inductive approach, emphasising in-depth analysis of a small data set to comprehensively understand the factors that drive the interoperability phenomenon (Saunders et al., 2019). Qualitative data analysis can be used to explore diverse perspectives related to interoperability. By focusing on detailed data interpretation, the research aims to uncover nuanced insights and enrich the understanding of the complexities surrounding interoperability in the mobile money sector.

7.4 Research Choice(s)

Refer to research onion: 3, Methodological Choice

Buckley et al. (1976) define research methodology as a researcher's strategic plan or design to determine how to approach problem identification or problem-solving. Crotty (1998) describes research methodology as a comprehensive strategy that outlines the selection and utilisation of specific methods in relation to the anticipated outcomes. The choice of research methodology, however, is determined by the nature and characteristics of the research problem (Jamshed, 2014). This research study seeks insights from selected multi-stakeholders involved with the MMSP sector, focusing on key individuals' perspectives, beliefs, and attitudes (Hammarberg et al., 2016) toward interoperability as co-creation and collaboration with competitors in the digital innovation setting. Therefore, the chosen research methodology allows "*the researcher to develop a level of detail from high involvement in the actual experiences*" and facilitates the investigation "*from the participant's viewpoint*" (Williams, 2007, p. 67). This reflective process of analysis and interpretation cannot be reduced to measurable quantities or defined as numerical data. It aligns with the "*pragmatic rule of thumb*" highlighted by Busetto et al. (2020): "*Qualitative research generally includes data in the form of words rather than numbers*" (p. 1). An inductive approach enables the emergence of meanings from the collected data, facilitating further analysis, pattern identification and thematic grouping (Saunders et al., 2019). This qualitative research is supported by strategies designed to have an in-depth and extensive understanding of the issues using each participant's interpretation of interoperability (Saunders et al., 2019).

7.5 Research Strategy and Design

Refer to research onion: 4, Strategy

The strategy for this study is explored within a real-life natural setting (Yin, 2004; Saunders et al., 2019) within the South African MMSP sector, focusing on exploratory, descriptive or explanatory questions aimed at gaining first-hand insights into people and events (Yin, 2004). Therefore, this study employed a case study strategy. Yin (2004) advised that case studies should be used for "how" and "why" types of questions, where research doesn't have control over the contexts and phenomenon. This distinction between a case study strategy and other research approaches is fundamental (Yin, 2004; Saunders et al., 2019). While debates exist about whether a case study is a choice for study, a strategy, or a methodology (Yin, 2004; Creswell & Poth, 2016; Saunders et al., 2019; Durdella, 2020), the researcher chose to view it as a strategy as with Yin's perspective.

Moreover, two additional considerations regarding the type of case study have been carefully examined. Firstly, while this study aims to explore the factors influencing interoperability decisions within South Africa's MMSP sector, the evaluated intervention lacks a clearly defined, singular set of outcomes (Baxter & Jack, 2008). Therefore, an exploratory approach is deemed most appropriate. The research endeavours to delve into the phenomenon of interest, viewing it through the lens of a case study to explore its intricacies. Secondly, the case study's validity and reliability is discussed further in Section 7.8.

This strategic approach guides the design of this qualitative research and its objectives by investigating a bounded system (case) over time, utilising in-depth data from multiple sources of information (Yin, 2003; Creswell & Poth, 2016; Durdella, 2020). The five crucial components of the case study can be reviewed as the following:

1) Research Question: This study investigates the factors that impact the interoperability considerations within the MMSP industry. It explores how interoperability influences the operations, challenges, and opportunities MMSPs face in South Africa.
2) Study Proposition: The study proposition is centred on understanding the implications of interoperability on the MMSP sector from a decision-making perspective and its role in promoting financial inclusion in South Africa.
3) Unit of Analysis: The MMSP sector in South Africa is utilised as a single unit for study (Yin, 2003). It represents a unique circumstance where the MMSP sector operates predominantly in the informal economy. The MMSP sector is the unit of analysis for this case study. The research is focused on a single sector as a case, examining various aspects of the industry with interoperability as the phenomenon.
4) Linking Data to Proposition: The data collected through semi-structured interviews with stakeholders in key positions and experts in the MMSP sector was analysed inductively. The study aims to explore complex social, organisational, and innovation issues related to interoperability. Furthermore, data was collected from the people and sectors closely linked with the MMSP sector to improve the research validity and credibility and help the researcher explain a phenomenon better (Ban-Akutey & Timub, 2021); refer to further Section 7.8.
5) Interpreting Findings: By adopting an interpretive case study approach, the research seeks to create a new and comprehensive understanding of the MMSP sector's operations and its engagement with interoperability. The study employed the data triangulation method to ensure the robustness of the research findings by using three cohorts of participants. This approach strengthened insights and findings and provided

a more in-depth analysis of the data (Bans-Akutey & Tiimub, 2021). As a result, it increased the credibility and validity of the research (Bans-Akutey & Tiimub 2021).

The case study method facilitates a comprehensive exploration of interoperability decision-making factors within the real-world context of the MMSP sector in South Africa (Yin, 2004; Saunders et al., 2019). This study delves into social and inclusive innovation, with social innovation research often relying on case studies due to the unique nature of innovations (Unger, 2015). This approach is favoured for phenomena that are not easily distinguishable within their context and require thorough documentation from various information sources (Yin, 2004; Unger, 2015; Creswell & Poth, 2016). Given mobile money innovation's nuanced and multifaceted nature, a case study methodology is deemed appropriate for capturing its complexity. By focusing on a single case study of the MMSP sector, the study aims to understand factors affecting interoperability adoption comprehensively. This allows for an in-depth exploration of the unique contextual factors influencing the sector, such as culture, socioeconomic conditions, and financial inclusion dynamics in South Africa (Unger, 2015). This qualitative richness provides valuable insights and facilitates a deeper understanding, making it particularly suitable for exploring complex and multifaceted phenomena within inclusive innovation (Unger, 2015; Yin, 2004).

Refer to research onion: 5, Time Horizon

As per Saunders et al. (2019), numerous case studies involve interviews conducted over a brief period, capturing a "snapshot" of the current state. This research adopts a cross-sectional approach to study the impact of interoperability on the mobile money sector in South Africa at the present moment. In this study, a longitudinal design was not a suitable consideration, as its actual departure depends on the current financial and economic conditions (Albertus & Hamman-Fisher; 2021) and the ongoing mobile phone application innovation.

7.6 Methods

Refer to Research Onion: 6, Techniques and Procedures

The case study evidence can come from many sources; Yin (2004) discusses six. This researcher chose to use interviews as the most crucial source of evidence, as they were guided conversations that allowed for the posing of a “why” question in an actual conversation that serves the study's needs in an unbiased manner (Yin, 2004). In addition, the documented information is then used to “*corroborate and augment evidence*” (Yin, 2004, p. 107) from the

interviews. It helps verify the correct information that might have been mentioned in an interview and provides additional specific details to improve the validity and reliability (Yin, 2004); refer to Section 7.8.

7.6.1 Sample Selection

Interviews are the most common source of evidence for a case study, as they can be directly targeted at the topic and can be insightful (Yin, 2004). The interview sample size in case studies is typically small, as the case study's strength is not in the sample size but rather in the selection of participants and the clear delineation of research parameters and objectives (Zainal, 2007). Yin (2004) contends that this concentration of a single case with a small sample size permits a “microscopic” and thorough exploration, yielding unique insights not attainable with large samples (Zainal, 2007). Samples were not selected by systematic sampling because they do not necessarily apply to other case studies, but by identifying them as crucial to this study’s goals (Durdella, 2020; Kumar et al., 2020) where the sample would provide an information-rich case study (Saunders et al., 2019; Kumar et al., 2020). A purposeful sampling approach has been used to focus on the logical relationship between the sample section and the purpose of the research (Saunders et al., 2019). The goal was to select the individual who would provide insights into the situation under this study regardless of the general population (Patton, 2002; Kumar et al., 2020). Key individuals with decision-making influence power from the sector have been selected as the common theme for this research (Patton, 2002), with a maximum variation of work positions and organisations within the MMSP sector. The maximum variation sampling (Heterogenous) enables the variation in perspectives, from business attributes to individual experiences (Saunders et al., 2019). Therefore, this study could gain more significant insights into the phenomenon of mobile money interoperability by examining it from all angles that influence decision-making (Laerd, 2012). Heterogeneous sampling allows the data collected to describe and explain the key themes (Patton, 2002; Saunders et al., 2019) that influence the decision-making factors for interoperability. The collected data is unique due to its variation, yet any discernible emerging patterns are likely valuable and indicative of the key factors that influence interoperability (Patton, 2002; Saunders et al., 2019).

Each interviewee was selected based on their deep knowledge of the field and decision-making power over the influence of interoperability in the mobile money sector. Due to the

limitation of the number[10] of MMSPs in South Africa and the key decision-making positions in each entity, only a small number of samples could be selected. This small sample of great diversity can yield findings through qualitative interviews with detailed descriptions highlighting the uniqueness and shared patterns (Patton, 2002). By concentrating on individuals in decision-making or knowledge-intensive roles, this study can access rich and comprehensive information that might be overlooked in large or more broadly applicable studies (Patton, 2002; Zainal, 2007; Kumar et al., 2020). Eight to ten in-depth interviews are regarded as a sufficient number to collect necessary data (Kumar et al., 2020; Moser & Korstjiens, 2018; Saunders et al., 2019), and four to six samples for a single case study as the expert opinions across methodological disciplines (Kumar et al., 2020).

Purposeful sampling was used to maximise the research insight and lived experiences of the phenomenon by reaching out to all the entities' senior management in the MMSP sector. The purposive sampling is known as judgment selection, and it was decided upon based on the researcher's practical experience in terms of senior management's ability to influence decision-making.

Initially, messages on WhatsApp[11] and on LinkedIn[12] were sent to most possible interviewees, and the researcher briefly explained why they were contacted. A 5-minute phone call or an email address was requested to explain the research purpose and set up an interview. Once the participants agreed on a time, a meeting request email was sent, including a research consent form, which included the interview's purpose and the interviewee's rights. A total of thirty people have been reached out to.

After initial engagement with the potential participants to discuss the research interview, all were interested. Subsequently, one company from the sector has opted to withdraw from participation due to concerns about their business being under scrutiny. They wanted to refrain from further involvement in interviews, citing fears that sensitive information may be disclosed. Furthermore, two participants no longer work in the MMSP sector and lost interest in joining

[10] There are limited established MMSPs that operate nationally, actively in the informal sector with the agent footprint and end consumer base. As reported by Lesaka for 2023 annual financial reports, major competitors are "Flash, Blue Label, Shop2Shop, Pay@, Ukeshe" and Kazang (Lesaka, 2023, p. 11). These entities are the main focus of this research purpose. Even though some mobile application businesses operate or facilitate mobile money services, these are excluded from this research sample selection since they are only using mobile money services as payment tools and not the principal providers.

[11] It allows users to send text, voice messages and video messages, make voice and video calls, and share images, documents, user locations, and other content. https://www.whatsapp.com/

[12] LinkedIn is a business and employment-focused social media platform that works through websites and mobile apps. https://www.linkedin.com/

the interview. In addition, three participants did not reconfirm the interview. A total sample of nineteen confirmed and agreed to participate.

Two entities asked to sign confidentiality and non-disclosure agreements through the engagement process. Therefore, the sample does not disclose which entities participated in the interviews. Except for two individuals, the rest asked to be anonymous. All participants did not hesitate to go on record during the interview process.

A total of nineteen participants agreed to be research participants with multiple engagements; however, only sixteen were interviewed. Two people did not join or failed to reply after they requested rescheduling of the interview session on numerous occasions. One participant asked to withdraw their participation subsequently and asked to refrain from engaging further with this research topic. All sixteen participants had a copy of the consent form with the researcher's contact details and understood they could withdraw at any point during the research process. Participants did not receive any form of compensation for their involvement in the research.

7.6.2 Interview Protocol

The interview was semi-structured, and interview protocols are included in Appendix D as pre-set, open-ended questions. Even though there is a list of themes and questions to be covered, these vary from interview to interview due to the maximisation of variation in sample selection and the interpretive nature of the research (Saunders et al., 2019). Some questions were omitted, and the order of the questions varied depending on the flow of the conversation. This semi-structured setup made participants feel comfortable and open to deviating from the topic if they had something important to say. As part of this case study strategy, the data collected through the interview is intended not only to reveal and understand the "what" and the "how" but also to place more emphasis on exploring the "why" (Saunders et al., 2019). "*We follow wherever informants lead us in the investigation of our guiding research question*" (Gioia et al., 2013, p. 20). Based on each participant's attitude and opinions, interview discussions were led into areas that were not previously considered, and a rich and detailed set of data was collected with the semi-structured interview (Saunders et al., 2019; Kumar et al., 2020). The researcher kept the interview focused on the desired line of action (Jamshed, 2014) to ensure it stayed within its objective.

There are no specific interview questions regarding inclusive innovation, as it is not about cognitive and technical learning but rather about formulating strategies that implement action (Ismail, 2015) and intention. Inclusive innovation is delivered through the consideration

of interoperability. Mobile money interoperability may potentially link unbanked and underbanked users as partners with the MMSP sector. These marginalised groups' needs and wants could be considered through a resolution (Ismail, 2015) and may aid the implementation of interoperability. This research emphasises illustrating a practical understanding of the problem by taking small initiatives (Unger, 2013) to explore factors influencing MMSPs that can contribute to reshaping financial inclusion.

7.6.3 Data Collection

A half to two-hour in-depth interview was conducted with the participants, and interviews were audio-recorded. The interviews were scheduled with the option for in-person Cape Town-based or online virtual interviews, as per the interviewee's preference. Even before the COVID-19 pandemic, research data collection methods were already transforming, aiming to become more efficient and effective in driving meaningful change (Günel et al., 2020). This evolution indicates a shift towards research trends and the integration of new technologies into the data collection process. Examples include virtual interviews, mobile apps, and social media platforms being used to gather data in innovative ways. These technologies allow researchers to reach a wider audience and collect data in real-time, providing a more dynamic and nuanced understanding of the research topic. The interviews for this study were recorded using Microsoft Teams[13] via UCT student login for in-person and virtual interviews. This allows data to be collected as audio recordings and transcribed to assist the analysis process. One participant, however, could not meet online and instead sent voice notes over WhatsApp due to the connectivity issue on the day.

The data collection process was divided into three cohorts. The first cohort was used for the initial coding design and confirming the appropriateness of the interview questions. The second cohort was to reconfirm the process, and the final cohort was invited to discuss the themes and findings. This has been discussed in detail in Section 8.1. Furthermore, four people were invited for a second-round interview within the final cohort to discuss the data analysis and confirm the findings.

A total of twenty interviews were conducted. The participation details are provided in Table 1 below. Each participant was labelled "P," along with a unique number assigned sequentially upon their acceptance of the interview. The Table includes information on their work positions, organisations, how interviews were conducted, and the duration of each

[13] https://www.microsoft.com/en-us/microsoft-teams/group-chat-software

interview. Additionally, commentary on the colour coding is included: grey indicates participants who agreed to the interview but later cancelled, blue highlights the final cohort that contributed to the research for confirming the analysis, and orange highlights repeated interviews.

Table 1: Sample Selected for the Interview Participation

No of interviews	Samples	Work position	Organisation	Way of interview	length	Comment
1	P1	CEO/Founder	MMSP Entity 1	In-person	One hour	
2	P2	Head of Legal	MMSP Entity 1	In-person	One hour	
	P3	Head of Sales	MMSP Entity 1	Online	N/A	After rescheduling four times the participant failed to respond.
3	P4	Market Insight Specialist	MMSP Entity 1	In-person	One hour	
4	P5	Tech solution architect	MMSP Entity 1	In-person	Two hours	
5	P6	Trade analyst	MMSP Entity 1	In-person	One hour	
6	P7	Data Scientist	MMSP Entity 2	Online	One hour	
7	P8	Head of Project	MMSP Entity 2	Online	One hour	
8	P9	Head Strategist	MMSP Entity 2	Rescheduled Online	One hour	
9	P10	CEO	MMSP Entity 3	Online	One and a half hour	
10	P11	Payment Project Manager	MasterCard	Online	One hour	
11	P12	Payment Consultant	FinTech Space	Online	One hour	
12	P13	Financial Manager	MMSP Entity 3	In-person	Two hour	
13	P14	Head of Sales	MMSP Entity 5	Online (WhatsApp voice note)	Half hour	
14	P15	Head of Finance	MMSP Entity 1	Online	One hour	The interview is based on confirming the finding
	P16	Operational director	MMSP Entity 5	Online	N/A	Withdrew from the participation
	P17	Mobile Payment Consultant	FinTech Space	Online	N/A	After rescheduling three times the participant failed to respond.
15	P18	Business support manager	MMSP Entity 1	Online	One hour	The interview is based on confirming the finding
16	P19	Regional sales manager	MMSP Entity 5	Online	One hour	The interview is based on confirming the finding
17	P4	Market Insight Specialist	MMSP Entity 1	Online	One hour	Repeated the interview to review the analysis and confirm the finding
18	P6	Trade analyst	MMSP Entity 1	Online	One and a half hour	Repeated the interview to review the analysis and confirm the finding
19	P7	Data Scientist	MMSP Entity 2	Online	One hour	Repeated the interview to review the analysis and confirm the finding
20	P8	Head of Project	MMSP Entity 2	Online	Half hour	Repeated the interview to review the analysis and confirm the finding

(Source: Author)

7.7 Research Data and Data Analysis

Research data management concerns the organisation of data, from its entry to the research cycle through to the dissemination and archiving of valuable results. It aims to ensure reliable verification of results and permits new and innovative research built on existing information (Whyte & Tedds, 2011, p. 1).

The researcher analysed the recordings of the interviews, and a transcription copy using software was made. During the interview process, a manual note was also typed for each research question, as summarised by the researcher and agreed upon by the interviewee to align the mutual understanding of each answered question. These notes helped analyse the data and address software-generated transcription errors caused by the South African and researcher's accents. The manual notes also served as a reflective point for each interview. They included a summary of the research's interpretations of their views on interoperability, recognition of similarities or differences with other interviewees, the literature review, and any unexpected comments.

After the data collection, the next phase in the research process was data analysis. All data collected was reviewed and imported into NVivo[14]. Data analysis was performed within NVivo. Merriam (1998) defined data analysis as "*the process of making sense out of the data. And making sense out of data involves consolidating, reducing and interpreting what people have said and what the researcher has seen and read – it is the process of making meaning*" (p. 178).

The codes were developed based on the frequency of the key terms noted in the literature review chapter and as a starting point for developing the data analysis. The data collected was then analysed using coding techniques to identify common themes, patterns, and correlations in a systematic order (Saldaña, 2021). Saldaña (2021) notes that "*all coding is a judgement call*" (p. 12) as we have our subjective viewpoint, and we perceive and interpret social life differently. Coding is not just labelling; it links the data to the idea and builds data to the research findings (Saldaña, 2021). The codes were based on the original data or by reusing the exact words and then processed to a broader category and conceptual level in the coding cycles (Saldaña, 2021; Yin, 2015). The data analysis is further discussed in Section 8.1 in terms of coding, recoding, categories, and theme development.

[14] NVivo is a qualitative data analysis computer software package. It was downloaded via the UCT login: https://icts.uct.ac.za/services-hardware-and-software-software/nvivo

Thematic analysis is defined by Braun and Clarke (2006) as "*a method for identifying, analysing and reporting patterns (themes) within data*" (p. 79). "*Thematic analysis is an accessible, flexible, and increasingly popular method of qualitative data analysis*" (2012, p. 1). Data analysis in the context theme and further thematic analysis were performed to reflect the emergent patterns and meanings of human experiences (Saunders et al., 2019). The thematic analysis provides an orderly and logical way to analyse qualitative data, leading to rich descriptions and explanations (Saunders et al., 2019). Theme development was carried out from the code after the first and second rounds of coding analysis; please refer to Chapter 8.1 for a detailed data analysis process. After completing the final cohort of interviews, it became evident that no additional data collection was required as data saturation had been achieved. Merriam (1998) suggests that saturation has been satisfactorily attained when ongoing data collection fails to yield new information or insights into the phenomenon.

7.8 Credibility

Yin (2015) argues that "*a credible study is one that provides assurance that you have properly collected and interpreted the data, so that findings and conclusion accurately reflect and represent the world that was studied*" (p. 85). The research triangulation was reviewed to strengthen the credibility, trustworthiness, and validity (Yin, 2015).

The research protocol was followed and recorded, as shown in Section 7.6.2 above, to support the trustworthiness of this study (Yin, 2015). The authenticity of the data was supported by capturing the summarised answer to each question and agreeing with the participants during the interview process. A record and a reflective journal were kept for each interview session to improve the reliability of the study. Data collected through an interpretive approach reflects the variation in participants' experiences and perspectives (Saunders et al., 2019). Therefore, the analysis must be sensitive to their variability and complexity to be meaningful (Saunders et al., 2019).

Validity can be seen as "*a fairly straightforward, commonsense way, to refer to the correctness or credibility of a description, conclusion, explanation, interpretation, or other sort of account*" (Maxwell, 2012, p. 122). Validity for a case study requires reliability, in the sense that research should be repeatable upon the same set of evidence in the system. Yin (2004) proposes four essential tests for research validity; these include construct validity, ensuring accurate operational measures for studied concepts; internal validity, which pertains to establishing causal relationships rather than spurious ones; external validity, determining the generalisability of study findings to other contexts; and reliability, demonstrating the

replicability of study operations, including data collection procedures, to yield consistent results.

Yin's (2004) four tests to enhance research quality provide a necessary framework for conducting empirical research, with construct validity being particularly challenging due to subjective judgment and lack of operational measures. Furthermore, Yin's framework reviews the criteria for assessing the trustworthiness of the interpretive research. Good quality interpretive research has credibility (internal validity), transferability (external validity), dependability (reliability) and confirmability (objectivity) as suggested by Yin (2004). To address this, Yin (2004) recommends employing several advantages for the case study, such as having "*multiple sources of evidence*" and "*establish(ing) converging lines of evidence*" to support the research and make the "*findings as robust as possible*" (p. 9) through the data collection process using research triangulation (Ban-Akutey & Tiimub, 2021).

Therefore, conducting repeat interviews can be viewed as purposefully enhancing the data's credibility, dependability and confirmability. These repeat interviews have been conducted to review the themes found in terms of the factors that affect interoperability as a phenomenon in the MMSP sector. The repeat interviewees were invited based on the data analysis process and on their significant comments or expertise in the area that emerged from the findings. The cohort was purposefully divided to discuss the themes and their interrelationships based on the findings and to capture their response regarding exploring the complex social, organisational, and innovation issues. Subjective factors, such as personal beliefs and attitudes of decision-makers, have been considered through interviews with decision-makers. Inviting three new participants and four repeat interviewees generated no new code or new themes, which suggests that the findings have a comprehensive convergence. This provided further proof that the results of the interviews were well covered to the extent that conducting more interviews was unlikely to change the results significantly.

7.9 Positionality and Bias

Positionality plays a pivotal role in qualitative research, recognising the researcher's individual characteristics and life experiences that can impact both the research process and the interpretation of its outcomes (Berger, 2015). The researcher's standpoint, or positionality, can profoundly influence every aspect of the research endeavour, from the choice of topic to the data analysis and presentation (Chavez, 2008). In this study, the researcher acknowledged her positionality in the following manner:

The researcher is a permanent resident of South Africa who grew up in China. The researcher has not experienced informal living in her life, which may limit her understanding of the socio-economic realities of the informal economy regarding financial inclusion.

The researcher also has a six-year tenure at one of the MMSPs in a senior position, providing valuable first-hand industry insight. The practical experience from working in the industry also significantly enhanced the empirical study process. This understanding of the field offered valuable insights and allowed for a deeper connection between theory and practice. Moreover, this experience facilitated access to interviewees through established professional relationships. The interview process was more straightforward, without much introduction or the need to build trust and relationships during the interview process. The researcher was able to dive directly into the question.

By examining interoperability and reflecting on the potential benefits of digitalisation through mobile money, the researcher has a personal bias toward promoting financial inclusion and interoperability. The researcher strived to remain objective throughout the research process to address potential bias and maintain neutrality. Keeping a reflective journal enabled the capture of personal biases and facilitated self-awareness and critical analysis during interviews. This commitment to ethical practices and self-reflection contributes to the integrity and validity of the research findings.

7.10 Limitations

Geographical limitations confined this research to the specific context of the MMSP sector and interoperability in South Africa. Consequently, findings may not apply to regions or countries with different economic, cultural, and regulatory landscapes.

Acknowledging the limitations of sample selection due to the size of the industry in South Africa and the scarcity of senior positions with comprehensive understanding, efforts were made to purposefully select a diverse range of participants across various MMSP companies. This helped mitigate the risk associated with limited sample diversity.

Furthermore, the researcher resigned from her position during the year 2023. This posed a limitation due to trust concerns, as the researcher was once considered an "insider" to the business, and this study could have been more beneficial to the business. Consequently, participants may not have been entirely open or honest about their business strategy and reputation, possibly sugar-coating specific responses. Additionally, other MMSPs may have viewed the researcher as having been employed by a major competitor for an extended period, which may have affected participants' openness. This may have resulted in two participants not

engaging and withdrawing, especially with interoperability and factors influencing competitor collaboration.

Therefore, triangulating the study with other sources and repeating interviews helped confirm the validity of the findings. Despite these factors, repeat interviews were selected to mitigate the risk associated with trust, geographical and size limitations. With no new themes or findings emerging from the final interview cohort, the validity of the findings was confirmed, mitigating the risk of sample size limitation and further enhancing credibility, dependability, and confirmability. This shows that additional interviews were unlikely to alter the results significantly.

The pressure to complete the dissertation within two years necessitated adherence to a strict timetable for data gathering, transcription, and analysis. The constantly evolving payment industry, coupled with the possible upcoming regulatory changes from the Reserve Bank (refer to literature review Section 5.1), posed potential challenges for the mobile money sector. Consequently, the researcher iterated between the data collection, analysis and updating the literature review to ensure a comprehensive understanding until the final draft submission. Supervisory feedback was crucial in guiding decisions and meeting the submission deadline.

7.11 Ethical Consideration

On September 27, 2023, the researcher secured ethical clearance from the Faculty of Commerce, a prerequisite for conducting interviews with human subjects. To uphold ethical standards, the researcher obtained both written and oral consent from all participants before commencing the interview process. Prior to the interview, respondents received consent forms and ample time was allocated for any inquiries they may have before signing. The researcher informed participants about the recording of the interviews and ensured that data is stored in accordance with the data management plan. All data collected were securely stored and only available to the researcher. Confidentiality and anonymity of the interviews were assured to all participants. All the interviewees were assigned with “P” and labelled to protect their identities. All participants were made fully aware that following completion, this research will be published on the Open UCT site as an open-access resource.

7.12 Conclusion

This chapter describes and rationalises the methodology selection and adoption process guided by the research onion framework. A single case study was chosen as the most appropriate strategy to qualitatively explore the factors influencing interoperability adoption in

the MMSP sector. The chapter highlights the sample selection process and briefly discusses the data analysis method using an inductive approach. The research limitation, researcher bias, and research validity have been disclosed in this chapter. Lastly, ethical clearance has been disclosed to conclude this methodology chapter.

In the subsequent chapter, a detailed explanation of data analysis and theme development will be provided, incorporating quotes from participants' own words to elucidate the findings of this study.

Chapter 8: Result and Findings

The case study aimed to investigate the factors affecting interoperability as an inclusive innovation within the South African MMSP sector. This chapter follows the methodology outlined in Chapter 7 to present and report on the theme development process, data analysis, and research findings derived from primary data collected through semi-structured interviews. Additionally, industry reports were consulted to augment and validate these findings.

The primary research question guiding this study was:

What are the factors influencing interoperability adoption in South Africa's MMSP sector?

The two sub-questions were as follows:

1. What are the challenges and potential benefits for MMSPs associated with implementing interoperability in South Africa?
2. What are the key considerations for interoperability adoption by stakeholders with decision-making influence within the MMSP sector? (see Section 1.3)

The methodology employed in this study, providing insights into the research ontology and design employed, was discussed in Chapter 7. This chapter focuses on presenting the results obtained from the data collection process. Through thematic analysis, five themes were developed, systematically identifying, organising, and providing insights into the code patterns across the dataset (Braun & Clarke, 2006). These themes are as follows, refer to 8.2 for details:

- Size of the Footprint
- User Needs
- Degree of Risk and Control
- Level of Strategy and Timing
- Profitability

This chapter will explore the identification of key themes through thematic analysis in Section 8.2, examining them in terms of challenges or benefits to interoperability consideration in Section 8.3. The visual results of the findings reveal that profitability emerges as the primary driver and illustrate how themes interact and shape decision-making in Section 8.4. By examining the interplay between these themes and decision-making, this research aims to present a comprehensive understanding of the factors driving interoperability adoption in the South African MMSP sector.

Finally, the findings will be contextualised within the framework of inclusive innovation, as defined by Heeks et al. (2013), using the "ladder of inclusive innovation" to represent the notion of inclusivity in relation to mobile money interoperability. This chapter presents various interpretations of the findings, serving as an introduction to the discussion in Chapter 9. Chapter 9 examines the findings through theoretical lenses related to the literature streams and considers practical contributions.

8.1 Theme development process

The theme development process unfolded through a series of structured interviews and subsequent analysis. NVivo software was instrumental in managing the coding process, enabling systematic organisation and analysis of the extensive dataset. Initially, a cohort of six participants formed the basis for the primary data collection phase to pilot-test the coding process (Saldaña, 2021). An inductive approach was used in this process; coding was data-driven, and no pre-existing coding frame was defined (Braun & Clarke, 2006). Through meticulous analysis of these interviews, codes were systematically generated based on initial patterns that were observed through the data sets (Saldaña, 2021). The word cloud view of the codes shown in Figure 6 initiated the coding process. The size of the words is based on the frequency of the coding of the data. Please refer to Appendix E for the definition of the codes used.

Figure 6: The Word Cloud View Generated from the Codes

(Source: Author)

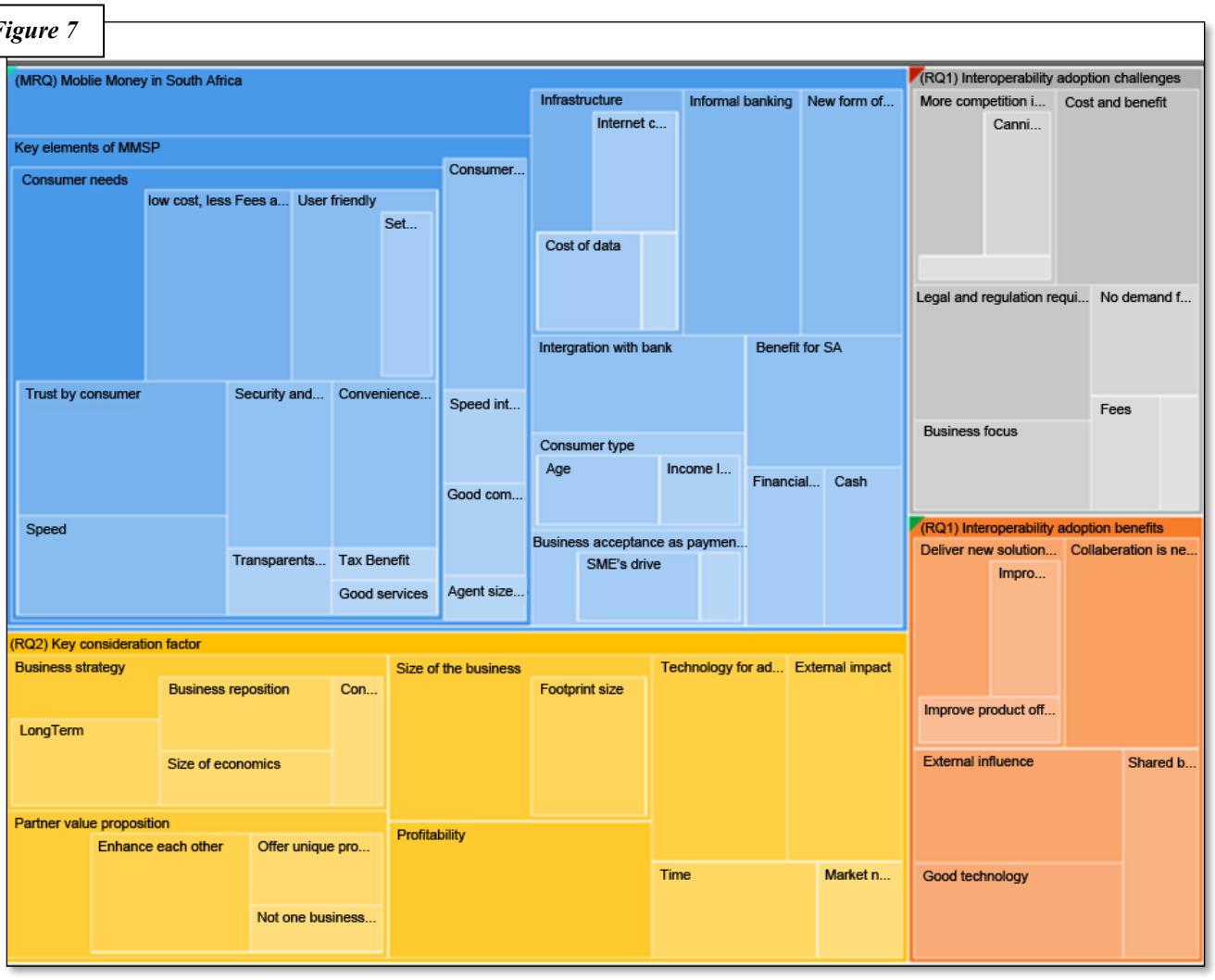
The codes were classified based on the answers of the semi-structured data-gathering protocols (Saldaña, 2021). Structural coding was employed based on the research question. These codes were classified into categories based on the sub-research questions one and two.

Four overarching categories were developed: "Mobile Money in South Africa," "Interoperability Adoption Benefits," "Interoperability Challenges," and "Key Consideration Factors". These categories were thoughtfully aligned with the research questions, thus providing a comprehensive framework for thematic analysis. Refer to Figure 7 for details about the initial code category.

In the following extract from NVivo reporting, each colour represents a category of the research question. The size of each square indicates the percentage of codes associated with that category. Lighter shades represent sub-codes of the main code within the key question element. Refer to Appendix F for the list of this coding analysis breakdown.

Figure 7: Illustration of the Four Categories of Code in the First Round of NVivo Coding Process

Figure 7



(Source: Author by extract from NVivo Software coding report)

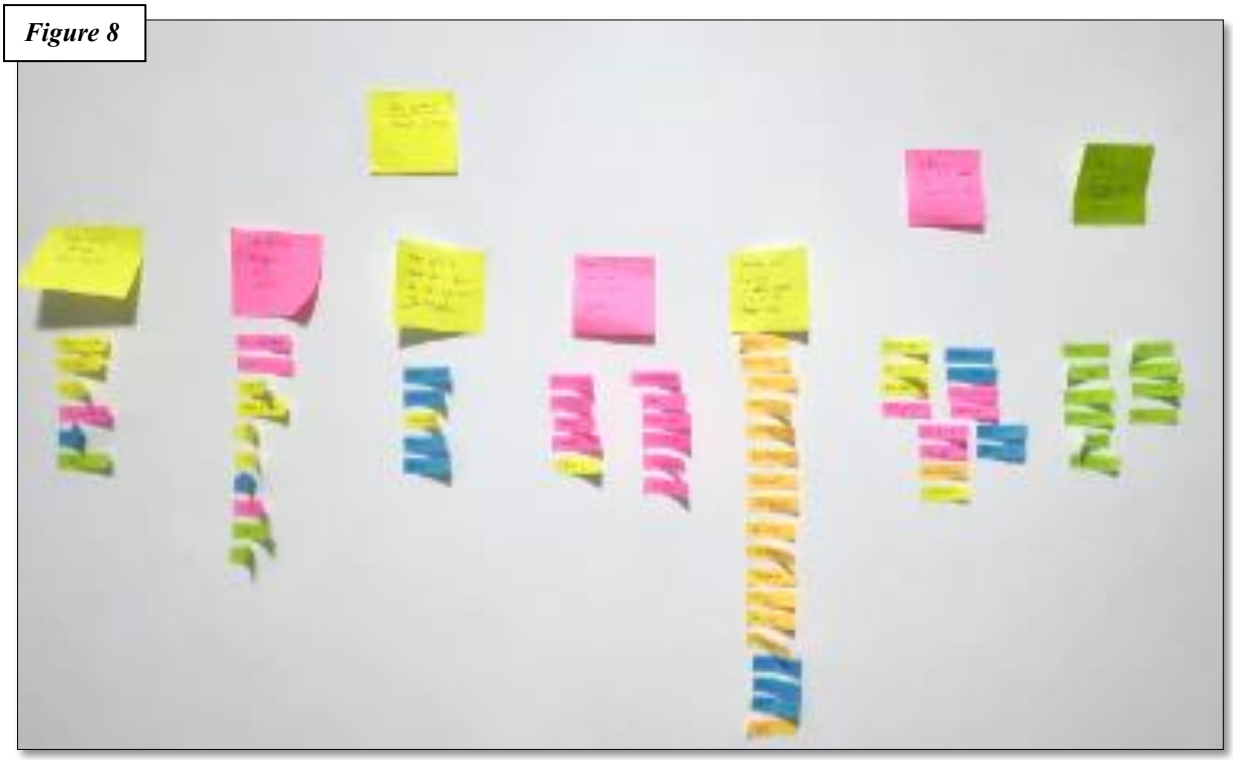
During this data analysis stage, it was noted that specific transcripts were excessively lengthy and contained tangential discussions unrelated to the research inquiry. Consequently, the research questionnaire was refined (refer to Appendix D). The refined questionnaire emphasised clarity and relevance in participant interactions during subsequent interviews. Giving clear instructions and defining the key terms before the interview improved the recording process.

A second phase of interviews, involving an additional seven participants, was conducted to complement the initial dataset and validate evolving codes. This iterative process facilitated the identification of novel codes while necessitating the change and consolidation of existing ones. A total of 2415 words were coded across 525 references, yielding a compilation of 74 distinct codes from the thirteen participants.

The second cycle of coding employed a manual process. Physical representations in sticky notes were used to facilitate the visualisation and synthesis of coded data, each corresponding to a specific code. The coding process extended beyond labelling, linking data to ideas, grouping ideas into patterns, and consolidating patterns into categories (Saldaña, 2021). "*The thematic analysis is to find repeated patterns of meanings*" (Braun & Clarke, 2006, p. 86). "*It involves a constant moving back and forward between entire data set*" (Braun & Clarke, 2006, p. 86) to segregate and regroup the code lead integration, conceptualising the theme (Saldaña, 2021), which was the second coding process. Refer to Figure 8 below, which illustrates the manual coding process. This is further elaborated and presented in Figure 9, where the codes are typed out and explained in greater detail for ease of interpretation. Notably, the category "Mobile Money in South Africa" was disaggregated and distributed among the remaining three buckets to enhance thematic coherence. As the reorganisation progressed, the "Key Consideration Factors" were summarised and sub-coded into the five buckets as they shared common characteristics.

Figure 8*:* Illustration of the Manual Coding Process

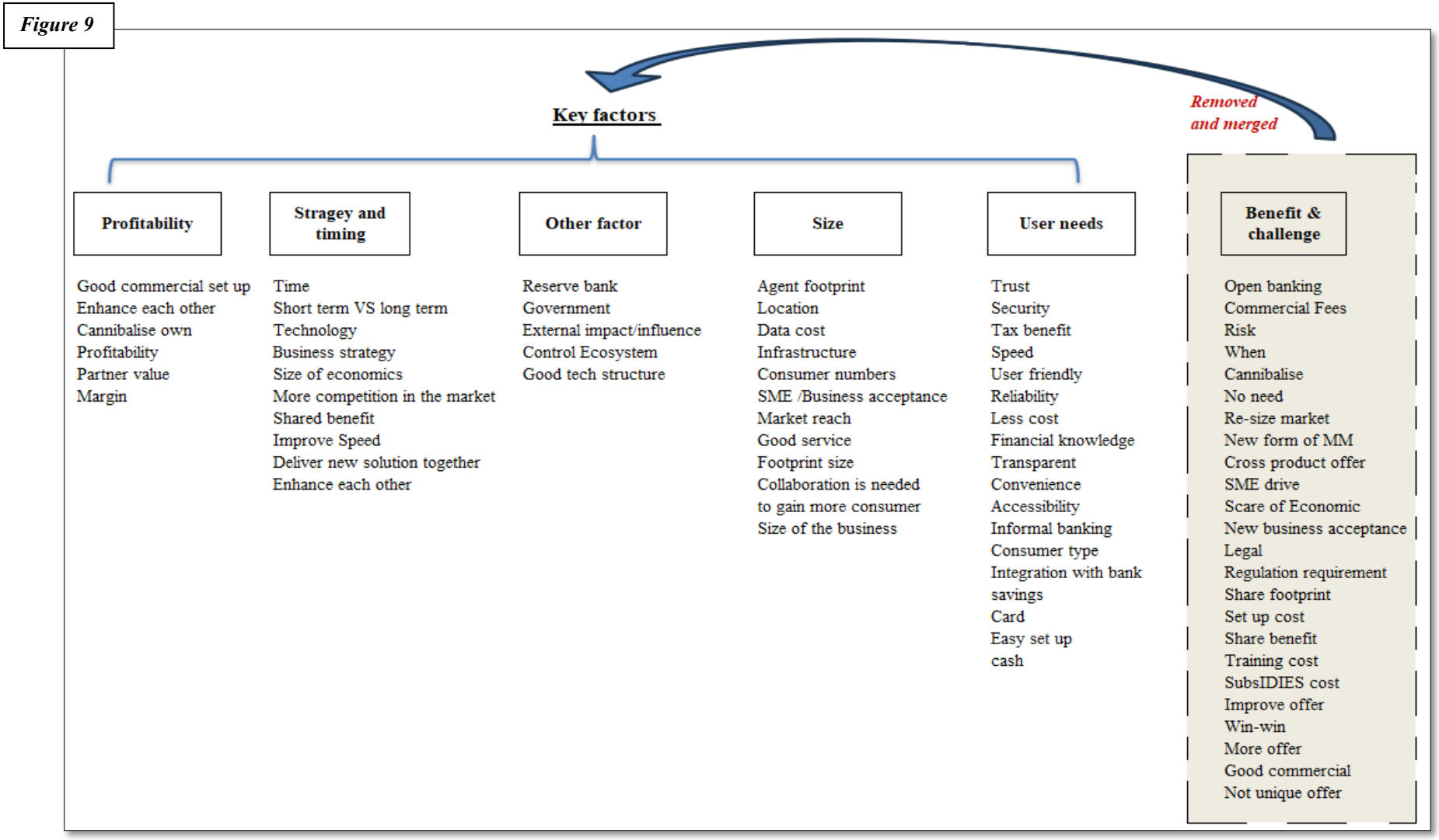
Figure 8



(Source: Author)

Further refinement of the thematic analysis, focusing on the main research question: "**What are the factors influencing interoperability adoption in South Africa's MMSP sector**?" resulted in the identified benefits and challenges emerging as pivotal variables shaping key considerations. Consequently, the overarching theme was conceptualised around these central tenets, leading to the development of five distinct thematic areas encapsulating the "Key Consideration Factors". Refer to Figure 9 below for the merge process of the codes.

Figure 9: List of the Codes Merge and Theme Grouping Process



(Source: Author)

Seven additional interviews were conducted in the final phase of the research data collection to consolidate and validate the emerging themes. This round of interviews included introducing three new participants to provide fresh perspectives and test the robustness of the themes developed. Additionally, four participants from previous interviews were invited for repeat interviews to delve deeper into specific aspects of the research phenomenon. By incorporating new participants and conducting repeat interviews with existing ones, the aim was to enhance the depth and richness of the data collected. This approach not only established validity and improved the credibility of the research findings but also provided a more comprehensive understanding of the research phenomenon, concluding with a critical analysis of the findings (Bans-Akutey & Tiimub, 2021).

Despite the inclusion of new participants and the opportunity for repeat interviews, no new themes or codes emerged from the final round of interviews. This underscores the completeness of the research sample and suggests a saturation of data, indicating that the themes identified were comprehensive and representative of the research context. The absence of new themes further reinforced the validity and reliability of the findings, demonstrating consistency and coherence in the data collected throughout the research process. Eventually, 74 codes were synthesised into five concepts, which were redefined and renamed to keep the analysis coherent into five themes (Saldaña, 2021; Braun & Clarke, 2006). This is consistent with Saldaña (2021), who recommends the quantities for qualitative research be three to seven themes.

8.2 The five themes

After the process of theme development, analysis and review, five themes were finalised for this study. The five themes are defined and described in the Table 2 below:

Table 2: Theme and its Description

Theme	Description
Size of the Footprint	This theme encompasses the breadth of the user base reached by the MMSPs, commonly referred to as their "Footprint" within the sector. It considers both the number and geographic distribution of users and agents. A larger number of consumers and agents utilising mobile money services signifies a broader footprint.
User Needs	This theme explores the needs and demands of mobile money users in relation to the services offered. The degree of user demand influences the supply provided by MMSPs, shaping their service offerings and features.
Degree of Risk and Control	This theme delves into the internal and external risks and controls that impact MMSPs services and ecosystems. It examines the approaches and measures employed by MMSPs to mitigate risks and maintain control over their operations.
Level of Strategic Integration and Timing	This theme focuses on the strategic direction and timing of actions undertaken by MMSPs. It considers how business strategies, goals, and the timing of actions influence decision-making processes and operational outcomes.
Profitability	Highlighting the primary objective of business operations, this theme underscores the importance of profitability. It examines how MMSPs' product offerings and commercial strategies are geared towards achieving profitability and financial sustainability.

(Source: Author)

These five themes will be discussed individually by defining each theme, explaining how they have been utilised in the mobile money sector, and outlining their significance. This is followed by explanations for why these are essential factors for interoperability. Furthermore, the challenges and potential benefits these themes present for interoperability consideration are discussed in Section 8.3.

8.2.1 Size of Footprint

This theme encompasses the breadth of the user base reached by the MMSPs, referred to as the "Footprint". It considers both the number and geographic distribution of users and agents. A larger number of consumers and agents utilising mobile money services signifies a broader footprint. Also note that the footprint is not only limited to informal users and traders but also includes formal businesses, such as retailers.

During the analysis of the interview data, it became clear that footprint size influences the MMSP value proposition. This can be explained by Mas and Nicholas (2012), who state that the MMSP business model is based on gaining a market share through their users and creating some stickiness with them through the geographical reach of services (Aron, 2018). As commented by participants, having a robust footprint is the most critical factor for mobile money to be successful. The participants discussed the importance of footprint size in market share, accessibility, transaction volume, and competitive advantage.

P2: "Everyone wants access to that footprint; all parties are constantly worried about whether or not someone's going to take the footprint"

P5: "Trader agent network, the agent footprint matters"

P6: "There's a competitive landscape, with multiple players entering the market, focusing on building ecosystems for the future that have big coverage and footprint. It is about to have a bigger base."

P6: "Investing in market share, devices, and footprint is most crucial."

P8: "The most important element is actually to gain the user base…a bigger base and (lead to) more people use the same services"

Other than direct use of footprint, there are also merged sub-codes, such as consumer size, trader numbers and user base. These are primarily split into two types of footprints: the agent and consumer base (refer to Section 3.2). The agent model involves building trust and facilitation to enhance the SMEs (MMA), and the consumer base is based on individuals downloading and using the mobile application directly. This was discussed further in Section 4.3 in terms of gaining more footprint by meeting the user needs.

The footprint is important for having a large user base and more market reach. Moreover, the size of the footprint determines their bargaining power with suppliers; as a result, more product offerings and cheaper offers can be provided by the MMSP to the users, leading to more users. This is emphasised by Participant 11: *"The more people who are using it, the more usable it becomes. So, to try and get that critical mass where you have enough people*

using it, that it makes sense for merchants to come on board to make sense for other consumers to come on board…"

Based upon the above statement by Participant 11, which Participant 18 reinforced during the final interview session, MMSPs need to expand their reach, increase transaction volumes, enhance customer convenience, and remain competitive in the market. A strong footprint can be a competitive advantage in the mobile money industry. Providers with a more significant presence may be perceived as more reliable and trustworthy, attracting more customers and partners. Moreover, customers can access mobile money services more conveniently. They can easily find agents or use their phones to action mobile money transactions that meet their financial needs.

A broader footprint ensures that more people, especially those in underserved areas, have access to financial services and enhance financial inclusion. The extent of the footprint forms the core of the business value proposition when considering collaboration. The larger the footprint, the more potent its influence may be. Participant 3 believes the influence of more prominent players highlights potential challenges related to the market dynamics. More prominent players may wield more influence, potentially leading to imbalances in the market, which could affect smaller players negatively. On the other hand, Participant 5's perspective emphasised the potential benefits of interoperability, especially for smaller players. By sharing footprints and costs, smaller players can access a broader customer base and enhance their competitiveness. This suggests that interoperability can level the playing field and foster a more inclusive and competitive mobile money ecosystem. Participant 6 argues that larger players might not see the need to collaborate if they already possess the largest footprint. Moreover, Participant 1 suggests there may be no incentive to share their footprint unless one competitor possesses superior technology or product. Participant 9 stated that a large footprint entity will only be willing to share its user base if a "win-win" situation is evident. Therefore, the size of the footprint emerged as a critical factor in interoperability considerations, potentially impacting positively or negatively. This will be further discussed in the Section 8.3.

8.2.2 User Needs

This theme explores the needs and demands of mobile money users in relation to the services offered. The degree of user demand influences the supply MMSPs provide, shaping their service offerings and features to a certain extent.

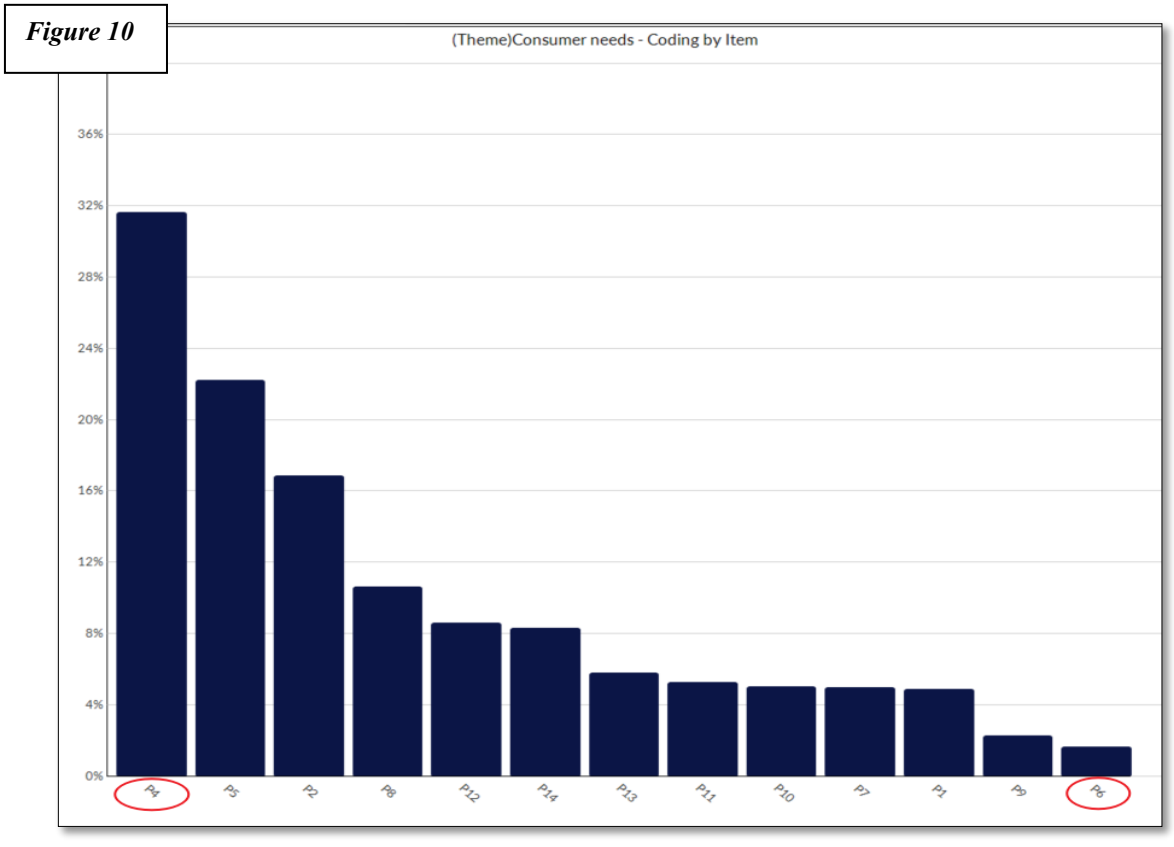
"I think too often businesses start around what's good for them, rather than look at the consumer first. So people talking about consumer centre…I don't think they really look at it from solving real issues for the consumer" P1

"[In South Africa] lower income consumer got a very specific set of needs that would need to be met" P11

"Offering unique benefits and addressing specific money management needs are crucial for mobile money providers…the future lies in collaboration and innovation, driven by the need to meet consumers' evolving needs and preferences. Businesses that embrace collaboration and adapt to changing consumer behaviours will succeed in the long term." P4

In the analysis, addressing user needs emerged as the most frequently coded theme across all participants. Figure 10 illustrates the varying levels of emphasis each participant placed on consumer needs during the coding process. The axes reflect the extent of each participant's focus on this theme, ranging from most to least. Participant 4 demonstrated the highest focus, with nearly 32% of their data related to user needs, whereas Participant 6 contributed significantly less, with under 4% of their data coded in this area.

Figure 10: The Level of the User Needs was Coded at the Participant Level.



(Source: Author)

Based on the results, Participant 4 and Participant 6 were invited for follow-up interviews to discuss the findings. Given that Participant 4 provided the most market insight, Participant 4's participation in the second interview was crucial for reconfirming the completeness and validity of the findings. Participant 6 was re-engaged to gather Participant 6's perspective and value proposition on the user needs theme, as Participant 6's initial input on this topic was limited. During the follow-up, Participant 6 emphasised that user needs are critical but ultimately depend on how they are framed and integrated into the business strategy and timing plans. This point is addressed later in Section 8.3.4. From the coding results, the user needs theme was further subdivided into five key areas; refer to Table 3 below (also, see literature review Chapter 3).

Table 3: The Five Key Areas of User Needs

User Needs		
1, Good services Speed Convenience and accessibility Security and reliability Trust by consumer User friendly Easy to set up	**2, Cost** low cost and less fees Savings Cost of data Tax benefit Transparent to consumer	**3, Consumer type** Income level Age
4, Support structure Infrastructure Internet connect Integration with bank Informal banking Financial Inclusion and exclusion Agents drive	**5, No demand from consumer** Card instead of MM Formal channel Cash Business acceptance as payment method	

(Source: Author)

8.2.2.1 Good services:

MMSP believes that users are looking for good services. "*Speed and flexibility that can get products and services out to customers quickly*" as mentioned by Participant 1. Eight

of the participants repeatedly highlighted that "quick and instant and easy" use is essential to the users.

"*Speed of technology*" assists with "*transferring funds in its real time*" and user's need, "*reliability and security*" in control of their finances. Moreover, the quicker the service is, the more convenient for the MMA to provide their service to their consumers. As highlighted by Participant 13 and Participant 14, MMA customers do not want to wait in the shops for transactions to go through. Additionally, speed and accessibility were mentioned by eight of the participants. "*People trust simple things that [are] working*" and "*simple interfaces, [that are] very user friendly*" are the key to gaining more users, as mentioned by Participant 5. Participant 6 agreed that "*advanced technology will not be in use*" and "*users may not understand English*" as highlighted by Participant 2.

"*Culture and trust [is] still the issue*" and "*word of mouth plays a significant role in driving adoption*" as mentioned by Participant 4 and Participant 2. All participants mentioned that trust is the key element, echoed in the repeat interview by Participant 7, who highlighted that "*trust involved in the sense that users can give up the physical cash and believe they still have the control of their money."*

8.2.2.2 Cost

Another concern regarding user needs relates to MMSP's belief that users seek the most affordable prices. Low cost and savings are essential for the users. The savings on the transaction and convenience fees are the key drivers for people using the informal channel. Participant 11 commented, "*Consumers are very price sensitive… agents like the financial incentives for using the service*". This was mirrored by Participant 4, stating that "*people are becoming less brand loyal and more focused on the benefits offered by the different providers*". It is essential that people know that they are paying for "*transparency of the transaction cost"* and that the ability to avoid *"being tied to a specific bank [is a key factor] is encouraging [informal banking]",* as commented on by Participant 13, Participant 7 and Participant 4.

Noting that tax saving is debatable as part of needs, Participant 2 highlighted the tax benefit as a key consideration at the SME level. However, Participant 4 urged the growth of SMEs to be part of the formal path. The rest of the participants agreed that tax savings should not be part of the business's consideration for its users' needs.

8.2.2.3 Consumer types

Participants believe that income level and age affect consumers' usability of mobile money services. The younger generation is far more open to mobile applications. Lower-income and casual workers use mobile money as it is cheaper and easier than formal bank channels. Five participants mentioned that older consumers with lower incomes are unlikely to use mobile money and technology. Through personal observation, Participant 18 mentioned older females in the same low-income range being more likely to use mobile money than males. This was particularly interesting as gender had not been focused on much in previous research or any other interview conducted in this study. Participant 18 believes that with the younger generation, there is no gender difference in using mobile money. This has been queried during repeat interviews to address all plausible rival interpretations and attend to all evidence with no loose ends (Yin, 2014). Participant 6 and Participant 7 do not see any gender difference. Participant 4 explained in the second interview it is customary that older females are more than likely to handle the financial affairs of the household in the informal areas "*because in a slightly older generation you see a majority of women as breadwinners and it is more likely their children sending money through mobile money to their mother*" and Participant 4 concluded it as "*I won't say it is true but it is possible*".

8.2.2.4 Support structure

Participants highlighted the importance of infrastructure in South Africa to have more users and for mobile money to be more successful. It would be essential to have a good internet connection to use mobile money; it would be helpful to integrate with formal banking and make informal banking more convenient. Financial knowledge, literature and training are essential for financial inclusion. Additionally, accepting more mobile money in the informal space must be more agent driven.

8.2.2.5 No demand from consumers

In this category, participants commented that having a card for the informal channel is more needed than mobile money, the phone is easier to steal, and there are more places to use the card than mobile money. These participants believe that formal channels have been and

can be more aggressively pursued with roll out to the informal sector, looking at the banked population and South African Social Security Agency (SASSA) grant[15] payment.

Some participants think cash is still king and nothing will replace it. Lastly, some participants believe that mobile money can be more successful than it currently is, but there is not enough demand from the consumer side. "*The market seems satisfactory as it is"* emphasised by Participant 6. Therefore, these participants do not see that mobile money would be more successful than it is currently, even with interoperability, as is evident in Participant 7's comment that "*if the need is there from the client, then it'll get done.*" Furthermore, Participant 5 commented that the needs should not be on the users but "*needs to go is more towards accepting, focus[ing] on enabling businesses to accept various forms of mobile money*."

During the repeat interviews, all findings were shared, and themes were discussed. All participants agreed on the themes, and no new coding was introduced. Participant 6 further highlighted that trust is significantly important; it encompasses not only the fundamental needs of the users but also the service quality they demand. It is also a crucial element in terms of business collaboration. Collaborating with businesses that users trust and meeting the users' needs is a good advantage factor. Furthermore, Participant 7 reinforced the level of awareness of mobile money, the internet infrastructure and integration with banks could lead to more need. Participant 7 agrees that business acceptance would lead to more demand, and interoperability would significantly contribute to closing that gap.

8.2.3 Degree of Risk and Control

The next theme concerns risk and control; this theme delves into the internal and external risks and controls that impact MMSP services and ecosystems. It examines the approaches and measures employed by MMSPs to mitigate risks and maintain control over their operations.

Internal factors are about how the business can manage its technology environment and how to control the ecosystem in which the mobile wallet operates. Participant 14 summarised it as "*more safer technology environment [then] than less risky…business wants to track that money movement"*. Participant 9 emphasised that "*when you control your ecosystem, you can control your (money) destiny. You can control what your merchants use the funds in your wallet*

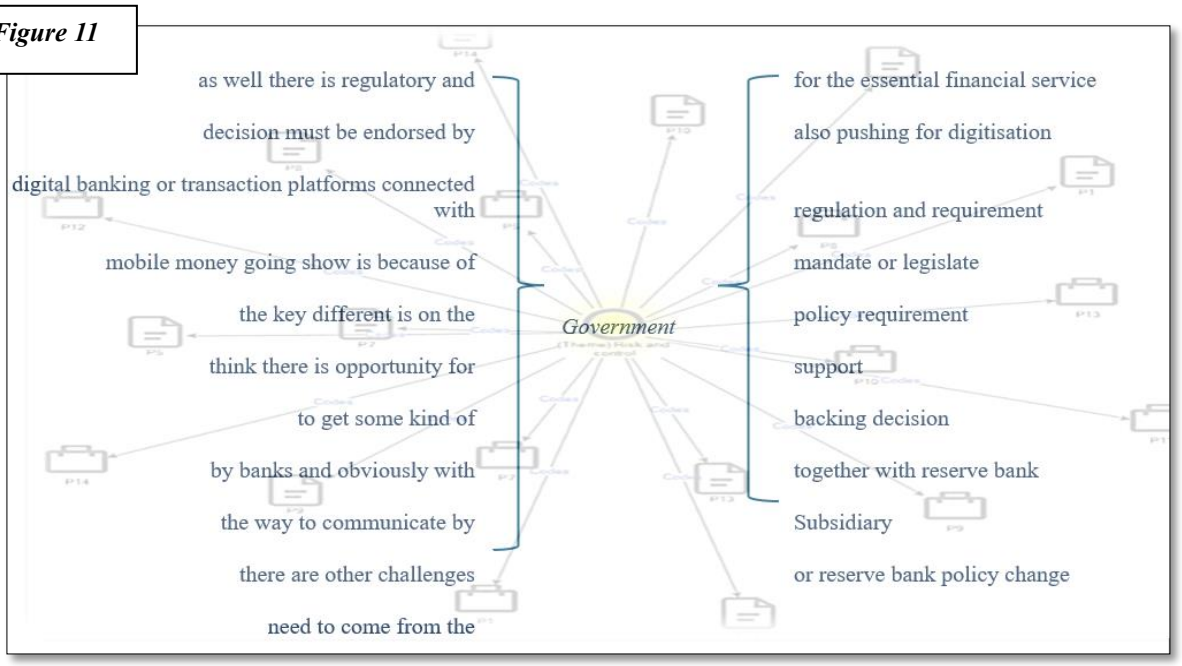
[15] SASSA is a national agency of the South African government created in April 2005 to administer South Africa's social security system, including by distributing social grants, on behalf of the Department of Social Development, categories focused in low income, old age and children care. https://www.sassa.gov.za/SitePages/Social-Relief-of-Distress-Grant.aspx

for. As soon as you open the back door into a different environment, you don't have visibility" In addition, Participant 13 has a concern about the technological ability "*to kind of integration and collaboration, you may not [be] able to connect the way you want to, [it] depends on the maturity level of the other plug in"*. Participant 7 stressed that the internal technology has to be solid and not lead to any integration issues that may damage its environment. Therefore, strong technology can improve control and reduce business risks. Participant 18 further commented that technology must also comply with regulation requirements; the system must be set up correctly, which is beneficial in the long run, especially with software updates and hardware upgrades.

From external factors, the most mentioned word was government. Participants believe the government strongly regulates the South African market with regulations and requirements, which slows mobile money growth. There are many limitations set by government regulation, as highlighted in the literature review, Section 5.1. However, they also believe that the government and reserve banks' new way of financial inclusion, with open banks, would lead to more opportunities and collaboration in the financial sector. Referencing Figure 11, it is evident that all participants' coded comments relating to this theme have included mentions of "government." This highlights the participants' recognition of the government's role in this context, as reflected in their interviews and insights.

Figure 11: Words Diagrams that Highlighted "Government" within the Theme of Risk and Control

Figure 11



(Source: Author)

Intriguingly, MMSPs don't appear to view mobile operators as a significant external factor or key consideration element in their operations. Mobile money operators have been viewed as mobile money service providers with network limitations. While this aspect hasn't been explicitly addressed in the interview questions, it's notable that banks and formal channels are more commonly perceived as external factors and a business threat.

In summary, 10 participants believe that collaboration in the sector needs an external push, and the initiative is more than likely to be led by the government or the reserve bank.

8.2.4 Level of Strategy and Timing

This theme focuses on the strategic direction and timing of actions undertaken by MMSPs. It considers how business strategies, goals, and the timing of actions influence decision-making processes and operational outcomes.

The highlight of strategy is about a "win-win" that enhances each other's business. The strategy focuses on two primary requirements: expanding the footprint and addressing the users' needs. Therefore, a business is more likely to partner with another with better technology, provide faster and easier services, or, as an advanced technology business, collaborate with another company offering more products. Participant 7 commented that the current focus is *"the business as usual, you know, no one is going to take away my customer and good pricing, that's important",* Participant 13 agrees that the current focus is *"obviously just how quickly you can get into the market, offering the product to the users"* Participant 9 reinforced that " *enabling services is to partner to achieve better speed and able to provide unrelated product…. to growing customers as quick as possible*". This has been concluded by Participant 9 further as "*businesses are not going to do things or invest into uncertain or potentially harmful to our business*".

It is important to select partners and product offerings that can gain more market share and manage competitors. Furthermore, it is essential to determine the optimal timing for implementing the strategy. The short-term and long-term execution of the strategy then becomes key.

"It is so important to choose who to partner with and when is the most important question to consider…" P1

"I think that mobile money space will become much more competitive over the next few years and maybe we'll see some consolidation at some point as some players do leave the

market or are removed from the market…. So I think strategy because if you can, you've got the biggest baskets or biggest group of people using your product, you can control the narrative around you" P13

"Business potentially need to reposition right now, which I'm saying is change business strategy, not only focus on trader but the size of economics" P5

"I believe strategic partnerships are the way forward, so we can build a new relationship with our traders… the new relationship with shop owners is not about value-added services. It's more around the business solutions that we bring to shoppers" P2

"*There is ongoing growth, and we just need to have better strategies in terms of when and how to get people to adopt and retain the consumer*." P18

"There is a need for more forward- thinking and innovation…. It's an outdated business model to go after our competitor… And now days we got to start opening doors and we've got to start looking at collaborations because there's certain things, we don't offer... so I definitely think collaboration is probably one of the only ways to secure businesses in the long term… The future lies in collaboration and innovation, driven by the need to meet consumers' evolving needs and preferences. Businesses that embrace collaboration and adapt to changing consumer behaviours will succeed in the long term." P4

It is interesting to note that none of the discussion addressed users' needs as the current business strategy. Participant 6 echoed this understanding during the repeat interview session. Participant 6 was asked to comment on his perspective regarding users' needs, as he made little comment about it during the initial interview session (refer to Section 8.2.2). Participant 6 pointed out that "*the users need is not really of a business focus, it is more the bigger picture of strategy and profitability at the end of the day… the position of the business or the value proposition in terms how they see themselves has nothing to do with users"*. Based on the interview discussion, the business focus is likely to establish the right partnership to enhance the product offering and gain more market share from the competitors. Other participants commented on the bigger picture as South Africa needs new forms of mobile money that deliver new solutions and business repositioning over a long-term investment. The long-term vision included considering the users' needs alongside innovation and investment.

Furthermore, the final cohort of participants also agreed with the theme and echoed the findings. Participant 4 states that "*win-win is the key, and it is very strategic about who we would enable… it needs to go beyond just product… bigger than the current, consider the needs and opportunities out there, there is a need of innovation and collaboration of the industry*".

Participant 7 agreed with the findings and emphasised, "*there is a need down the line, and I agree to certain extent but when is the good time, is the market mature enough and created enough awareness to establish the digitisation…more over interoperability happens when market is ready to switch, maybe next few years or sooner, get the right timing is important*". There is acknowledgement regarding a need for interoperability and the vision beyond the current offer, but when will it become a key consideration?

8.2.5 Profitability

Highlighting the primary objective of business operations, this theme underscores the importance of profitability. It examines how MMSPs' product offerings and commercial strategies are geared towards achieving profitability and financial sustainability.

It was somewhat challenging to categorise Participant 8's comment: *"The strategy focus is the profitability which from the shareholder, not to rebuild and lifting poverty, this is just to me, this approach is wrong, but business is around that."* It underscores the tension between profitability as a business strategy and the broader societal impact, particularly concerning poverty alleviation. All participants emphasised profitability as a key element for MMSP.

Participant 11 was explicit about profit as the driving force: "*We first need to have financial incentive in place, the commercial needs to be good and strong for the business… We want profitability, and we need to have a good margin… It will always be motivated by profitability at the end of the day; these businesses have obligations to their shareholders.*" Participant 5 highlights that "*profitability is what the business gets out of it after all; business should never use resources and energy that squeeze the margin.*" Participant 7 comments, "*it needs to make financial sense… Financial benefit initiates all business… What is the bottom line is the matter*." Overall, these comments collectively reflect the overarching priority of profitability and financial sustainability for businesses.

There were further explanations and discussions regarding partnerships with shared benefits and collaborations as a game changer. However, it "*cannot cannibalize own product and margin*," as emphasised by Participant 1, Participant 5, and Participant 9. Furthermore, seven participants discussed the costs and benefits, with Participant 14 stating that a business can "*invest, paying for higher costs or bigger outflows of funds, but it must enable profit in return*" and it certainly "*cannot let competitors make money*".

After defining and analysing the themes, the above five theme findings were presented to the final interview cohort: participants Participant 7, Participant 6 and Participant 18. They particularly highlighted that the most challenging factor for interoperability is the financial involvement in terms of setup costs, training, and implementation costs. This mirrored the point made by Participant 11 in an earlier interview, confirming that business concepts must be proved, and the business case needs to make financial sense. "*Some things like revenue-sharing agreements, where if there is interoperability, all the revenue is not going to go to just one party but a mutual benefit share agreement to balance the interests, I think that's an important success factor.*" In the same way, as Participant 6 stated in the repeated interview, business needs to be profitable at the end of the day. Finally, this finding was presented to Participant 15; the participant giggled and believed that the business is just about its margin and profitability to make more money.

8.3 Challenge and Benefit

Based on the MMSP's inherent identity and various influencing factors, the interoperability consideration can be categorised independently based on these five themes. Therefore, this section is focussed on addressing the sub-research question **1: What are the challenges and potential benefits for MMSPs associated with implementing interoperability in South Africa?** When the benefits of interoperability outweigh the challenges, the response leans towards "Yes " rather than "No" to interoperability, and it can be summarised by the key codes in each theme as demonstrated in Table 4 below. Each theme can either be enhanced or disagree with interoperability based on MMSP's position in the sector, which will be discussed further in this section.

Table 4: Summary of Each Theme in Benefit or Challenges to Interoperability

Theme	Yes↑	No ↓
Size of the footprint	Smaller players Cover more area Gain more consumers & agents More product offer	Large footprint Share of footprint Resize the market share May lose its position in the market
User Needs	Met consumers need better Able to provide more product Better technology SMEs offer Link with formal bank Better coverage Demand to use MM	Believe there is no demand Consumer needs a bank card Cost of use MM (airtime/internet) is not worth it Not aware of MM
Degree of Risk and Control	Internal Well-designed system External Industry-standard Government support Reserve bank requirement	Internal Business risk Lose control of the ecosystem External Regulation risk
Level of Strategy and Timing	Win-Win More market offer Better transaction speed Cross sectors long term focus Shared value Size of economy Innovation and investment Grow digitalisation	Current focus Manage the competition Address current market needs Stabilise the current offer Gain more market share in current status
Profitability	More income Additional revenue share External subsidy Partner value proposition Enhance each other margin Additional charge on service	More cost Initial set-up cost Training and roll-out cost Lose the ability to lock into the ecosystem Commercial structure Cannibalisation own product No need to move if already making money Margin lost with more competitors

(Source: Author)

8.3.1 Size of the footprint

Suppose the market players are in similar positions. In that case, interoperability can be expected to emerge as a market solution because the players will see the benefits of the interconnection with each other (Maune et al., 2022). Smaller players with less established footprints will likely benefit from collaboration to access a larger footprint, expanding their

market reach and attracting more consumers and agents. Collaboration allows smaller MMSPs to offer a more unique product offering into the market, which can help them attract new users and agents. By collaborating, MMSPs can cover a wider area they could not reach before.

On the other hand, large-footprint MMSPs may resist collaboration as they risk resizing their market share and sharing their profits with smaller players. Sharing the footprint with smaller players could potentially erode the dominant position of more significant players in the market. This has been noted previously in Section 8.2.1, as there is no incentive for the business with more reach to share its footprint with a possible risk of repositioning.

8.3.2 User Needs

MMSPs that prioritise meeting consumer needs may be more open to collaborating, as they can provide a wider range of products, better technology, and improved coverage. When MMSP's focus is beyond only aiming for acceptance as a payment method among informal traders, it opens up partnerships with SMEs, formal corporations and banks. That might enable MMSPs to better address a wide range of user needs, thereby enriching their market offerings and attracting more users. Participant 5 stated that "*interoperability is crucial for consumer adoption, focus on enabling businesses to accept various forms of mobile money."* Participant 4 agreed that "*interoperability can offer benefits to both MMSPs and end-users by providing greater flexibility and convenience in financial transactions. However, there are challenges, including consumer distrust of banks and institutions, which may hinder adoption. Additionally, ensuring security and addressing concerns about fees are crucial factors influencing both providers and end-users…consumers want control over their money without being tied to a specific bank or institution. They prefer prepaid options to avoid unpredictable fees and value the ability to track their transactions closely."*

However, some MMSPs may underscore consumer demand for mobile money services, believing consumers prefer traditional banking methods like bank cards. They are more concerned about costs associated with using mobile apps, such as data usage charges that may negatively impact the usability of mobile money. These MMSPs do not see the demand from the users and, therefore, do not believe collaboration efforts are needed.

Additionally, Participant 7 expressed a strong viewpoint during the first-round interview, asserting that there is currently no significant user demand. Participant 7 justified this perspective by citing the market's immaturity and lack of establishment in mobile money,

noting that general education and awareness about digitisation are lacking. According to Participant 7, the market still relies heavily on word-of-mouth communication and has not fully embraced digital solutions "*...eventually people will use it but not now, so no need in terms of in general, market is not mature, and we will probably get there in the next few years if not sooner, government and policy set up would help it rapidly grow*".

8.3.3 Degree of Risk and Control

MMSPs with well-designed internal systems and adherence to industry standards are more likely to collaborate, reducing internal risks and ensuring system reliability. Collaboration may be more appealing with government support or adherence to reserve bank requirements, reducing regulatory risks and increasing credibility. MMSPs will have no option if an industry standard or reserve bank requirement is published. Participant 12 believes that interoperability may have a significant impact beyond the MMSP level. As yet, "*South Africa as a country, I think it will increase its credibility and also from a security and trust perspective, if the interoperability is further enhanced, right, uh, that allows, you know, data sets to be share[d] across the system, more comparisons right between the data. And that will facilitate a more robust business infrastructure, the underlying financial infrastructure*". Based on this comment, it is evident that interoperability implementation may be addressed at a higher level rather than merely as a private sector initiative.

On the other hand, companies with weaker technological foundations may resist collaboration due to concerns about exposing their systems to risk with different connectivity. MMSPs may be reluctant to collaborate if they are more at risk of losing control over their ecosystem or are open to potential regulatory risks.

8.3.4 Level of Strategy and Timing

Collaboration provides MMSPs with opportunities to develop win-win strategies and establish mutually beneficial relationships. This will broaden their market offerings and attract more consumers (Zhang & Liang, 2011). MMSPs are increasingly receptive to partnering with businesses that offer superior and faster technology than their current options. At the same time, they are willing to engage in co-opetition with entities providing products or services from different sectors, even if they are unrelated to their existing offerings. These factors serve as catalysts for co-opetition. Developing advanced technology and diversified product offerings may require significant time and resources. As Participant 9 pointed out, the strategic rationale

behind this approach is akin to a reciprocal arrangement: *"If you scratch my back, I will scratch yours, effectively*."

Another factor, related to timing, which could drive collaboration efforts, is when a business is open to having a long-term focus on shared value creation, innovation and investment. The long-term focus strategy could foster growth, cross-sector digitalising and effectively broaden the economy of scale,

On the other hand, MMSPs may prioritise short-term gains and focus on managing competition rather than pursuing collaboration to address current market needs. These approaches could help answer questions about how to gain more market share with current offerings from the competitors, as well as stabilise the current offerings by addressing the current market needs without expansion.

8.3.5 Profitability

MMSPs can enhance each other's value propositions through collaboration, if there are additional services offered. This sentiment is echoed by Participant 9 who states: "*If your services don't overlap, there is a benefit in enabling interoperability, if services overlap and so interoperability is unlikely because there is effectively revenue lost on our ecosystem*."

Interoperability is more beneficial when there is mutually agreed revenue generation, external subsidies, or a broad profit share that enhance each other's offerings, providing mutual benefits for partners and driving collaboration.

MMSPs already in a good profit position may see little incentive to collaborate for fear of reducing their margins or disrupting their current business model. Participant 6 highlighted that "*Interoperability may lead to increased competition but might not benefit existing market leaders…Interoperability could lead to increased competition and possibly lower margins in the short term…and decrease the profitability.*" This could raise concerns about the commercial structure as it may cannibalize their product distribution and reduce profitability. Furthermore, the open ecosystem will not be able to lock users into their system, resulting in lost breakage. Significant concerns about initial setup costs, training expenses, and the risk of cannibalising existing products may deter MMSPs from pursuing collaboration.

8.3.6 Conclusion

This section focused on mapping the findings in a way that addresses the research question in terms of the challenges and benefits regarding the implementation of interoperability in the MMSP sector. By summarising the codes in the themes to “Yes” and “No” columns, it provided the understanding of whether interoperability would encourage or discourage the MMSPs from collaborating. This provides an in-depth insight into the understanding of the theme, which paves the way for discussion in Chapter 9.

8.4 Relationship between the five themes

After analysing the findings of the five themes and their impact on interoperability adoption, it becomes crucial to delve into the relationships and interactions between these factors. Understanding the cause-and-effect dynamics among these themes is essential to grasp how changes in one theme can influence others.

To visually represent these relationships, an Interrelationship Diagram was chosen as a tool to identify key drivers. At the same time, a Causal Loop Diagram was created to illustrate the causal effects between variables. These diagrams provide a visual representation of the relationships and how they impact each other, particularly regarding interoperability adoption considerations. These diagrams aid in decision-making processes by identifying key drivers and feedback loops.

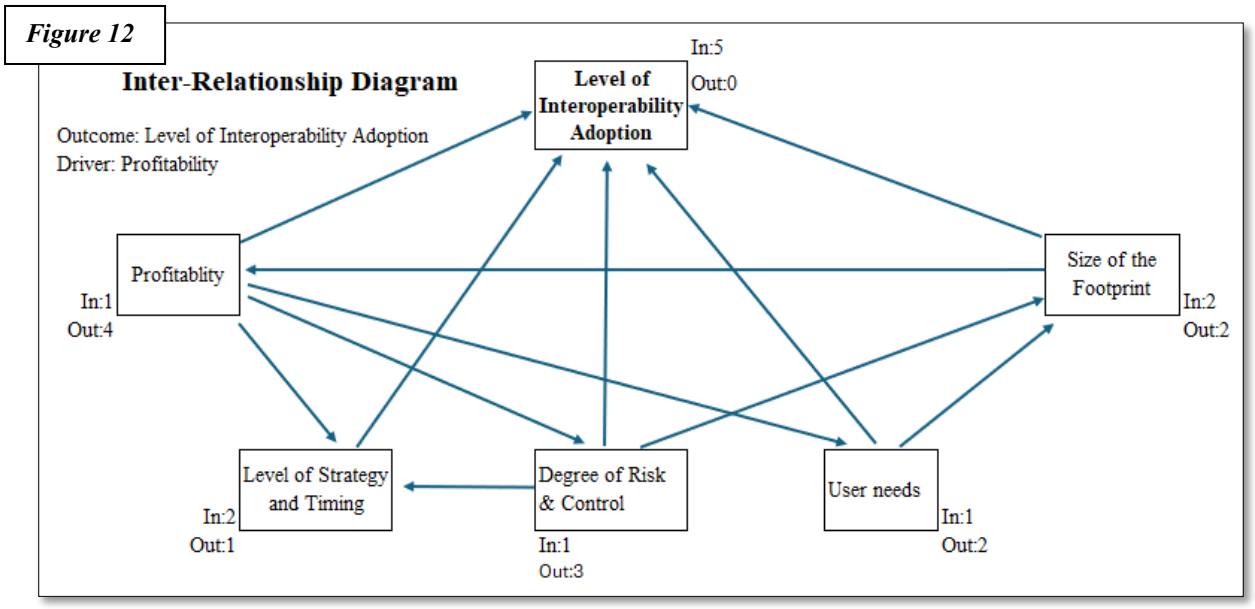
This section addresses the sub-research question: 2**. What are the key considerations for interoperability adoption by stakeholders with decision-making influence within the MMSP sector?** It explores how each theme affects one another and highlights profitability as the primary driver influencing adoption considerations.

8.4.1 Interrelationship Diagram

To examine the relationships and causal links between the themes, an interrelationship diagram was utilised as a tool to depict the connections among these five factors (Doggett, 2005). This diagram is designed to clarify complex relationships, presenting a problem-solving and decision-making approach by linking each factor cohesively. Therefore, each theme was treated as a variable in relation to the level of interoperability adoption, and the theme was considered to assess the impact on other themes. The process followed a clockwise direction until every theme had been thoroughly examined and the analysis completed. Arrow lines

indicate whether Theme 1 impacts Theme 2 and vice versa. The number of arrows associated with each theme was tallied to determine the flow of influence both into and out of the theme. After all relationships had been assessed, a theme with more "out" arrows than "in" arrows is a cause, while a theme with more "in" arrows is an effect (Doggett, 2005). Therefore, a theme that has the most "out" emerged as the driver, being the root cause. This gives a structured and systematic approach to the analysis of the themes' relationship, which is also simple and easy to follow (Doggett, 2005). Refer to Figure 12 below for the interrelationship diagram showing the themes from the findings.

Figure 12: Interrelationship Diagram of the Five Themes



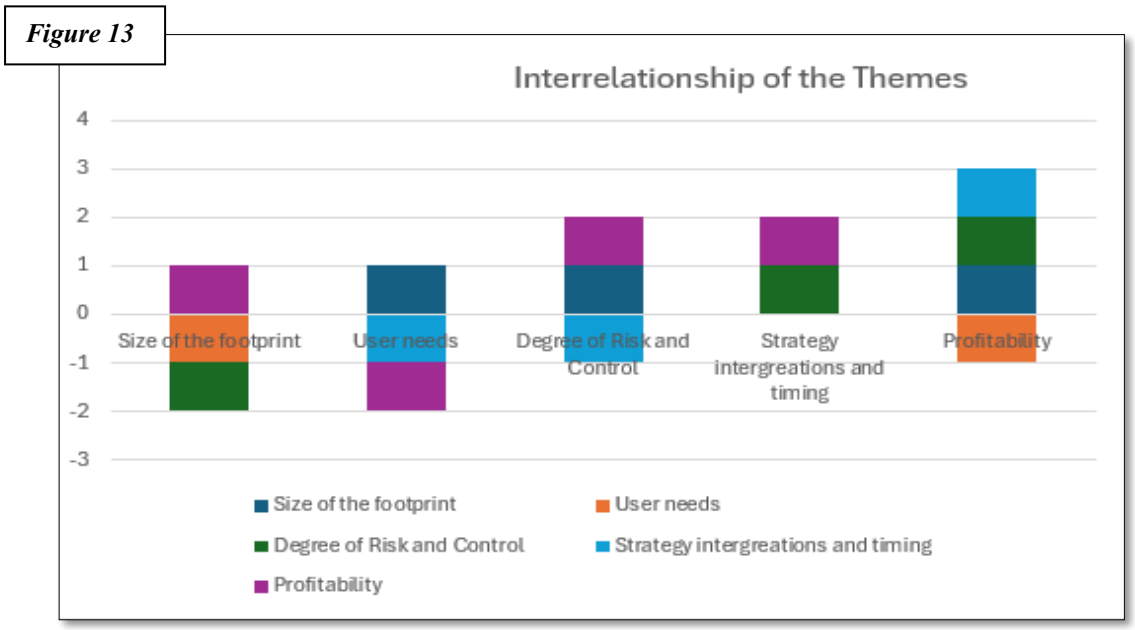
(Source: Author)

Referencing Section 8.2 for the individual theme analysis and based on the interrelationship diagram, profitability emerges as the primary driver for the level of interoperability adoption. A larger footprint correlates with increased profitability, prompting businesses to invest and prioritise user needs. Focusing on current strategies may yield short-term cost savings, though long-term investments may be necessary, incurring additional costs. Moreover, an internally controlled environment mitigates business risks, while external control support enhances profitability. However, when a business is more profitable, it becomes increasingly interested in understanding users' needs and prioritises meeting them instead of pursuing competitors' market share. Consequently, with all five key considerations for interoperability adoption, profitability stands out as the most influential factor driving

interoperability consideration. See the detailed discussion in Appendix G for further details on each interrelationship per theme.

A graph, illustrated in Figure 13 below, was developed to visually represent the relationships between themes; refer to Appendix G for assumptions and calculations. Figure 13 shows the graph of the themes' interrelationships, which clearly highlights profitability as the primary driving force, as it achieved the highest score for root causation. The visual depiction enables a more straightforward understanding of how profitability is a central driver for interoperability adoption within the sector.

Figure 13: The Graph of Interrelationship of the Themes



(Source: Author)

Participant 4 agreed with profitability being the key driver and commented: "*I think there's a lot of truth in it… if the cost of doing business is costing, I know that sounds stupid, but you've got your cost of doing business right the first, it is just sort of margin for the company or profit for the company that drive the business*"

8.4.2 Causal Loop Diagram

After identifying the key driver and outcomes, a causal loop diagram was created to further identify the cause-effect between the themes. A causal loop diagram consists of the variables, the links between them, the interconnection directed by the sign between the variables, and the loop that indicates the behaviour in the system. Three distinct loops emerged

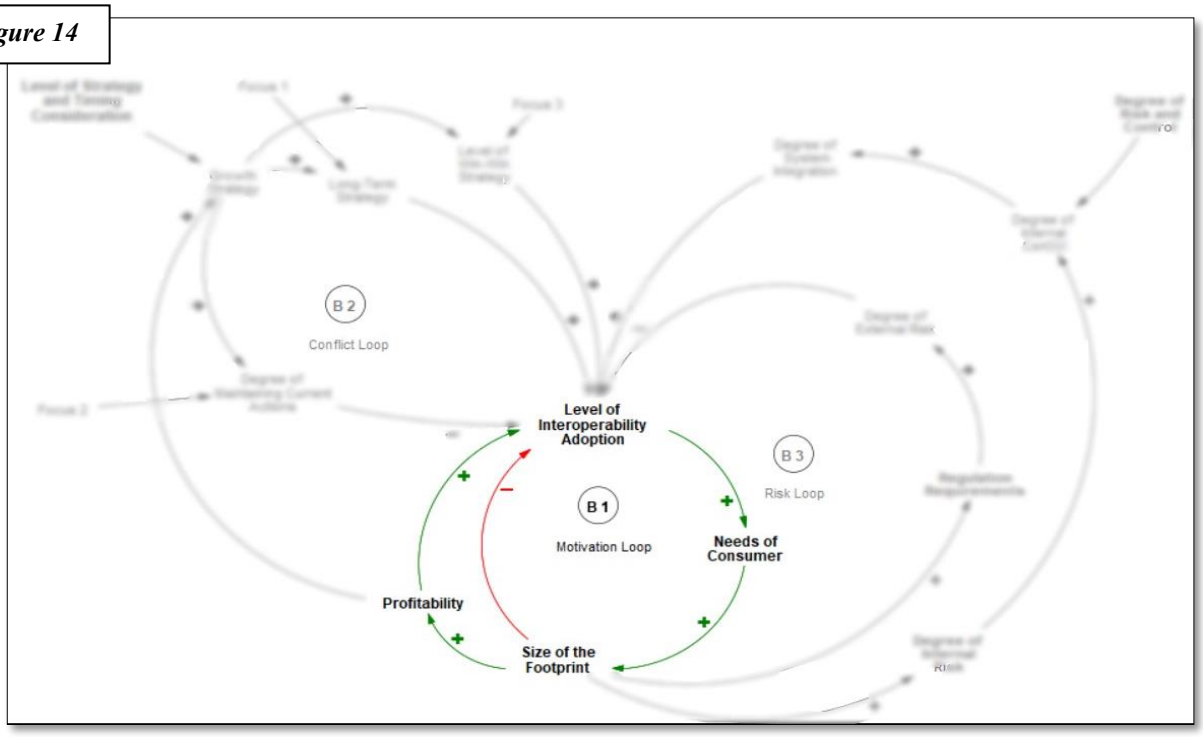
from the findings, each weaving its narrative of influence and consequence. Based on the theme analysis, the causal loop has been demonstrated through Figure 15 to Figure 17, where a green arrow with a "+" sign represents a need to increase, and red with a "-" sign depicts resistance in the system.

Loop B1 is identified as the Motivation Loop, where most variables reinforce the move toward interoperability, except for footprint size. Named for its influence on promoting interoperability, this loop suggests that as the variables increase in the loop, so does the level of interoperability adoption. A larger footprint size leads to higher profitability, and as profitability rises, businesses show greater openness to consider interoperability. This interconnected sector better meets user needs, further amplifying the growth of the mobile money sector's footprint.

This summary encapsulates the interplay of three themes as variables that amplify each other toward interoperability. However, the willingness to pursue interoperability may decrease when the footprint size reaches a significant scale, and the business becomes a dominant player. In such cases, the dominant position reduces the perceived benefit of sharing resources, as resizing or sharing might not be advantageous. Figure 14 below highlights the Motivation Loop (B1), focusing on the green area, while the rest of the loop is greyed out and will be further elaborated in the following Figures.

Figure 14: B1 as the Motivation loop

Figure 14



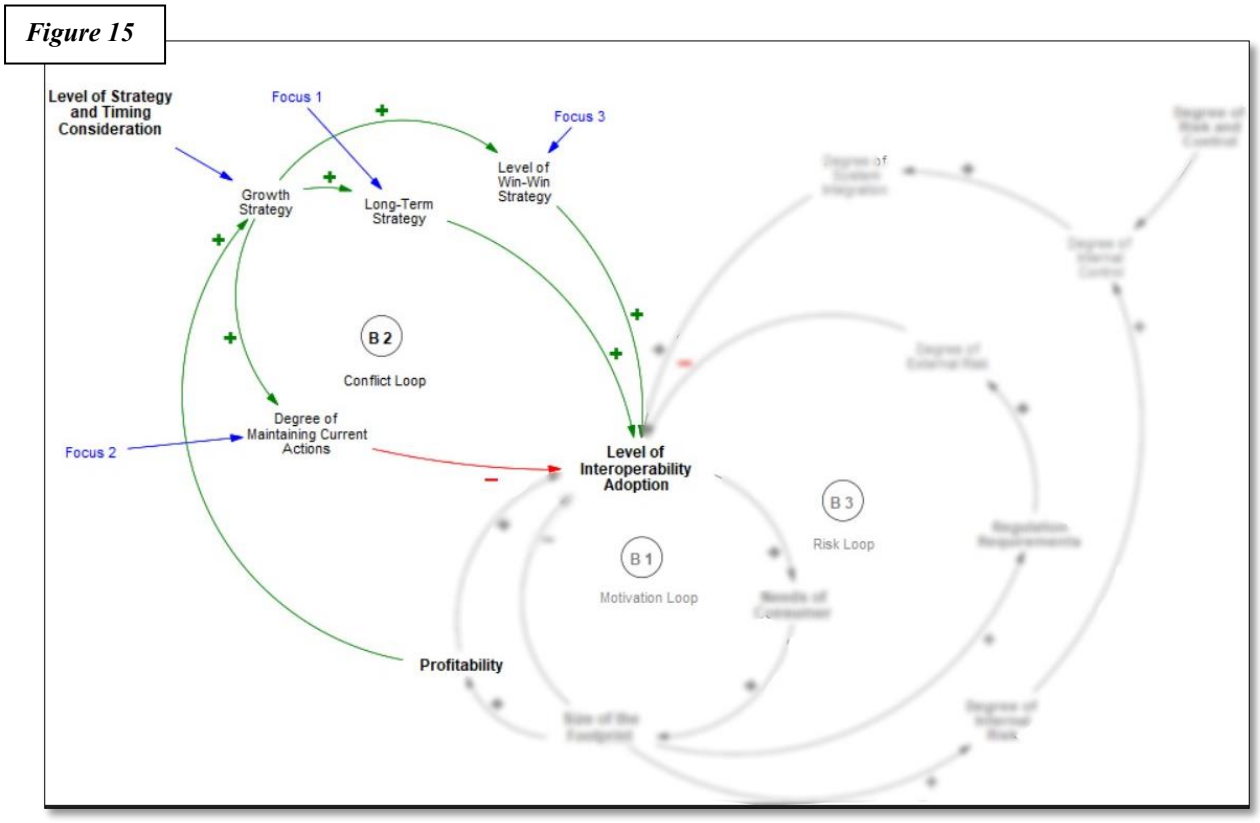
(Source: Author)

Loop B2, termed the Conflict Loop, illustrates how profitability influences strategic and timing considerations. This loop highlights the tension between pursuing immediate gains and investing for long-term growth, with key factors such as investment costs and the timing of collaborations playing significant roles. Within Loop B2, the theme of strategy and timing is broken down into specific variables that represent the theme accurately, with areas marked in red indicating resistance to interoperability. The focus of business strategies often dictates the decision-making process, influencing whether interoperability is pursued.

In Loop B2, as seen in Figure 15, profitability can lead to conflicting priorities. When a business adopts a long-term strategy, it tends to be more open to investing in the sector and engaging in collaborations, as depicted in *Focus 1*. Conversely, when the focus shifts to short-term goals, prioritising current margins and existing product offerings, this strategy negatively impacts investment in growth. It is a deterrent to interoperability adoption, as seen in *Focus 2*. The willingness to adopt interoperability diminishes if expansion is not deemed necessary despite potential profitability benefits.

However, the likelihood of pursuing interoperability increases when a business adopts a win-win strategic outlook that embraces co-opetition for collective benefits. This approach is represented as *Focus 3* in Figure 15.

Figure 15: B2 as the Conflict Loop represent the Level of Timing and Strategy Consideration

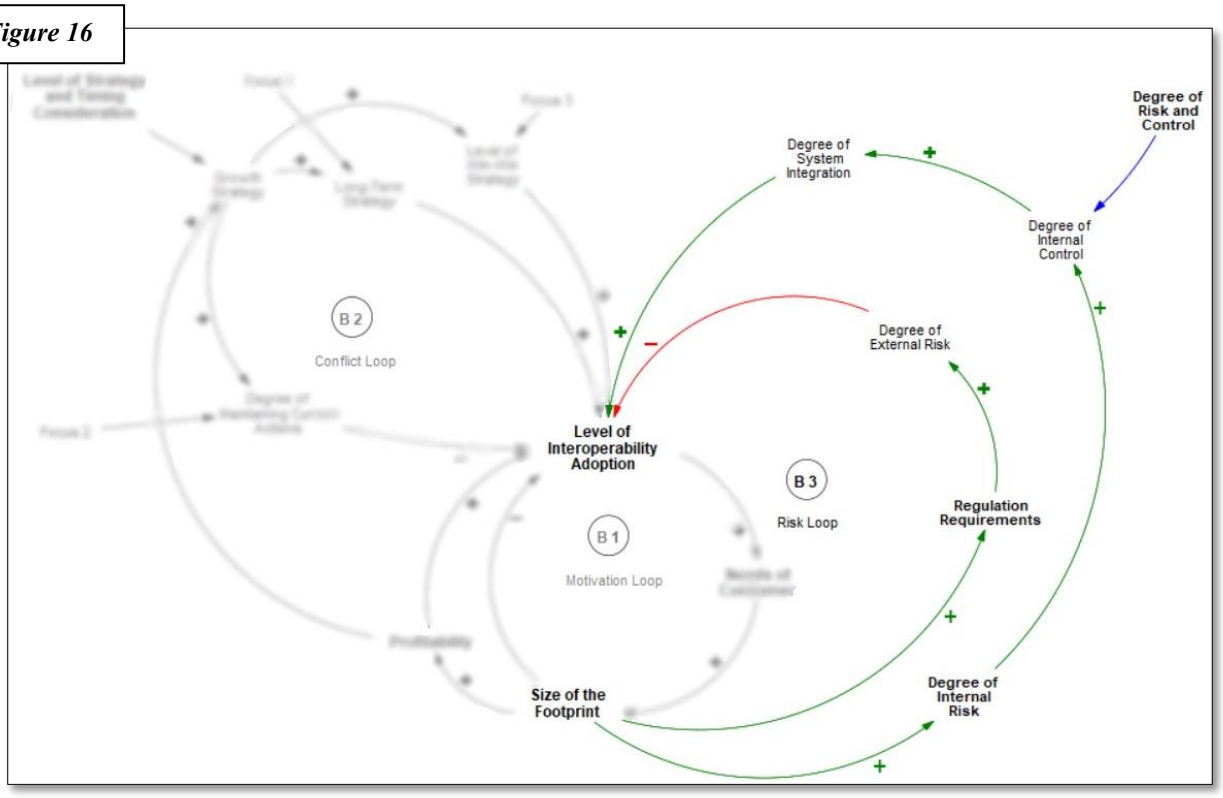


(Source: Author)

The final loop, labelled Loop B3, is termed the Risk Loop and illustrates the connection between footprint size and risk considerations. This loop corresponds to the theme of the degree of risk and control (see Figure 16). As the size of the footprint expands, scrutiny of internal and external risks, ecosystem control, and technological development increases. Internally, as the footprint grows, there is a heightened need for robust internal controls. Improved internal controls facilitate better technology system integration as the ecosystem becomes more efficiently managed; it, in turn, supports the potential for interoperability.

However, an increased footprint size also elevates external compliance requirements and regulatory scrutiny. This heightened compliance can lead to more significant external risks for businesses, especially in South Africa's heavily regulated banking sector. Such regulation can hinder integration efforts due to the associated compliance risks. Consequently, while internal risk management can positively influence interoperability, the external risk and regulatory landscape can have a negative impact, reducing the likelihood of interoperability consideration.

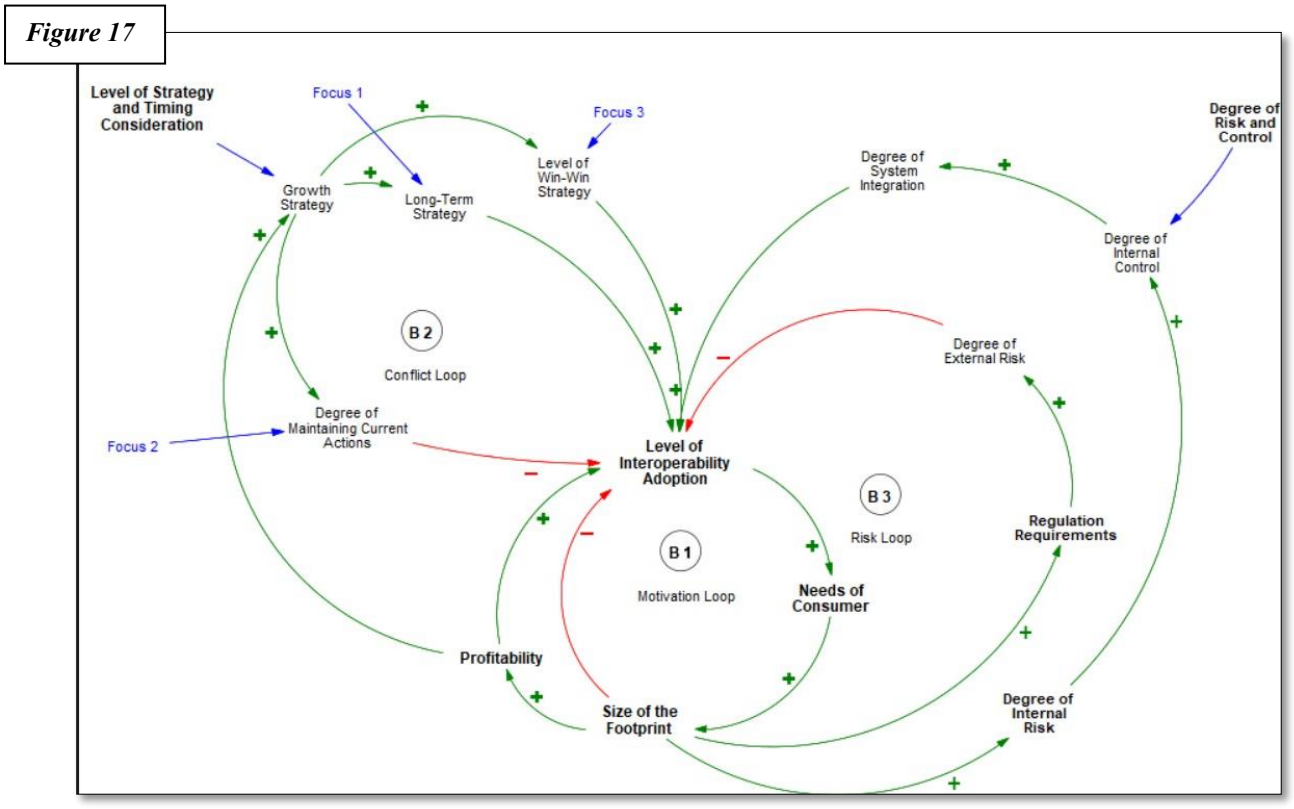
Figure 16: B3 as the Risk and Control Loop



(Source: Author)

The three loops are integrated into a final causal loop diagram, illustrating the comprehensive interactions between key themes influencing interoperability in the MMSP sector. This combined model, represented in Figure 17, synthesises the findings from the data analysis and highlights the interplay of motivation, risk, and conflict factors that shape decision-making regarding interoperability adoption. As indicated by the colour-coded arrows in Figure 17, with "+" representing improvements and "-" indicating decreases, it is easier to identify that the negative factors influencing interoperability adoption primarily stem from the large footprint size, the degree of maintenance required for the current focus, and external risks related to compliance and regulation. These factors are further discussed in Chapter 9, where they are analysed in relation to the research questions.

Figure 17: The Integrated Causal Loop for Interoperability Adoption Considerations



(Source: Author)

These findings were shared with the final cohort of participants, and participants commented as follows:

P4: "*This is not something that I can necessarily quantify, but it absolutely comes into this.*"

P7: "*I think you have covered all bases from point of strategy, risk to profitability, which I agree it is the key point*"

In the intricate narrative of loops and interrelationships, the journey toward interoperability adoption is fraught with challenges and opportunities. Participant 8 highlights that " *all businesses are trying to get to the number one status, when businesses start looking beyond, if they are thinking the impact of the ecosystem rather than individual profitability, we all cutting into a certain degree and rebuilding to lift out of poverty, addressing a need in the community that has no privilege with the people to resolve, it shouldn't be unreasonable but when everyone contributes with a centralised or open platform, we all going to make more money out of it after all*".

Despite the complexities involved, one central consideration stands out: in the journey towards interoperability, the desire for profit may be a powerful motivator, yielding positive social impacts. However, it cannot be considered a sole driver in isolation from the other systemic factors critical to achieving positive social outcomes. Pursuing interoperability has the potential to drive growth through inclusive innovation. Additionally, the causal loop diagram underscores the importance of the variables and their interactions concerning interoperability, which will be further discussed in Chapter 9. Here, interoperability is examined as an implementation of inclusive innovation aimed at enhancing mobile money as an inclusive product. As a result, an inclusive innovation concept model was developed, offering a structured approach for future exploration and application.

8.5 Themes in Inclusive Innovation

> *Conventional views of innovation (often implicitly) understand development as generalised economic growth. By contrast, inclusive innovation explicitly conceives development in terms of active inclusion of those who are excluded from the mainstream of development. Differing in its foundational view of development, inclusive innovation therefore refers to the inclusion within some aspect of innovation of groups who are currently marginalised* (Heeks et al., 2013. p. 4).

In the context of mobile money interoperability adoption, this research serves as a potential path to broader inclusive innovation, particularly for under and unbanked marginalised groups, by "*giving right, voice, capabilities and incentives for the excluded to become active participants in processes of development and innovation*" (Johnson & Andersen 2012, p. 8, as cited in Heeks et al., 2013. p. 4).

The Heeks et al., (2013) "*ladder of inclusive innovation*" (refer to literature review Section 2.2) provides a valuable framework for understanding the notion of inclusivity in the context of mobile money interoperability adoption themes:

1. **Size of the Footprint:** A larger footprint provides broader access to financial services, aligning with the ladder's level 2 of "consumption," where innovations begin to reach previously excluded populations. However, the impact on adoption may vary, as indicated by the causal loop diagram**.**
2. **User Needs:** Understanding and meeting user needs is critical for driving adoption and opening digital inclusion. This touches on levels 1 ("intention") and 3 ("process") of the ladder, empowering inclusive innovation by providing effective services and involving marginalised groups in development.

3. **Degree of Risk and Control:** Managing risks and maintaining control are crucial for sustainability. This aligns with level 5 ("structure"), where interoperability may require structural reforms or external structures to ensure success.
4. **Strategic Integration and Timing:** Strategic collaboration and timing accelerate progress towards inclusivity, aligning with level 2 of the ladder, where marginalised groups adopt mobile money services to a certain extent.
5. **Profitability:** Profitability serves as a central driver influencing interoperability adoption. MMSPs are motivated by potential increased profits and market share. This again touches on Level 3 impact, to reach out to more excluded group and have a positive impact on their livelihoods.

Mobile money has served as an innovative product model that specifically encompasses the financial inclusion of the marginalised group. Mobile money interoperability may potentially enhance this mobile money service as a financial pathway to the mainstream in South Africa. Mobile money interoperability could be an inclusive innovation product that addresses the needs of the unbanked or underbanked groups. However, based on this empirical study's findings, MMSP industry priorities are skewed towards profitability, so if interoperability does not incentivise profit gains, the motivation for MMSPs to embrace interoperability might not be adequate to drive systemic change. That said, the other aforementioned factors would have to be balanced with the profit motive for a successful, inclusive system to be produced that yields significant social benefits. Therefore, the product's intention is no longer closely linked to the user's needs. Heeks et al. (2013) established that inclusive innovation intends to address the excluded group's needs, wants, or problems. This does not relate to any concrete activity but merely the abstract motivation behind the innovation. Consequently, there's a disconnection between the key driver for interoperability adoption (profitability) and inclusive innovation.

As with interoperability adoption in the mobile money sector, the profitability may or may not be achieved at the individual MMSP level. In addition, Heeks et al. (2013) suggested that some specific government interventions were identified as inclusive innovation enablers, which could possibly link with the incentives to encompass the specific drive. As commented by Participant 7: "*one thing that is, we need government support*". Participant 1 believes that some kind of underwriting would accelerate the ecosystem for businesses to talk together. Participant 10 further suggest that "*if mobile money endorsed by the government as the way to communicate for essential services and payment*". "*The external forces, that if there is some*

incentive by the policy makers and standardised the chargers, like formal banking, it will be a game change, has the potential to drive economic development by increasing financial inclusion and accessibility" as noted by Participant 5.

8.6 Chapter Conclusion

This chapter has comprehensively analysed the interview data, employing thematic analysis to categorise codes into key insights relevant to the themes. The five key themes—Size of the Footprint, User Need, Degree of Risk and Control, Level of Strategy and Timing, and Profitability—have been identified as pivotal factors influencing considerations for the adoption of interoperability.

This analysis shows how these themes interrelate and impact the variables concerning interoperability adoption, as outlined in the research question. The findings elucidate a complex web of factors shaping the landscape of interoperability adoption, with profitability emerging as a critically important driver. The causal loop diagram highlighted the reinforcing and balancing variables among the themes, illustrating their connection to actions and decision-making related to interoperability. This model underscores how these variables interact, influencing the pathways and strategic choices that impact the adoption of interoperability within the sector.

Interestingly, the study has revealed that while mobile money represents an inclusive innovation product, the underlying intentions and motivations may not always align with addressing users' needs. It reflects that the logic, motivations and perceptions within the MMSP industry are primarily driven by profit-seeking. Hence, it cannot be ignored as a key driver. Moreover, it may drive behaviours that work against interoperability and positive social outcomes. Indeed, that may well be the case currently. In turn, this may indicate a role for government and the state to play in fostering interoperability, as their primary role is oriented towards the public good. Suffice it to say, however, government and state-imposed policies and regulations that promote interoperability will have to remain sensitive to their impacts on profitability in the MMSP sector. This highlights gaps in addressing innovation intentions and ensuring alignment with the broader goals of inclusive innovation. Government interventions and policy support have been identified as potential enablers of inclusive innovation, suggesting the importance of external incentives and standardised practices in driving economic development and financial inclusion. This chapter underscores the multifaceted nature of interoperability adoption considerations and emphasises the need for alignment with inclusive innovation and profitability.

Chapter 9: Discussion

This chapter focuses on interpreting and situating the findings within the context of the literature review. It also reviews and discusses the potential contribution to scholars and future studies that may arise from the findings in Chapter 8.

The research questions guiding this study consider the factors influencing interoperability adoption in South Africa's MMSP sector by further exploring the challenges, benefits and adoption considerations of influential decision-makers in this sector. In Chapter 8, the findings were summarised, and the key factors influencing interoperability adoption are noted as Size of the Footprint, User Needs, Degree of Risk and Control, Level of Strategy and Timing, and Profitability (refer to Section 8.2). These factors are interrelated, and their impact on interoperability adoption varies depending on an MMSP's position and business focus in the sector. While mobile money is designed to be inclusive, a gap exists between the innovation's intended goals and its ability to consistently address user needs, as profitability emerged as a key driver. Furthermore, the study finds that government interventions could potentially enable interoperability within the MMSP sector and simultaneously drive financial inclusion.

While the above key factors have been introduced in Chapter 8, they have not been analysed or elaborated upon in depth. This chapter will, therefore, refine the research problem around interoperability in the mobile money sector. Also, the vision of a potential inclusive product concept model for robust, inclusive innovation will be introduced for further development.

9.1 Interpreting the Findings Using the Literature

This section will discuss the research findings in relation to the research questions, focusing on factors influencing the adoption of mobile money interoperability. These findings are compared with existing literature, highlighting areas of alignment and points of debate. Additionally, the interoperability decision factors identified from the MMSP perspective are examined with insights from the literature review (Chapters 3 to 5), providing a comprehensive analysis of the results.

As summarised in Chapter 8, five themes addressed the main research question: **What are the factors influencing interoperability adoption in South Africa's MMSP sector?** When considering interoperability, the findings indicate a complex interplay of interconnected factors within the MMSP sector, where profitability emerges as the primary driver (refer to Section 8.4.1). Currently, the sector focuses on maximising efforts to lock users into specific mobile money ecosystems to secure profit margins and enhance profitability (refer to Section 3.2). This finding is consistent with previous research by Donovan (2012), Mas and Nicholas (2012), Bourreau and Valletti (2015), and Dargahwala and Riedl (2021), who similarly identified profitability as a key consideration for MMSPs.

This echoes back to Chapter 1 and the foundational rationale for this study, mobile money in South Africa presently functions with limited inclusive impact. It predominantly delivers basic financial services within siloed, non-interoperable ecosystems. Users can adopt these services; however, they face significant barriers and innovation in this context is largely provider-driven, focused on capturing market share and profitability rather than addressing systemic financial exclusion. This reflects the inclusive innovation theory in section 2.2, the mobile money sector is currently at level 2 of Heeks' Ladder as consumption-focused, where end-users consume innovations but have limited influence on service design or structural outcomes (Heeks et al., 2013)

Interoperability could reduce the "lock-in" effect by facilitating user movement between systems, particularly when users feel that other mobile money systems offer better service (Donovan, 2012; Davidson & Keishman, 2012). However, despite the awareness of this potential drawback, this study found that MMSPs believe that interoperability could help the mobile money sector grow by increasing the number of users and driving overall digitalisation (refer to Section 8.2). The findings further highlight that interoperability has the potential to expand the mobile money market, increase market reach, and ultimately better meet users' needs, increase the footprint, and contribute to the sector's growth. Therefore, the implementation of mobile money interoperability has the potential to shift the ecosystem toward higher levels of inclusive innovation as per Heeks' ladder, particularly Level 5 (Structure) and Level 6 (Post-Structure). Interoperability transforms mobile money from a set of isolated, competing platforms into an integrated and inclusive financial infrastructure. It enables systemic restructuring of service delivery by fostering open, API-enabled ecosystems that facilitate seamless transactions across providers. This systemic integration aims to promote user empowerment. Innovation becomes more participatory, coordinated, and responsive to

user needs, especially in underserved informal markets. As a result, mobile money evolves from a fragmented collection of services into a transformative infrastructure—one capable of redefining the financial landscape through inclusive, accessible, and universally coordinated service provision.

Furthermore, this study found that engaging with a broader market facilitates the acceptance of mobile money as a payment method. An increase in users leads to greater support and supply of mobile money. To expand market reach, it must be widely used first. Thus, this study emphasises that mobile money needs to be widely recognised as a viable payment tool before it can be effectively utilised. This was supported by participants (e.g. P5, P7 and P4) during the interviews, namely, if all SMEs and retailers accept mobile money as a payment gateway, more people will adopt mobile money usage (reference finding Section 8.3.3). This, in turn, encourages MMSPs to enhance their services and improve user experience. Interoperability fosters an open ecosystem that promotes collaboration and seamless transactions, ultimately addressing user requirements and increasing value for all stakeholders (GSMA, 2023; Nomanini, 2018; Gnyawali & Park, 2011). This creates economies of scale and enhances financial inclusion, echoing the findings of studies conducted by Lim (2016), Tsanga (2018), and Baptista and Heitmann (2010), as reviewed in Chapter 4 (Section 4.1). As a result, this alignment meets user needs and leads to a broader market reach and acceptance. Interoperability would accelerate the standard setting and improve the value creation as highlighted by Gnyawali & Park (2011) that “co-operation” for competitors to work together to create greater common value and benefit for the business segment to grow.

Mobile money is widely used in the informal sector, where MMAs play a crucial role in facilitating the acceptance of these services (refer to Section 3.2). However, the adoption of mobile money in the formal sector and more developed urban areas remains limited. This disparity can be attributed to the dual economic characteristics of South Africa, which hinders the growth of the mobile money sector (refer to Chapter 4). As discussed in Section 4.2, South Africa has a well-developed banking sector and infrastructure, yet it also experiences one of the highest levels of inequality globally. Interoperability between mobile money and formal banking has the potential to advance digital transformation and enhance financial inclusion. A more interconnected mobile money system could facilitate greater acceptance within the formal sector, providing a pathway to financial inclusion.

Furthermore, to address the sub-research question: **What are the challenges and potential benefits for MMSPs associated with implementing interoperability in South Africa?** Mobile money interoperability would likely lead to ease of use and more collaborative opportunities. This explains why banks enjoy the benefits of Mastercard or Visa card programmes and offer EFT to consumers (Nomanini, 2018; Lim, 2016; FinMark Trust, 2017). They have long since discovered that their customers are best served by ensuring they can send, receive and use money at any service point, irrespective of the bank (Bahia & Rattel, 2024). This is echoed in the work of Nomanini (2018) and Lim (2016) on whether the players involved opt to maximise the market's total size or just their market share. Generally, the more the players work together to enlarge the market, the larger each share will get. However, we have not yet seen this logic extend to mobile money, as pointed out by GSMA (2024). As highlighted in Brunnermeier et al.'s (2023) research across most countries, the prospect of providers collaborating appears to be less a matter of 'if' than 'when'—just as it has been for banks sharing ATMs (Bahia & Rattel, 2024). It is a relative certainty that interoperability is the path for mobile money ecosystem development (GSMA, 2024).

How to interconnect with different ecosystems is concerned with technology development. However, more importantly, the key decision factor is determining when South Africa's interoperability journey will begin. In the South African context, it is worth noting that there remains a perception that technology often seems to be the problematic part of interconnecting with external systems. However, according to interview participants, it is easier to integrate the mobile money system than to decide to integrate. Compared to a scholarly review, this study observed that IP management or lead technology innovation are not priorities when considering collaboration. None of the participants mentioned that technology is a key consideration for interoperability. This differs from the scholarly view of Aloini et al., (2017), Drechsler and Natter (2012), and Nalmpanti et al. (2024) in that IP protection and highly innovative technology are the key focus areas when considering collaboration factors (refer to Section 5.2.1). Instead, they emphasised how technology can be connected between different ecosystems. The integration process suggests that internal technology and systems must be solidly built and regularly updated to meet technical needs and risk control management. The technological foundation is a key consideration from a security and risk perspective to the extent that the internal control of the technology system is more relevant than IP protection or the level of innovation.

Additionally, this study found that an ease-of-use interface and a faster mobile money system have improved collaboration considerations. MMSPs believe that users prefer real-time transfers for their money, and customers are more attracted to getting the value of their money as soon as possible (This will be further discussed in Section 9.3). As a result, MMSPs are more likely to consider integrating into a faster ecosystem to improve the service they offer to the users.

Therefore, this study highlighted that system integration could be seen as far easier to achieve than the decision to collaborate, as highlighted by Participant 5: "*integration is easier, you just need to get a group of developers in the same room and after 3 months, things will all figure out itself and all APIs will be able to plug in together… but to agree the commercial is the difficult part*". Moreover, the market needs to be mature enough to integrate. The timing and strategy for the interconnection must be well-planned. This aligns with Davidson and Leishman (2012), Bourreau and Verdier (2010), and Chakravorti and Kobor (2005), who held the same view. Interoperability is not commercially viable until a significant volume has been achieved. However, scaling up takes time and cost in terms of investment into the interoperability process and obtaining more users in the system. This leads to the response to the second sub-research question: **What are the key considerations for interoperability adoption by stakeholders with decision-making influence within the MMSP sector?**

It is always hard for competitors to collaborate on some key aspects of their business. This study found that key factors influencing such decisions include business size and strategic focus, particularly the size of the footprint, short-term current strategic priorities in profitability and the degree of external risk (refer to Figure 17 in Section 8.4.2). Collaboration is more likely to occur voluntarily when businesses are relatively similar in size, as González-Benito et al. (2016) suggested. Large businesses may face negative incentives for interoperability in the short run. However, the market may have significant growth potential over an extended period (González-Benito et al., 2016). This aligns with Aron's (2018) and Mas and Nicholas (2012) findings. The most essential factor for collaboration with competitors is the size of the business, referring to the coverage of the footprint in the mobile money sector. This study supports Hamel et al. (1989), suggesting that business size contributes to market power and a strong position for collaborative influence. Large businesses also face more significant regulation and compliance risks.

Furthermore, this study found that a strong footprint can provide a competitive advantage in the mobile money industry, enabling a pricing power benchmark. The big players with dominant market share and high margins have no incentive to collaborate with others unless they can see potential benefits. Larger MMSPs may interconnect as a concession of value to their competitors. The footprint size is discussed in Section 8.4.2. According to the participants, a large footprint entity will only be willing to share its user base if a "win-win" situation is evident. This is supported by Hamel et al.'s (1989) argument that strategy is about a "win-win" that enhances each other's business to reach more footprint, serve more users and effectively become a more profitable business in the sector.

This reinforces the findings documented in Chapter 8.4, where profitability was identified as the key driver. Building on Aron (2018), Davidson and Leishman (2012) and Bourreau and Verdier (2010), this study highlights the primary objective of the business operation, and most of the interview participants have commented on the importance of the commercial strategy and profit margin of the business. Interoperability presents the opportunity for players to increase the size of the pie and thus increase the size of each company's slice. However, it will not be easy as a lot needs to be considered, particularly in terms of investment cost and profitability, as noted by Aron (2018). Interoperability would emerge when profitability for this investment has gained significant weight for the interoperability consideration to MMSPs. All participants have indicated that MMSPs will only consider interoperability if the investment enables a profit in return. Based on the above, it is clear that MMSPs certainly care about the sector's growth and sustainability in the long term. However, even though they care about growth, their high margins and financial benefits are more important.

To summarise the discussion above, Table 5 is presented to include the theme from Chapter 8 and grouped with the literature reviewed from Chapter 3-5. It is compared with the findings of this study to determine whether it agrees with the existing literature or only agrees to an extent. Lastly, if the literature aligns with the findings, it specifies which theme in Chapter 8 it corresponds to. Refer to Table 5 below for a comparison of the key consideration factors for interoperability.

Table 5: The Key Consideration Factors for Interoperability Implementation in the MMSP Sector.

Literature review summary	**Scholars**	**Findings**	**Theme**
Win - Win approach	*Gnyawali & Park (2011), Bourreau & Valletti (2015), Hamel et al. (1989), Zhong (2016), Hargrave & Van de Ven (2006), Nalmpanti et al., (2024),Gnyawali & Park (2011)*	**Agreed**	Level of strategy and timing
Size of the business	*González-Benito et al., (2016), Aron (2018), Mas & Nicholas (2012), Hamel et al. (1989), Drechsler & Natter (2012), Aron (2018), Manue et al. (2022)*	**Agreed**	Size of the footprint
Market knowledge	*Dahlander & Gann, (2010), Drechsler & Natter (2012), Nalmpanti et al., (2024), Kramer et al., 2007*	**Partial**	User Needs
Tech: IP Protection and specialised innovation	*Aloini et al., (2017), Drechsler & Natter (2012), Nalmpanti et al. (2024), Lichtenthaler & Holger (2009)*	**No**	N/A
Profitability	*Donovan (2012), Mas and Nicholas (2012), Bourreau & Valletti (2015), Bourrenu & Verdier (2010), Dargahwala & Riedl (2021), Aron (2018), Davidson & Leishman (2012) and Bourreau & Verdier (2010), Mas & Sullivan (2011), Chakravorti & Kobor (2005)*	**Agreed**	Profitability
Regulation, Policy and Government	*Brunnermeier et al., (2023), Itzikowitz & Gunning (2021), Bourreau & Verdier (2010), Jackson & Dunn-Jensen (2020)*	**Agreed**	Degree of Risk and Control
System control and security risk	*Brunnermeier et al., (2023), Davidson & Keishman (2012), Odorović (2023)*	**Agreed**	Degree of Risk and Control
Right time	*Davidson & Leishman (2012), Hamel et al., (1989)*	**Agreed**	Level of strategy and timing

(Source: Author)

Based on the Table 5 above, market knowledge is partially agreed upon when linked to user needs. This indicates that the finding was not straightforward and requires further exploration of how it has been addressed in practice within the MMSP sector. The following section will discuss why this theme is not synchronised.

9.2 'User Needs' in Practice for MMSP Sector

During the interviews, all participants suggested that meeting the users' needs is essential to success in the mobile money sector. This was discussed under the interview question, "*What is the most important factor for mobile money to be successful in South Africa, as a MMSP, from the company's perspective?*" (Refer to Appendix D for interview questions). Based on the participants' market knowledge, they all discussed how they believed users' needs should be addressed. Therefore, it is clear that in MMSP's view, meeting user needs, which is based on MMSP's understanding of the market, is the most critical factor for mobile money to be successful in South Africa. This shows that market knowledge is an underlying attribute of business success. Refer to Section 8.2.2 for more details and Figure 10 in Chapter 8 for the user needs finding summary. This clearly shows that market knowledge is essential from an MMSP's perspective.

When discussing interoperability and the factors to consider for its implementation, none of the participants mentioned meeting users' needs as a key consideration. This seems contradictory, given that earlier in the discussion, they emphasised the importance of addressing users' needs for success in the sector. However, the participants did agree that interoperability would help advance the mobile money sector and improve services for their users. As a result, this theme was still noted as not directly linked to the interoperability decision factors. Therefore, additional questions were introduced to reconfirm the findings and discuss the users' needs and interoperability considerations during the final cohort of the interviewees. Participants explained in different ways, but all delivered the same meaning. It can be summarised as users' needs are a necessary factor to enter the market and to improve the footprint size and profitability. Nevertheless, consumers' experience is impaired as the business grows. Participants commented that they often grow distant from their customers and, therefore, can easily get caught up in the fear of losing existing high-profit businesses. Therefore, users' needs are somewhat linked, which may not be a key consideration for business growth, especially regarding cooperation (Gnyawali & Park, 2011). Instead, the business focuses on a "win-win" strategy and maintaining its current profitability level without further

investment. The analysis showed that even though market knowledge and understanding of the users' needs are essential for long-term business growth, they are not currently key factors. This is detailed in Section 8.2, where participants highlighted that while user needs are the foundation of the business, they are not primarily a key focus for the business. Instead, users' needs reflect a broader strategic vision. However, the business's core focus on profitability ultimately shapes its directions and actions. Consequently, how businesses perceive their position or value proposition is often disconnected from the actual needs of users.

In addition, another meaningful finding to the research in terms of the users' needs emerged from this study. This study suggests that savings, accessibility, safety, convenience, security, user-friendliness and trust motivate users to consume mobile money (refer to Section 8.2.2). This is echoed by the existing literature (Aron, 2017; Suri, 2017; Kumar & Palanisamy, 2019; Koloseni & Mandari, 2017; Weber et al., 2021; Olaleye et al., 2017) that was mentioned in Section 3.1.

This study has validated these factors as necessary for users and enhances mobile money usage. However, it is worth highlighting that MMSPs believe the most critical factor for mobile money to succeed in South Africa is the platform's transactional simplicity and transaction speed. The participants emphasised that platform development often uses many technologies and functions. However, users only need simple things. This speaks directly to the need for user-centricity in design. User-centric design is most likely to yield simplicity in the design of products because it emphasises user behaviours and needs. Considering the unique character and background of the informal sector in South Africa, many people may not understand English and cannot afford the data cost required to play around with the App to use all its features. So, user-friendliness, simple setup and an easy-to-navigate, lightweight, low-data platform are key to retaining App users. People must be able to use the App before enjoying the mobile money benefit.

It is a complicated undertaking to build a simple and easy-to-use App that is also comprehensive. A simple platform and easy App lead to speedy transactions. Speed is the most essential feature users prefer, as perceived by the MMSPs. Users want to transfer funds in real-time (refer to findings in Section 8.2). All participants mentioned this, which was reconfirmed with the final cohort of participants. Furthermore, speed is also an implicit link between the users' needs and the strategy theme. MMSPs are likely to collaborate with another competitor if their system is faster. This would enhance a win-win approach to implementing

interoperability and MMSP's willingness to operate with faster providers towards mutual benefit through collaboration. Therefore, this finding has reconfirmed the existing theory regarding user needs. It has also further highlighted that simple processes and fast transactions are essential benefits that mobile money users prefer.

This section focused on the theme of user needs, which is the most mentioned and coded in the findings but least linked to the interoperability implementation. Thus, user needs are essential but are not part of the business's tactical focus on growth and development. In addition, all participants highlighted a simple process and speed of mobile money transactions as key to user needs, which is a possible scholarly contribution from this study.

9.3 Discussion on Inclusive Innovation

This study examines the concept of inclusive innovation, focusing specifically on financial inclusion for marginalised groups. The research began with a broad exploration of inclusive innovation, narrowing its scope to investigate the role of mobile money as a significant inclusive innovation product. Furthermore, the study emphasised the potential for enhancing inclusive innovation processes through interoperability, which could further advance financial inclusion efforts.

The literature review in Chapter 4 indicated that mobile money interoperability offers significant benefits, a finding further corroborated by participant feedback (refer to finding Section 8.2). However, a notable gap exists between the intentions to address user needs and the actual services provided by businesses. Profitability concerns often compromise the objective of facilitating easier access to financial services. Participants emphasised that for interoperability to be effectively implemented, external influences are necessary to propel it beyond its current limitations. This could involve regulating mobile data charges, incentivising MMSPs to collaborate, or establishing regulations for interoperability connectivity.

From a regulatory perspective, it is far easier to mandate than to encourage companies to discuss or voluntarily opt-in to become interoperable. This has been proven in other African countries, such as "*in Tanzania and Kenya, where the central banks played major roles in becoming coordinators and at the same time ensuring interoperability agreements do not become costly to customers*." (Maune et al., 2022, p. 351). As highlighted in section 5.1, the SARB has also initiated discussions on integrating the informal sector into formal economy, which reflects the need to contextualise South Africa's unique development path. Within this

framework, effective policy development can foster and encourage collaboration among service providers while ensuring that end-users meaningfully benefit from interoperability. By regulating the process, governments can ensure that the interests of consumers—such as lower transaction costs, improved access, and better service quality—are safeguarded. This alignment between regulation and user benefit will foster a more inclusive and efficient mobile money ecosystem. As Heeks et al. (2013) suggest, scaling inclusive innovation through policy development is crucial for a key research topic. Policy and regulation may ensure and accelerate the mobile money sector to serve a broader demographic while simultaneously addressing equity and access challenges for marginalised populations.

In summary, advancing inclusive innovation may stem from external initiatives that promote growth by shifting internal priorities. However, in the absence of such external influences, inclusive innovation can be viewed as an independent concept, which served as the foundation for this study. The themes of the findings have led to the next section, which explores the factors necessary to achieve inclusive innovation without external support. Key priorities include fostering inclusivity, addressing user needs, expanding market reach, and balancing profitability with growth. Ideally, innovation should function as a win-win solution, benefiting providers through enhanced margins while improving user experience and utilisation.

9.4 Development of Inclusive Innovation Concept Model

Mobile money can be conceptualised as an inclusive innovation product, while interoperability enhances this innovation. Consequently, a conceptual model (refer to Figure 18) has been developed based on the themes identified in this study. This model outlines the essential requirements for achieving inclusive innovation, highlighting the essential components for fostering an environment conducive to inclusivity and accessibility in financial services.

As discussed in the findings of Chapter 8, profitability is a key requirement for mobile money interoperability to be successfully enhanced by MMSPs (refer to Section 8.4.1). To achieve profitability, the business first needs to address the users' needs effectively and then have a good market reach to have more users. Risk and control mechanisms will be internally managed to align with business requirements, which is fundamental to any business but not particular to address inclusive innovation. The timing and strategy for connecting with other

entities are also crucial, as they determine when and who to connect with. Only if the strategy leads to potential growth with a long-term focus could it result in interoperability, as per the finding in Chapter 8. Interoperability can be further achieved by meeting more user needs and expanding the geographic reach of mobile money services, thereby attracting a more extensive user base. By doing so, mobile money services can increase their accessibility, allowing more people to use these services across different networks and regions. This expansion enhances the user experience and strengthens the overall ecosystem, making it more inclusive and sustainable (Mortazavi et al., 2021). Therefore, a balanced approach to business and social value emphasises cooperation of social impact and profitability (Phillips et al., 2015). This alignment of business strategies and practices aims to achieve financial success while positively contributing to social impact (Phillips et al., 2015). Consequently, a successful model must meet the criteria of profitability, effectiveness and growth, with inclusivity being the most critical factor in delivering inclusive innovation. Therefore, a suggested concept model is illustrated in Figure 18.

There are four pillars to support a successful inclusive innovation: inclusive, effective, profitable, and growth. It can be viewed based on characteristics grouped as the top two (in green colour) and the bottom two (in yellow colour) pillars.

The top two are the requirements of the inclusive innovation:

- Inclusive – it has to be inclusive in terms of the product, design and delivery
- Effective – a product or an improved process must address the user's needs effectively.

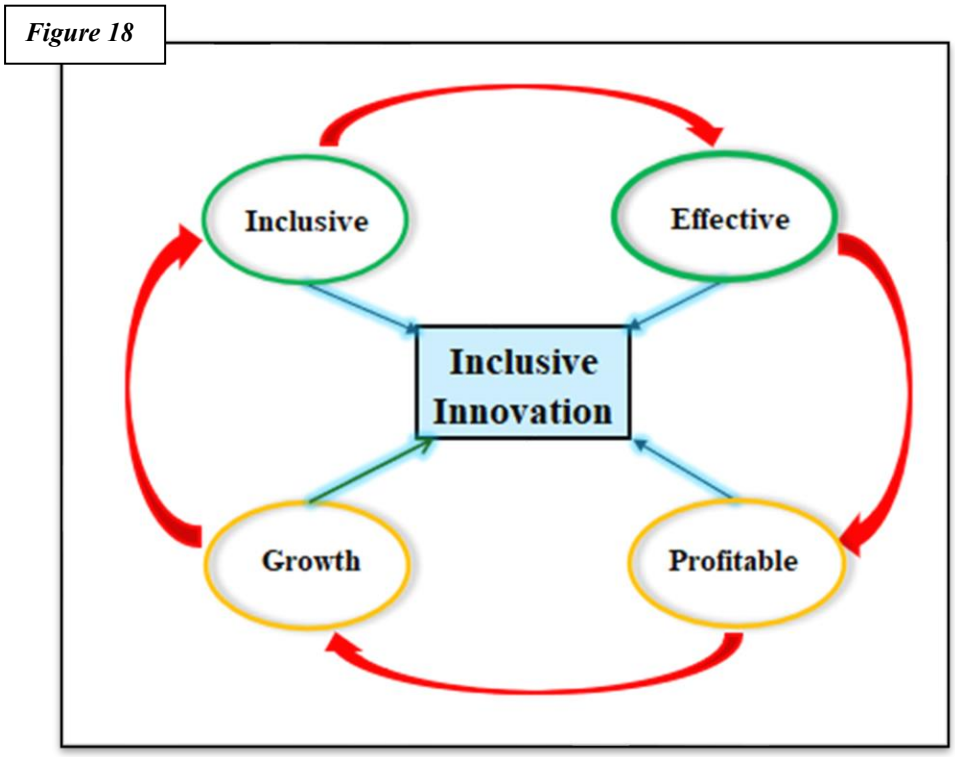
The bottom two illustrate the inclusive innovation provider's characteristics:

- Profitable – sustaining its purpose and maintaining product focus must be profitable, ensuring the business remains viable.
- Growth – the providers need to focus on the growth of the business and growth of the sector so that there can be investment for future growth and long-term development

In addition, once these requirements are met, they form the foundational pillars of inclusive innovation. When all pillars are established, they create a closed-loop system where each pillar reinforces the others, resulting in a value-creation cycle. This cyclical process ensures that inclusive innovation continually evolves, with each element enhancing the overall impact and sustainability of the innovation. When the product is inclusive, addressing the user's needs is more effective. When the innovation is more effective, it reaches out to more users

and, as a result, becomes more profitable for the providers. When the providers become more profitable, the business is better able to invest for further growth in their strategy to stay profitable. As a result, the innovation would be more inclusive. Therefore, this closed loop could improve the inclusive innovation cycle. It empowers the users and enhances the providers' capabilities in balancing social impact and profitability (Mortazavi et al., 2021; Phillips et al., 2015).

Figure 18: Suggested Concept Model for Inclusive Innovation



(Source: Author)

This model was developed and designed based on the findings of this study, and it has not been further tested. Therefore, it is discussed further in Section 9.6 below, proposing how this model may be tested as a tool for inclusive innovation effectiveness.

9.5 Limitations

This study was solely focused on industry and not users, which might have skewed the emphasis of the results. While the users' needs were discussed, the perspective was limited to that of the MMSPs. The intention was to study MMSP industry incentives and barriers within the MMSP industry, and users' demands were beyond the scope of the study in that regard.

This study is limited because there were no government or policymaker participants. The researcher tried to reach out to the “reserve bank, government, innovation division, association”; however, no positive feedback was received. The policymakers' opinions or insight would have been greatly beneficial in validating the findings and providing insight into the future direction of the mobile money industry. However, this is beyond the research scope for this study as it is focused on the MMSP. The limitation of having no government or policy-maker participants in this study could be a future study consideration. This is coherent with Heeks et al. (2013) “Government support” as the external motivating force for inclusive innovation.

There is a limitation in mapping out the MMSP landscape due to the confidentiality agreement they have requested. To analyse the MMSP market share, the size of each MMSP’s business and the margin in the market would have been beneficial in adding depth to the research and further supporting the findings. In addition, two entities have strictly requested that their names not be mentioned in any way in the study. A few participants also strongly requested anonymity due to the size of the MMSP sector in South Africa, as it could otherwise have become relatively easy to deduce who they are in the limited market space.

Moreover, as discussed in Chapter 6 regarding the researcher’s positionality, the prior senior role within the business provided valuable insights into the leadership dynamics and their influence on business strategy. However, this study excludes an in-depth analysis of the limitations posed by leadership and business relationships. Additionally, considerations of leadership positionality, particularly in the context of potential mergers and acquisitions within the market, are omitted. Therefore, future research would benefit from incorporating management and leadership perspectives to explore their roles in fostering collaboration within the innovation space.

9.6 Future Studies Avenues

Based on the preceding sections, several potential avenues for future research emerged. These studies could provide deeper insights into user preferences, the impact of government policy, leadership dynamics, and the effectiveness of existing inclusive innovation models in the context of mobile money.

Possible Future Study Directions are listed below:

1. **Gender and Age Dynamics in Mobile Money Use**

No significant separation was noted between gender, age, and user preferences. However, participants commented that older females are more likely to utilise mobile money in the informal sector (refer to findings in Section 8.2.2.3). This observation has not been addressed in the existing literature. Participants indicated that older women tend to use mobile money because their children often send money home to them cost-effectively, possibly influenced by cultural norms and family support structures. This highlights the need for further research in the South African context to explore how gender behaviour influences mobile money usage.

2. **User Needs**

   This study focused exclusively on the MMSP industry's user needs perspective. Future research could explore reconciling both industry and user needs to provide a more comprehensive analysis, to identify 'win-win' solutions that benefit not only the industry but also the users.

   Another possible consideration as discussed in Section 9.2, investigating whether transaction speed is a critical user need that could help increase market size has not been emphasised in the existing literature. This focus may prove beneficial for mobile money usage and improve practical applications. The research suggests that conducting a user survey across both developed and developing mobile money markets would be advantageous for testing this theory and gathering comprehensive data on user requirements.

3. **Government Policy and Market Development**

   Section 9.2 also emphasised the potential influence of government policy on market development. A comparative analysis of policy frameworks and mobile money market sizes could yield valuable insights. Understanding the perspectives of policymakers is crucial to identifying what influences policy considerations that could enhance the mobile money sector and what barriers to its introduction exist in South Africa.

4. **Leadership Dynamics in Decision-Making**

   As noted in Section 9.5, future studies could benefit from examining the role of leadership style and status in decision-making processes. Investigating how senior leadership mindsets affect collaboration could provide valuable insights into effective strategies for fostering innovation within organisations.

5. **Testing the Inclusive Innovation Concept Model**

   Lastly, the inclusive innovation concept model could serve as a valuable tool for assessing whether successful initiatives from the private sector align with the four main pillars of this concept. Evaluating the extent to which these sustainable, inclusive innovations meet the model's criteria could enhance understanding and advance the theory.

In summary, these suggested future studies present a comprehensive approach to understanding the multifaceted landscape of mobile money and inclusive innovation. By exploring user dynamics, government influences, leadership roles, and inclusive innovation frameworks, future research may contribute significantly to the advancement of mobile money and its impact on financial inclusion.

9.6 Conclusion

In conclusion, this discussion has explored the dynamics of inclusive innovation, highlighting its dual role in benefiting providers and users and addressing the gaps identified in the literature review sections. This study contributes towards a deeper understanding of how inclusive innovation can effectively enhance the mobile money sector and address financial inclusion.

Reflecting on the findings of the research questions, the adoption of interoperability in South Africa's MMSP sector is influenced by a range of factors, including profitability, internal business strategy and timing, internal and external risks and controls, business footprint size, and user needs. Key challenges faced by MMSPs include the complexities of ecosystem integration, the resizing of their footprint, regulatory constraints, and concerns about losing competitive advantages. However, the potential benefits of interoperability—such as increased user base, expanded market reach, and enhanced service offerings—are understood to be significant drivers for adoption. Stakeholders with decision-making influence, including MMSPs and regulators, emphasise the importance of balancing collaboration and competition, with profitability being the main driver for MMSPs. At the same time, regulatory policies play a crucial role in fostering adoption. Ultimately, despite the challenges, interoperability is recognised as a critical factor for the growth and sustainability of South Africa's mobile money sector.

Key findings also indicate that fundamental aspects of inclusive innovation—such as addressing user needs and ensuring profitability—are essential for its success. This study

developed a model for inclusive innovation that emphasises the need to balance and enhance inclusivity, effectiveness, profitability, and growth to ensure its sustainability.

Future research directions include further examining the inclusive innovation concept, testing the speed of mobile money applications, investigating user preferences related to gender, and the influence of leadership on collaboration. Furthermore, engaging with policymakers to explore how government interventions could promote financial inclusion through mobile money would be valuable.

Chapter 10: Conclusion

This concluding chapter offers a reflective overview of the research, summarising key findings and reviewing the steps to address the research aim and objectives. It synthesises the main insights gained from the study, discusses the implications of the findings, and evaluates the contributions made to the field. Finally, it considers potential directions for future research and practical applications of the study. It offers a comprehensive closure to this investigation into interoperability adoption through mobile money service providers in South Africa.

In South Africa, mobile money platforms remain largely disconnected, highlighting a critical need to explore the barriers hindering business-to-business collaboration and interoperability within the MMSP sector. The ability for different mobile platforms to connect and facilitate seamless transactions between users, regardless of their service providers, is essential to advancing financial inclusion. Consequently, this study examined the factors influencing interoperability adoption within the MMSP sector by investigating the central research question: **What factors influence interoperability adoption in the South Africa MMSP sector**? Two sub-questions were developed to provide further insights: (1) **What are the challenges and potential benefits for MMSPs associated with implementing interoperability in South Africa?** and (2) **What key considerations do stakeholders with decision-making authority in the MMSP sector evaluate when contemplating interoperability adoption?** By addressing these research questions in the findings and discussion chapters, this research adds to the existing knowledge base by offering valuable insights into the critical factors and considerations that MMSPs weigh when deciding to pursue interoperability.

This study employed an inductive approach, prioritising qualitative data analysis through a single case study within the MMSP sector. A total of twenty interviews, organised into three cohorts, were conducted to enhance research quality and credibility. Through coding analysis, five central themes emerged as significant influencers of interoperability adoption in South Africa's MMSP sector: Size of the Footprint, User Needs, Degree of Risk and Control, Level of Strategy and Timing, and Profitability. These themes represent key factors impacting the adoption of interoperability within the sector, each affecting decision-making in unique ways.

The study further explored the challenges and benefits tied to each theme, analysing their influence on decision-makers within the MMSP sector. While interoperability adoption factors vary according to each MMSP's business focus and market position, profitability emerged as a decisive driver across the sector in co-opetition decisions. The analysis of the primary data, situated within the context of the literature review, was a deeply reflective process which affirmed the research question posed at the outset. This highlighted the practical implication that while mobile money was designed as an inclusive innovation to enhance accessibility, a gap persists between its intended goals and its capacity to consistently address user needs as businesses grow. Once established in the market, many businesses tend to lose focus on their initial objectives, prioritising short-term margins over long-term foundational user satisfaction. To bridge this practical gap, this study proposes a possible theoretical inclusive innovation concept tool to assess and test suitable requirements for inclusive innovation.

Additionally, the research findings highlight that transaction speed is a key priority for mobile money users—an aspect that has not been sufficiently addressed in existing literature. This oversight indicates a significant disconnect between academic discourse and practical application in South Africa's mobile money sector. Such a gap underscores the necessity for further integrating academic insights with practical applications, emphasising the importance of addressing user needs in developing mobile money services. To ensure the sustainability of inclusive innovation, this study has developed a possible conceptual model that emphasises a balanced approach. The model underscores the importance of harmonising users and providers, highlighting key factors—inclusivity, effectiveness, profitability, and growth. Each element is crucial in fostering lasting impact and scalability, making them essential for sustainable, inclusive innovation consideration.

Furthermore, the research acknowledges limitations stemming from the researcher's positionality and potential biases, as well as the limited scope of the MMSP sector in South Africa. The inability to obtain policymakers' perspectives on mobile money and interoperability concerning financial inclusion also presents another gap. These aspects could serve as valuable directions for future studies, particularly in collecting secondary data on how strategies are linked to business size and profit margins. Investigating leadership value propositions, directions in co-opetition, and the role of government interaction in driving digitalisation may also provide critical insights into the dynamics of the mobile money sector.

This research has provided valuable insights into the exploration of interoperability within South Africa's mobile money sector as a form of inclusive innovation. By examining the factors influencing interoperability adoption, this study highlights the critical role collaboration among MMSPs plays in advancing financial inclusion. The findings underscore the importance of addressing user needs and balancing profitability, along with the various themes that impact decision-making within the sector. Ultimately, this research contributes to a deeper understanding of how inclusive innovation can be harnessed to enhance the effectiveness and reach of mobile money services in South Africa. Inclusion starts somewhere, as does innovation; it can build its way forward from where it is (Thompson, 2018). Just like the MPhil first-year non-official certificate, "this is a human process that requires courage and integrity" (Refer to Appendix F for a more personal reflection on this MPhil research journey). Inclusive innovation has the potential to pave the pathway to the next revolution, which "*will be less [focus] about technological advancement and more about the next chapter of humankind…inclusiveness humanity as the ultimate of what constitutes of common good*." (Antonacopoulou, 2022, p. 588).

Reference list

Adaba, G. B., & Ayoung, D. A. (2017). The development of a mobile money service: an exploratory actor-network study. *Information Technology for Development*, *23*(4), 668-686 https://doi.org/10.1080/02681102.2017.1357525

Adrian, M. T., & Griffoli, M. T. M. (2023). *The Rise of Payment and Contracting Platforms*. International Monetary Fund.

Agola, N. O., & Hunter, A. (2016). *Inclusive innovation for sustainable development*: *Theory and practice.* Palgrave Macmillan.

Ahmad, A. H., Green, C., & Jiang, F. (2020). Mobile money, financial inclusion and development: A review with reference to African experience. *Journal of Economic Surveys*, 34(4), 753–792. https://doi.org/10.1111/JOES.12372

Airvantage. (2024). The potential of mobile money in South Africa. https://www.airvantage.co.za/post/the-potential-of-mobile-money-in-south-africa

Aker, J. C., Boumnijel, R., McClelland, A., & Tierney, N. (2016). Payment mechanisms and antipoverty programs: Evidence from a mobile money cash transfer experiment in Niger. *Economic Development and Cultural Change*, 65(1), 1–37. https://doi.org/10.1086/687578

Akudugu, M. A. (2013). The determinants of financial inclusion in Western Africa: Insights from Ghana. *Research Journal of Finance and Accounting*, *4*(8), 1-9.

Albertus, R. W., & Hamman-Fisher, D. (2021). Investigating information technology skills retention challenges in South Africa's public sector. *African Journal of Science, Technology, Innovation and Development*, *13*(5), 541-549. https://doi.org/10.1080/20421338.2020.1791386

Alcock, G. G. (2018). Kasinomic revolution: *The rise of African informal economies*. Tracey McDonald.

Aloini, D., Lazzarotti, V., Manzini, R., & Pellegrini, L. (2017). IP, openness, and innovation performance: An empirical study. *Management Decision*, *55*(6), 1307-1327. https://doi.org/10.1108/MD-04-2016-0230

Altman, M. (2017). *Handbook of behavioural economics and smart decision-making: Rational decision-making within the bounds of reason.* Edward Elgar Publishing.

Anderson, C. L., & Reynolds, T. (2015). *Review of interoperability and regulations of mobile money.* (EPAR Request No. 313) Evans School Policy Analysis and Research, University of

Washington. https://epar.evans.uw.edu/wp-content/uploads/2024/08/EPAR_UW_Request_313_Mobile-Money-Regulations-and-Interoperability_10.7.15_0.pdf

Antonacopoulou, E. P. (2022). Partnering for impact: A grand challenge and design for co-creating a just, resilient and flourishing society. *The Journal of Applied Behavioral Science*, *58*(4), 571-594

Aron, J. (2017). *Leapfrogging: A survey of the nature and economic implications of mobile money*. (Working paper no. 2017-02), Centre for the Study of African Economies, University of Oxford. https://www.inet.ox.ac.uk/files/26-Jan-17_Aron_WP.pdf

Mobile money and the economy: A review of the evidence. *World Bank Research Observer*, 33(2), 135–188. https://doi.org/10.1093/wbro/lky001

Avom, D., Bangaké, C., & Ndoya, H. (2023). Do financial innovations improve financial inclusion? Evidence from mobile money adoption in Africa. *Technological Forecasting and Social Change*, 190, 122451. https://doi.org/10.1016/j.techfore.2023.122451

Ayob, N., Teasdale, S., & Fagan, K. (2016). How social innovation "came to be": Tracing the evolution of a contested concept. *Journal of Social Policy*, *45*(4), 635–653. https://doi.org/10.1017/S004727941600009X

Bahia, K., & Rattel, F. (2024). *The impact of mobile money interoperability on financial inclusion. Evidence from five country case studies*. Global System for Mobile Communications Association. https://data.gsmaintelligence.com/research/research/research-2024/the-impact-of-mobile-money-interoperability-on-financial-inclusion

Bans-Akutey, A., & Tiimub, B. M. (2021). Triangulation in research. *Academia Letters*, *2*. https://doi.org/10.20935/AL3392

Baptista, P., & Heitmann, S. (2010). *Mobile Money Sumit 2010: Unleashing the power of convergence to advance mobile money ecosystems*. Harvard Kennedy School. https://www.hks.harvard.edu/sites/default/files/centers/mrcbg/programs/cri/files/report_45_MOBILE_MONEY_2010.pdf

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, *13*(4), 544-559. http://www.nova.edu/ssss/QR/QR13-4/baxter.pdf

BBC news. (2023, July 24). *South Africa country profile*. https://www.bbc.com/news/world-africa-14094760

Beck, T., Demirgüç-Kunt, A., & Martinez Peria, M. S. (2008). Banking services for everyone? Barriers to bank access and use around the world. *The World Bank Economic Review*, *22*(3), 397-430.

Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research*, *15*(2), 219-234.

Beuermann, D. W., McKelvey, C., & Vakis, R. (2012). Mobile phones and economic development in rural Peru. *Journal of Development Studies*, 48(11), 1617–1628. https://doi.org/10.1080/00220388.2012.709615

Bianchi, M., Bouvard, M., Gomes, R., Rhodes, A., & Shreeti, V. (2022). *Mobile payments and interoperability: Insights from the academic literature.* (Working Paper). https://hal.science/hal-03629513

Bizah, S. M. D. S. (2017). Mobile money users' challenges. Evidence from developing countries. *International Journal of Education and Research*, *5*(11), 77.

Bourreau, M., & Valletti, T. (2015). Competition and interoperability in mobile money platform markets: What works and what doesn't? *Communications & Strategies*, 99(3), 11-32. https://ssrn.com/abstract=2763624

Bourreau, M., & Verdier, M. (2010). Cooperation for innovation in payment system: The case of mobile payment. *Communications & Strategies, 79*, 95-113. https://ssrn.com/abstract=1810892

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101.

Brunnermeier, M. Limodio, N. & Spadavecchia, L. (2023). *Mobile money, interoperability and financial inclusion*. (NBER Working Paper 31696) National Bureau of Economic Research, Cambridge, Massachusetts. https://www.nber.org/system/files/working_papers/w31696/w31696.pdf

Buckley, J. W., Buckley, M. H., & Chiang, H. F. (1976). *Research methodology & business decisions*. National Association of Accountants, Society of Industrial Accountants of Canada.

Burns, S. (2015). Mobile money and financial development: The case of M-PESA in Kenya. http://dx.doi.org/10.2139/ssrn.2688585

Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice*, *2*(1), 14.

Carbo, S., Gardener, E., & Molyneux, P. (2007). Financial exclusion in Europe. *Public Money and Management, 27*(1), 21-27. https://doi.org/10.3926/ic.946

Carrilo, J. E., Franza, R. M. (2006). Investing in product development and production capabilities: The crucial linkage between time-to-market and ramp-up time. *European Journal of Operational Research, 171*(2), 536–556. http://dx.doi.org/10.1016/j.ejor.2004.08.040

Central Bank of Nigeria. (2023). *Annual Activity Report* https://www.cbn.gov.ng/Out/2024/FMD/2023%20FMD%20Annual%20Activity%20Report%20.pdf

Centre for Affordable Housing Finance in Africa. (2024). *South Africa housing market report.* https://housingfinanceafrica.org/app/uploads/2024/07/V8-National-Property-Market-Report-2024-Final-b.pdf

Chakravorti, S., & Kobor, E. (2005). Why invest in payment innovations? *Journal of Payment Systems Law, 1*(4), 331-353.

Chavez, C. (2008). Conceptualizing from the inside: Advantages, complications, and demands on insider positionality. *The Qualitative Report*, *13*(3), 474-494.

Chen, M. A. (2007). *Rethinking the informal economy: Linkages with the formal economy and the formal regulatory environment*. (Working Paper No. 46) UN Department of Economic and Social Affairs (DESA), United Nations. https://doi.org/10.1093/0199204764.003.0005

Chesbrough, H. W. (2003). The era of open innovation. *MIT Sloan Management Review, 44*(3), 35–41.

Chinn, M. D., & Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics*, *81*(1), 163-192.

Cohen, L., Manion, L., & Morrison, K. (2002). *Research methods in education*. Routledge.

Cozzens, S. & Sutz, J. (2012). *Innovation in informal settings: A research agenda*. IDRC, Ottawa, Canada.

Cook, W. (2018). *Interoperability in East Africa Dispatches from the Home of Mobile Money.* CGAP. https://www.cgap.org/sites/default/files/publications/slidedeck/2018_05-Slidedeck-Interoperability-in-East-Africa-Dispatches-from-the-Home-of-Mobile-Money.pdf

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Sage.

Cunliffe, A. L. (2022). Must I grow a pair of balls to theorize about theory in organization and management studies?. *Organization Theory*, *3*(3), 26317877221109277. https://doi.org/10.1177/26317877221109277

Dabla-Norris, M. E., Ji, Y., Townsend, R., & Unsal, M. F. (2015). *Identifying constraints to financial inclusion and their impact on GDP and inequality: A structural framework for policy*. International Monetary Fund.

Dahlander, L., & Gann, D. M. (2010). How open is innovation? *Research Policy,* 39(6), 699–709.

Dargahwala, T., & Riedl, E. (2021). How interoperability can solve and scale financial inclusion. *MasterCard.* https://www.mastercard.com/news/media/vrhj0cxo/how-interoperability-can-solve-and-scale-financial-inclusion.pdf

Davidson, N., & Keishman. P. (2012). *The case for interoperability: Assessing the value that the interconnection of mobile money services would create for customers and operators*. Global System for Mobile Communications Association. https://www.gsma.com/mobilefordevelopment/resources/the-case-for-interoperability-assessing-the-value-that-the-interconnection-of-mobile-money-services-would-create-for-customers-and-operators/

De Koker, L., & Jentzsch, N. (2013). Financial inclusion and financial integrity: Aligned incentives? *World Development*, *44*, 267-280.

Diniz, E., Porto de Albuquerque, J., & Cernev, A. (2011, December 3). *Mobile money and payment: A literature review based on academic and practitioner-oriented publications (2001-2011).* Proceedings of SIG GlobDev Fourth Annual Workshop, Shanghai, China. http://dx.doi.org/10.2139/ssrn.2924669

Dodgson, M., Gann, D., Wladawsky-Berger, I., & George, G. (2013). *From the digital divide to inclusive innovation: The case of digital money.* (Research Collection 6-2013) Lee Kong Chian School of Business, Singapore Management University. https://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=5725&context=lkcsb_research

Doggett, A. M. (2005). Root cause analysis: a framework for tool selection. *Quality Management Journal*, *12*(4), 34-45. https://doi.org/10.1080/10686967.2005.11919269

Donovan, K. (2012). Mobile money for financial inclusion. *Information and Communications for development*, *61*(1), 61-73.

Drechsler, W., & Natter, M. (2012). Understanding a firm's openness decisions in innovation. *Journal of Business Research,* 65(3), 438-445. https://doi.org/10.1016/j.jbusres.2011.11.003

Durdella, N. (2020). Working with data sources: Selecting research participants and forming research samples. In U. Flick (Ed.), *The Sage handbook of qualitative data collection* (pp. 177-212). Sage.

Eijkman, F., Kendall, J., & Mas, I. (2010). Bridges to cash: The retail end of M-PESA. *Savings and Development*, 219-252.

Fabregas, R., & Yokossi, T. (2022). Mobile money and economic activity: Evidence from Kenya. *World Bank Economic Review*, 36(3), 734–756. https://doi.org/10.1093/wber/lhac007

FinDev Gateway, (2024). *Four major challenges faced by mobile money users in Senegal*. https://www.findevgateway.org/blog/2024/02/four-major-challenges-faced-by-mobile-money-users-in-senegal

Finmark Trust, (2009). *The Mzani bank account initiative in South Africa*. https://finmark.org.za/system/documents/files/000/000/316/original/MsanziBankAccInitiativeSA_2009.pdf?1614593520

Finmark Trust, (2017). *Research report on mobile money in South Africa*. https://finmark.org.za/system/documents/files/000/000/267/original/Final-Report-on-Mobile-Money-in-South-Africa.pdf?1603094540

Foster, C., & Heeks, R. (2013). Conceptualising inclusive innovation: Modifying systems of innovation frameworks to understand diffusion of new technology to low-income consumers. *European Journal of Development Research*, 25, 333-355. https://doi.org/10.1057/ejdr.2013.7

Fuentelsaz, L., Gomez, J., & Polo, Y. (2023). Intrafirm diffusion of new technologies: An empirical application. *Research Policy*, 32, 533–51.

Fungáčová, Z., & Weill, L. (2015). Understanding financial inclusion in China. *China Economic Review*, *34*, 196-206.

George, G., Baker, T., Tracey, P., & Joshi, H. (2019). Inclusion and innovation: A call to action. In *Handbook of inclusive innovation* (pp. 2-22). Edward Elgar Publishing.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, *16*(1), 15–31. https://doi.org/10.1177/1094428112452151

Gnyawali, D. R., & Park, B. J. R. (2011). Co-opetition between giants: Collaboration with competitors for technological innovation. *Research Policy*, *40*(5), 650-663.

Grindley, P. C., & Teece, D. J. (1997). Managing intellectual capital: licensing and cross licensing in semiconductors and electronics. *California Management Review, 39*, 8-41.

González-Benito, Ó., Muñoz-Gallego, P. A., & García-Zamora, E. (2016). Role of collaboration in innovation success: differences for large and small businesses. *Journal of Business Economics and Management*, *17*(4), 645-662.

GSMA. (2016). *The impact of mobile money interoperability in Tanzania. Early data and market perspectives on account-to-account interoperability.* https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-for-development/wp-

content/uploads/2016/10/2016_GSMA_The-impact-of-mobile-money-interoperability-in-Tanzania.pdf

GSMA. (2020). *Tracking the journey towards mobile money interoperability. Emerging evidence from six markets: Tanzania, Pakistan, Madagascar, Ghana, Jordan and Uganda.* https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-for-development/gsma_resources/tracking-the-journey-towards-mobile-money-interoperability-emerging-evidence-from-six-markets-tanzania-pakistan-madagascar-ghana-jordan-and-uganda/

GSMA. (2022). *The state of the industry report on mobile money*. www.gsma.com/mobilemoney

GSMA. (2023). *The state of the industry report on mobile money*. https://www.gsma.com/sotir/wp-content/uploads/2024/03/GSMA-SOTIR-2024_Report.pdf

GSMA. (2024). *The Mobile Economy 2024*. https://www.gsma.com/solutions-and-impact/connectivity-for-good/mobile-economy

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp.105-117). Sage.

Günel, G., Varma, S., & Watanabe, C. (2020, June 9). A manifesto for patchwork ethnography. *Fieldsights: Member Voices.* https://culanth.org/fieldsights/a-manifesto-for-patchwork-ethnography

Hagedoorn, J. (1993). Understanding the rationale of strategic technology partnering: Interorganizational modes of cooperation and sectoral differences. *Strategic Management Journal, 14*(5), 371–85.

Hambrick, D. C. (1983). High profit strategies in mature capital goods industries: A contingency approach. *Academy of Management journal*, *26*(4), 687-707.

Hamel, G., Doz, Y. L., & Prahalad, C. K. (1989). Collaborate with your competitors and win. *Harvard Business Review*, *67*(1), 133-139.

Hammarberg, K., Kirkman, M., & Lacey, S. (2016). Qualitative research methods: When to use them and how to judge them. *Human Reproduction*, *31*(3), 498–501. https://doi.org/10.1093/humrep/dev334

Hargrave, T. J., & Van de Ven, A. H. (2006). A collective action model of institutional innovation. *Academy of Management Review*, *31*(4), 864-888. https://doi.org/10.5465/amr.2006.22527458

Haule, J. (2022, February 15). What is not yet happening but should happened now in FinTech Africa. *Medium*. https://medium.com/@jhaulay/what-is-not-yet-happening-but-should-happen-now-in-fintech-africa-5fe6e16f638

Heeks, R., Amalia, M., Kintu, R., & Shah, N. (2013). *Inclusive innovation: Definition, conceptualisation and future research priorities.* (Working Paper No. 53). Development Informatics Working Paper. https://www.researchgate.net/publication/334613068_Inclusive_Innovation_Definition_Conceptualisation_and_Future_Research_Priorities

International Monetary Fund. (2020). *South Africa: 2019 Article IV consultation-press release; and staff report; and statement by the Executive Director for South Africa*. https://www.imf.org/en/Publications/CR/Issues/2020/01/29/South-Africa-2019-Article-IV-Consultation-Press-Release-and-Staff-Report-and-Statement-by-49003

Iheanachor, N., David-West, Y., & Umukoro, I. O. (2021). Business model innovation at the bottom of the pyramid–A case of mobile money agents. *Journal of Business Research*, *127*, 96-107.

Ismail, S. (2015). *The Victoria Mxenge Housing Project: Women building communities through social activism and informal learning*. Juta.

ITUNews magazine, No.3, 数字金融包容性 2021 Financial Inclusion Global Initiative (FIGI) https://www.itu.int/en/publications/gs/Pages/publications.aspx?parent=S-GEN-NEWS-2021-3&media=electronic

Itzikowitz, A., & Gunning, E. (2021, October 9). The SARB'S policy proposals in respect of Open Banking. *ENSight.* https://www.ensafrica.com/news/detail/4912/the-sarbs-policy-proposals-in-respect-of-open

Jack, W., & Suri, T. (2011). *Mobile money: The economics of M-PESA* (No. w16721). National Bureau of Economic Research.

Jackson, N., & Dunn-Jense, L. (2020). Leadership succession planning for today's digital transformation economy: Key factors to build for competency and innovation. *Business Horizons*, 64(2), 273-284. https://doi.org/10.1016/j.bushor.2020.11.008

Jacolin, L., Massil, J. K., & Noah, A. (2021). Informal sector and mobile financial services in emerging and developing countries: Does financial innovation matter? *World Economy*, 44(9), 2703–2737. https://doi.org/10.1111/TWEC.13093

Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of Basic and Clinical Pharmacy*, *5*(4), 87.

Jonassen, D. (2012). Designing for decision making. *Education Tech Research, 60,* 341-359. https://doi.org/10.1007/s11423-011-9230-5

Kaplinsky, R. (2011). Schumacher meets Schumpeter: Appropriate technology below the radar. *en*

Kimberly, J. R., & Evanisko, M. J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *Academy of Management Journal*, *24*(4), 689-713. https://doi.org/10.5465/256170

Kline, D. (2003). Sharing the corporate crown jewels. *MIT Sloan Management Review, 44*(3), 89–93.

Kodom, M., Steel, W. F., Ackah, C., & Bokpin, G. A. (2022). Mobile money: A gateway to achieving financial inclusion in Ghana. *Enterprise Development and Microfinance, 33*(2), 105–123. https://doi.org/10.3362/1755-1986.22-00011

Koloseni, D., & Mandari, H. (2017). Why mobile money users keep increasing? Investigating the continuance usage of mobile money services in Tanzania. *Journal of International Technology and Information Management, 26*(2), Article 6. https://doi.org/10.58729/1941-6679.1312

Kostov, P., Arun, T. and Annim, S. (2015) Access to financial services: The case of the 'Mzansi' account in South Africa. *Review of Development Finance* 5(1): 34–42.

Kramer, W., Jenkins, B., & Katz, R. (2007). *The role of the information and communications technology sector in expanding economic opportunity*. (Corporate Social Responsibility Initiative Report No.22) Kennedy School of Government, Harvard University.

Kumar, A. S., & Palanisamy, Y. A. (2019). Examining the consumers' preference towards adopting the mobile payment system. *International Journal of Electronic Finance*, *9*(4), 268-286.

Kumar, S., Kumar, R. S., & Prabhu, M. G. N. (2020). Sampling framework for personal interviews in qualitative research. *PalArch's Journal of Archaeology of Egypt/Egyptology*, *17*(7), 7102-7114.

Ky, S., Rugemintwari, C., & Sauviat, A. (2018). Does mobile money affect saving behaviour? Evidence from a developing country. *Journal of African Economies*, *27*(3), 285-320.

Laerd Dissertation. (2012). *Purposive sampling*. https://dissertation.laerd.com/purposive-sampling.php#maximum-variation-sampling

Lichtenthaler, U. (2005). External commercialization of knowledge: review and research agenda. *International Journal of Management Reviews*, *7*(4), 231–255. https://doi.org/10.1111/j.1468-2370.2005.00115.x

Lichtenthaler, U. (2007). Hierarchical strategies and strategic fit in the keep-or-sell decision. *Management Decision*, *45*(3), 340–359. https://doi.org/10.1108/00251740710744990

Lichtenthaler, U., & Holger, E. (2009). Opening up the innovation process: The role of technology aggressiveness. *R&D Management, 39*(1), 38–54. https://doi.org/10.1111/j.1467-9310.2008.00522.x

Lim, M. (2016, June 2). Searching for Moats: Visa, Mastercard, and how they dominate the payment card industry. *The Fifth Person*. https://fifthperson.com/searching-moats-visa-mastercard-dominate-payment-card-industry/

Lonie, S. (2013). *The mobile money paradox – if everyone wants it, why is it doing so badly?* Consult Hyperion. https://chyp.com/2013/05/16/the-mobile-money-paradox-if-everyone-wants-it-why-is-it-doing-so-badly/

Lwanga Mayanja, M., & Adong, A. (2016). A pathway to financial inclusion: mobile money and individual Savings in Uganda.

Mahajan, S. (2014). *Economics of South Africa townships: Special focus on Diepsloot*. (World Bank Study 89917) World Bank. https://documents1.worldbank.org/curated/en/217211468302413395/pdf/Economics-of-South-African-townships-special-focus-on-Diepsloot.pdf

Malhotra, N. (Ed.). (2022). *Frontiers in Social Innovation: The Essential Handbook for Creating, Deploying, and Sustaining Creative Solutions to Systemic Problems*. Harvard Business Press.

Mashapha, M. C., & Mukonza, R. M. (2024). Exploring the role unemployment plays in perpetrating violent crimes, particularly murder in South Africa. *African Journal of Peace and Conflict Studies*, *13*(2), 157-175.

Manzini, E. (2014). Making things happen: Social innovation and design. *Design Issues*, *30*(1), 57–66.

Maréchal, N. (2016). What do we mean by mobile ecosystems? Ranking digital rights. https://rankingdigitalrights.org/2016/09/15/what-are-mobile-ecosystems/

Mas, I., & Porteous, D. (2015). Pathways to smarter digital financial inclusion. *CAPCO Institute's Journal of Financial Transformation, 42,* 47-62. https:// doi.org/10.2139/ssrn.1858377

Mas, I., & Sullivan, N. (2011). Mobile money as an information utility that touches everyone: Refining the vision for financial inclusion. *Innovations: Technology, Governance, Globalization*, *6*(4), 17-25. https://doi.org/10.1162/INOV_a_00097

Maune, A., Nyakwawa, G. M., & Magara, T. (2022). Financial inclusion: A review of mobile money interoperability in Zimbabwe. *Acta Universitatis Danubius. Œconomica*, *18*(6).

Maxwell, J. A. (2012). Designing a qualitative study. In L. Bickman & D. J. Rog (Eds.), *Qualitative research design: An interactive approach* (pp. 214–253). Sage.

McKinsey & Company (2022). *The future of payments in Africa*. https://www.mckinsey.com/industries/financial-services/our-insights/the-future-of-payments-in-africa

Menghwar. P., & Daood, A. (2021). Creating shared value: A systematic review, synthesis and integrative perspective. *International Journal of Management Reviews*, 23(4), 466–485. https://doi.org/10.1111/ijmr.12252

Merriam, S. B. (1998). *Qualitative research and case study applications in education. (*Rev. Ed.). Jossey-Bass.

Mhlanga, D., Dunga, S. H., & Moloi, T. (2021). Understanding the drivers of financial inclusion in South Africa. *Journal of Economic and Financial Sciences*, *14*(1), 8.

Mogaji, E., & Nguyen, N. P. (2022). The dark side of mobile money: Perspectives from an emerging economy. *Technological Forecasting and Social Change*, *185*, 122045. https://doi.org/10.1016/j.techfore.2022.122045

Molla, A., & Heeks, R. (2007). Exploring ecommerce benefits for businesses in a developing country. *The Information Society*, 23(2), 95108. https://doi.org/10.1080/01972240701224028

Moore, J. (1996). The death of competition: Leadership and strategy in the age of business ecosystems, Wiley.

Mortazavi, S., Eslami, M. H., Hajikhani, A., & Väätänen, J. (2021). Mapping inclusive innovation: A bibliometric study and literature review. *Journal of Business Research*, *122*, 736-750. https://doi.org/10.1016/j.jbusres.2020.07.030

Moser, A., & Korstjens, I. (2018). Series: Practical guidance to qualitative research. Part 3: rehttps://doi.org/10.1080/13814788.2017.1375091

Mswahili, A. (2022). Factors for acceptance and use of mobile money interoperability services. *The Journal of Informatics*, *2*(1), 1-21. https://journals.iaa.ac.tz/index.php/tji/article/view/45/31

Mulgan, G. (2006). The process of social innovation. *Innovation, 1*(2), 145 -162.

Nalmpanti, A. D., Wong, C. Y., & Oghazi, P. (2024). Collaborating for innovation: The inhibiting role of constraints. *Journal of Innovation & Knowledge*, *9*(3), 100504. https://doi.org/10.1016/j.jik.2024.100504

Nanziri, E. L. (2017). *Financial inclusion and welfare in post-apartheid South Africa*. African Economic Research Consortium.

National Treasury. (2011) A safer financial sector to serve South Africa better.

National Treasury. (2019). *Economic transformation, inclusive growth, and competitiveness: Towards an economic strategy for South Africa.*

https://www.treasury.gov.za/comm_media/press/2019/towards%20an%20economic%20strategy%20for%20sa.pdf

National Treasury. (2021). *An inclusive financial sector for all*. https://www.resbank.co.za/content/dam/sarb/what-we-do/prudential-regulation/PA%20Regulatory%20and%20Supervisory%20Strategy%202021.pdf

Neuwirth, R. (2011). *Stealth of nations: The global rise of the informal economy*. Anchor.

Neves, D., & Du Toit, A. (2012). Money and sociality in South Africa's informal economy. *Africa*, 82(1), 131–149. https://doi.org/10.1017/S0001972011000763

Nicholls, A., Simon, J., & Gabriel, M. (2015). *New frontiers in social innovation research*. Palgrave Macmillan.

Nilsson, W. (2019). Social innovation as institutional work. In G. George, T. Baker, P. Tracey, & H. Joshi (Eds.), *Handbook of inclusive Innovation*, (pp. 284-304). Edward Elgar. https://doi.org/10.4337/9781786436016.00026

Nomanini. (2018). *Interoperability: The next phase of mobile money*. https://www.techzim.co.zw/2018/11/the-importance-of-interoperability-the-evolution-of-payments-part-2-mobile-money/

Odorović, A. (2023). Open banking: Between cooperation and competition. *Анали Правног факултета у Београду*, *71*(1), 65-91. https://www.researchgate.net/publication/369584155_Open_Banking_Between_Cooperation_and_Competition

Okello Candiya Bongomin, G., Ntayi, J. M., Munene, J. C., & Malinga, C. A. (2018). Mobile money and financial inclusion in sub-Saharan Africa: the moderating role of social networks. *Journal of African Business*, *19*(3), 361-384.

Olaleye, S. A., Sanusi, I. T., & Oyelere, S. S. (2017, September). Users experience of mobile money in Nigeria. In *2017 IEEE AFRICON* (pp. 929-934). IEEE.

Ozili, P. (2020). Theories of financial inclusion. In E. Özen, & S. Grima (Eds.), *Uncertainty and challenges in contemporary economic behaviour* (pp. 89-115). Emerald. https://doi.org/10.1108/978-1-80043-095-220201008

Ozili, P. (2021). Measuring financial inclusion and financial exclusion, *Munich Personal RePEc Archive (MPRA)*, Paper No. 107866. https://mpra.ub.uni-muenchen.de/107866/

Patton, M. Q. (2002). *Qualitative research and evaluation methods.* Sage.

Paunov, C. (2013). *Innovation and inclusive development: A discussion of the main policy issues.* (OECD Science, Technology and Industry Working Papers, No. 2013/01), Paris: Organisation

for Economic Cooperation and Development (OECD). http://dx.doi.org/10.1787/5k4dd1rvsnjj-en

Pelletier, A., Khavul, S., & Estrin, S. (2020). Innovations in emerging markets: The case of mobile money. *Industrial and Corporate Change, 29*(2), 395–421. https://doi.org/10.1093/icc/dtz049

Peter, C. (2019, September 2019). Sustaining the African middle class: Leveraging green technologies and the fourth industrial revolution. *The World Financial Review*. https://worldfinancialreview.com/sustaining-the-african-middle-class-leveraging-green-technologies-and-the-fourth-industrial-revolution/

Peter, C. (2021). Social innovation for sustainable urban developmental transition in Sub-Saharan African: Leveraging economic ecosystems and the entrepreneurial state. *Sustainability, 13*(13), 7360. https://doi.org/10.3390/su13137360

Phillips, W., Lee, H., Ghobadian, A., O'regan, N., & James, P. (2015). Social innovation and social entrepreneurship: A systematic review. *Group & Organization Management*, *40*(3), 428-461. https://doi.org/10.1177/1059601114560063

Phills, J. A., Deiglmeier, K., & Miller, D. T. (2008). Rediscovering social innovation. *Stanford Social Innovation Review*, *6*(4), 34-43.

Porter, M. E., & Kramer, M. R. (2011). The big idea: Creating share value. How to reinvent capitalism—and unleash a wave of innovation and growth. *Harvard Business Review*, *89*, 62–77.

Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, *6*(2), 1-5.

Rehman, A. A., & Alharthi, K. (2016). An introduction to research paradigms. *International Journal of Educational Investigations*, *3*(8), 51-59.

Reyner, C., & Bonnici, F. (2022). The systems work of social change. *Oxford University Press.*

Rogerwilco. (2022). *The 2021 Township Marketing Report.* Survey54. https://www.rogerwilco.co.za/

Rogerwilco. (2023). *The 2023 Township CX Marketing report.* Survey54. https://www.rogerwilco.co.za/

Saldaña, J. (2021). *The coding manual for qualitative researchers.* Sage.

Saunders, M., Lewis, P., & Thornhill, A. (2019). Research methods for business students. *Pearson.*

Scharwatt, C., Katakam, A., Frydrych, J., Murphy, A., & Naghavi, N. (2015). *State of the industry 2014*. GSMA.

Schillo, R., & Robinson, R. (2017). Inclusive innovation in developed countries: The who, what, why, and how. *Technology Innovation Management Review*, *7*(7), 34–46. http://10.22215/timreview/1089

Seeking, J., & Nattrass, N. (2005). *Class, race and inequality in South Africa*. Yale University Press.

Senyo, P. K., & Osabutey, E. L. (2020). Unearthing antecedents to financial inclusion through FinTech innovations. *Technovation*, *98*, 102155. https://doi.org/10.1016/j.technovation.2020.102155

Shaikh, A. A., Glavee-Geo, R., Karjaluoto, H., & Hinson, R. E. (2019). How is the use of mobile money services transforming lives in Ghana? In A. A. Shaikh, & H. Karjaluoto (Eds.), *Marketing and mobile financial services: A global perspective on digital banking consumer behaviour* (pp. 256-280). Routledge. https://doi.org/10.4324/9781351174466-12

Shaikh, A. A., Glavee-Geo, R., Karjaluoto, H., & Hinson, R. E. (2023). Mobile money as a driver of digital financial inclusion. *Technological Forecasting and Social Change, 186* 122158. https://doi.org/10.1016/j.techfore.2022.122158

Shannon-Baker, P. (2022). Philosophical underpinnings of mixed methods research in education. *International Encyclopedia of Education* (4th ed.). https://doi.org/10.1016/B978-0-12-818630-5.11037-1

Simatele, M., & Maciko, L. (2022). Financial inclusion in Rural South Africa: A qualitative approach. *Journal of Risk and Financial Management*, *15*(9), 376. https://doi.org/10.3390/jrfm15090376

Sinclair, S. P., (2001). *Financial exclusion: An introductory survey.* Report of Centre for Research in Socially Inclusive Services, Heriot-Watt University, Edinburgh.

Slade, E., Williams, M., & Dwivedi, Y. (2013). Mobile payment adoption: Classification and review of the extant literature. *The Marketing Review*, 13(2), 167-190.

Statista. (2025). *20 Countries with the biggest inequality in income distribution worldwide in 2023, based on the Gini index*. https://www.statista.com/statistics/264627/ranking-of-the-20-countries-with-the-biggest-inequality-in-income-distribution/

Stats SA. (2023). *South Africa's youth continues to bear the burden of unemployment*. https://www.statssa.gov.za/?p=15407

Stats SA. (2024). *Quarterly Labour Force Survey (QLFS) Q1: 2024*

Suri, T. (2017). Mobile money. *Annual Review of Economics*, 9(1), 497–520. https://doi.org/10.1146/annurev-economics-063016-103638

Tengeh, R. K., & Gahapa Talom, F. S. (2020). Mobile money as a sustainable alternative for smes in less developed financial markets. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*(4), 163. https://doi.org/10.3390/joitmc6040163

The Global Findex Database. (2021). *Financial inclusion, digital payments and resilience in the age of COVID-19*. World Bank. https://www.worldbank.org/en/publication/globalfindex

Thompson, N. A. (2018). Imagination and creativity in organizations. *Organization Studies*, *39*(2-3), 229-250.

Tsanga, R. C. N. N. (2018). What about acceptability of mobile money in sub-saharan Africa? The case of Cameroon. *Journal of Business*, *6*(1), 6-11. https://doi.org/10.12691/jbms-6-1-2

Unger, R. M. (2015). Conclusion: The task of the social innovation movement. *New frontiers in social innovation research*, 233-251.Van Wijk, J., Zietsma, C., Dorado, S., De Bakker, F. G., & Martí, I. (2019). Social innovation: Integrating micro, meso, and macro level insights from institutional theory. *Business & Society*, *58*(5), 887-918.

Von Hippel, E. (1988). The sources of innovation. *Oxford University Press*.

Waris, A., Nazir, S., Khan, S., Ali, M. Z., & Gorsi, M. S. R. (2024). Effects of Mobile Money Services on the Performance of Small and Medium Size Enterprises. *American Journal of Industrial and Business Management*, *14*(4), 537-552.

Weber, C. E., Okraku, M., Mair, J., & Maurer, I. (2021). Steering the transition from informal to formal service provision: Labor platforms in emerging-market countries. *Socio-Economic Review*, 19(4), 1315–1344. https://doi.org/10.1093/ser/mwab008

Whyte , A., & Tedds , J. (2011). *Making the case for research data management.* [Digital

Williams, C. (2007). Research methods. *Journal of Business & Economics Research (JBER)*, *5*(3).

Windrum, P., Schartinger, D., Rubalcaba, L., Gallouj, F., & Toivonen, M. (2016). The co-creation of multi-agent social innovations: A bridge between service and social innovation research. *European Journal of Innovation Management*, *19*(2), 150-166.

Yazan, B. (2015). Three approaches to case study methods in education: Yin, Merriam, and Stake. *The Qualitative Report*, *20*(2), 134-152.

Yin, R. K. (2004). *Case study research: Design and methods* (3rd ed.). Sage.

Yin, R. K. (2015). *Qualitative research from start to finish*. Guilford publications.

Yin, R.K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage.

Zainal, Z. (2007). Case study as a research method. *Jurnal Kemanusiaan*, *5*(1).

Zhang, J., & Liang, X. (2011). Business ecosystem strategies of mobile network operators in the 3G era: The case of China Mobile. *Telecommunication Policy,* 35(2), 156-171. https://doi.org/10.1016/j.telpol.2010.12.009

Zhong, M. (2016). Research on multi-parties competition and cooperation in mobile payment market. *RISTI (Revista Iberica de Sistemas e Tecnologias de Informacao)*, (E9), 332-339. https://www.proquest.com/docview/1842824599?pq-origsite=gscholar&fromopenview=true

Zins, A., & Weill, L. (2016). The determinants of financial inclusion in Africa. *Review of Development Finance, 6* (1), 46–57. http://www. sciencedirect. com/science/article/pii S.

Appendices list

Appendix A: 数字金融 Mobile Money Included as a Gateway to Financial Inclusion

“金融普惠是减贫和包容性增长的关键，依托于信通技术基础设施的接入” (ITU, 2021, p. 50). This was quoted from the ITC news magazine which highlighted that financial inclusion is essential for alleviating poverty and fostering inclusive growth and depends on access to information and communication technology infrastructure. The World Bank Group illustrates below how to serve the unserved and provide access to various types of financial transactions through innovation and collaboration, ultimately leading to pathways for financial inclusion; please refer to Figure 19 from the World Bank Group.

Figure 19: Gateway to financial inclusion

Figure 19

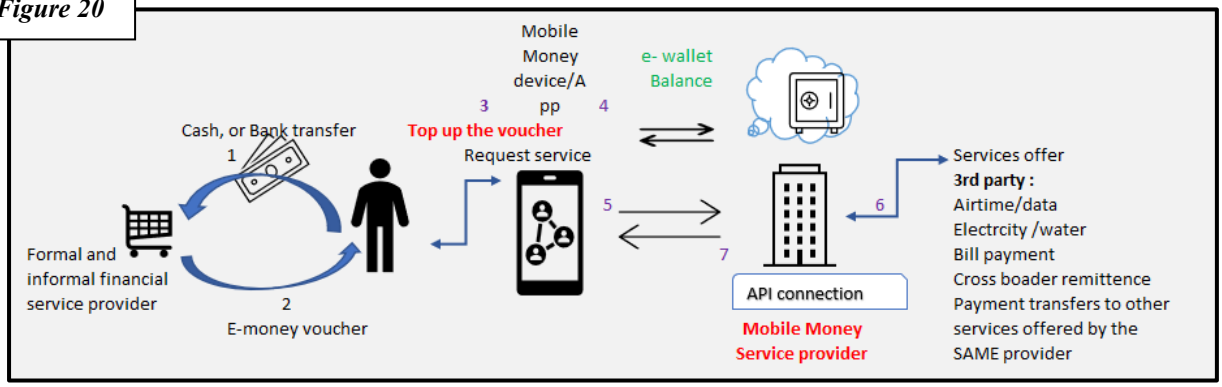
(Source: World Bank Group cited by Financial Inclusion Global Initiative, 2021, p. 50)

Appendix B: Illustrates a typical Mobile Money Transaction Flow with a Consumer Directly.

Figure 20 illustrates the general process of administering a typical transaction and its flow. The points below explain this using an example of a consumer requesting a service, such as a DSTV top-up, directly using the mobile money app.

Figure 20: Typical Mobile Money Transaction Flow by Consumer

Figure 20



(Source: Author)

An example of a typical transaction and its flow:

1. The consumer can buy an e-money voucher directly from a MMA or formal store or bank transfer.
2. The consumer can load the e-money directly to the mobile application.
3. The consumer can directly request the service needed through the application.
4. Mobile (money) devices receive the order and check the e-wallet balance to confirm that there are sufficient funds to complete the transaction.
5. The mobile device then instructs the API connection of the MMSP's system to connect to the third-party DSTV service to request the top-up.
6. The API confirms the successful top-up with the DSTV service provider.
7. The API confirms the successful top-up back to the mobile device and display the confirmation on the users' mobile application screen.

Appendix C: Literature Review Summary

Table 6 below presents the key literature reviewed in Chapter 2 to Chapter 5.

Table 6: Literature Review Summary

Category	Author (Year)	Article Name	Key Area of Insight
Social Innovation	Malhotra (2022)	Frontiers in Social Innovation	Handbook on creating, deploying, and sustaining innovative solutions to systemic social problems.
Social Innovation	Manzini (2014)	Making things happen: Social innovation and design	Discusses the intersection of design and social innovation to foster positive societal change.
Social Innovation	Mulgan (2006)	The process of social innovation	Explores the dynamics and stages of social innovation processes.
Social Innovation	Nicholls et al., (2015)	New frontiers in social innovation research	Examines emerging trends and opportunities in social innovation research.
Social Innovation	Phillips et al., (2015)	Social innovation and social entrepreneurship: A systematic review	Systematic review of social innovation and entrepreneurship concepts.
Social Innovation	Phills et al., (2008)	Rediscovering social innovation	Defining and distinguishing social innovation from related concepts.
Social Innovation	Reyner & Bonnici (2022)	The systems work of social change	Systems thinking as a framework for social change and innovation.
Social innovation	Thompson (2018)	Imagination and creativity in organizations	Investigates how creativity and imagination contribute to organizational innovation and change.

Category	Author (Year)	Article Name	Key Area of Insight
Social innovation	Unger (2015)	Conclusion: The task of the social innovation movement	Explores the challenges and tasks in the social innovation movement, advocating for wider adoption.
Social innovation	Van Wijk et al (2019)	Social innovation: Integrating micro, meso, and macro level insights from institutional theory	Discusses social innovation through the lens of institutional theory, integrating various levels of analysis.
Social innovation	Windrum et al., (2016)	The co-creation of multi-agent social innovations: A bridge between service and social innovation research	Focuses on the co-creation of social innovations, bridging service and social innovation theory.
Inclusive Innovation	Agola & Hunter (2016)	Inclusive innovation for sustainable development: Theory and practice	Provides a framework for understanding inclusive innovation in achieving sustainable development goals.
Inclusive Innovation	Foster & Heeks (2013)	Conceptualising inclusive innovation: Modifying systems of innovation frameworks to understand diffusion of new technology to low-income consumers	Adapting innovation frameworks to ensure technology diffusion to low-income users.
Inclusive Innovation	George et al., (2019)	Inclusion and innovation: A call to action	Advocacy for integrating inclusivity in innovation frameworks and practices.
Inclusive Innovation	Heeks et al., (2013)	Inclusive innovation: Definition, conceptualisation and future research priorities	Defines inclusive innovation and identifies future research priorities in the field.
Inclusive Innovation	Mortazavi et al., (2021)	Mapping inclusive innovation: A bibliometric study and literature review	Provides a bibliometric analysis of inclusive innovation research, mapping trends and gaps.
Inclusive Innovation	Paunov (2013)	Innovation and inclusive development: A discussion of the main policy issues	Policy implications for fostering inclusive innovation in developing regions.

Category	Author (Year)	Article Name	Key Area of Insight
Inclusive Innovation	Schillo & Robinson (2017)	Inclusive innovation in developed countries: The who, what, why, and how	Analysis of inclusive innovation frameworks in developed contexts.
Informal economy	Chen (2007)	Rethinking the informal economy: Linkages with the formal economy and the formal regulatory environment	Exploration of the informal economy's connections to formal economies and regulatory frameworks.
Informal economy	Mashapha & Mukonza (2024)	Exploring the role unemployment plays in perpetrating violent crimes, particularly murder in South Africa	Examines the relationship between unemployment and violent crimes, focusing on South Africa.
Informal economy	Neuwirth (2011)	Stealth of nations: The global rise of the informal economy	Explores the rise and impact of the informal economy globally.
Financial inclusion	Akudugu (2013)	The determinants of financial inclusion in Western Africa: Insights from Ghana	Identifies factors driving financial inclusion in Ghana, emphasizing the role of socio-economic and institutional variables.
Financial inclusion	Burns (2015)	Mobile money and financial development: The case of M-PESA in Kenya	Evaluates the contribution of M-PESA to financial development and its broader implications for financial inclusion.
Financial inclusion	Carbo et al., (2007)	Financial exclusion in Europe	Investigates financial exclusion in Europe and its determinants, offering comparative insights.
Financial inclusion	Chakravorti & Kobor (2005)	Why invest in payment innovations?	Motivations and implications of investing in payment innovations.
Financial inclusion	Chinn & Ito (2006)	What matters for financial development? Capital controls, institutions, and interactions	Impact of capital controls, institutions, and interactions on financial development.

Category	Author (Year)	Article Name	Key Area of Insight
Financial inclusion	De Koker & Jentzsch (2013)	Financial inclusion and financial integrity: Aligned incentives?	Investigation of the alignment between financial inclusion and integrity objectives.
Financial inclusion	Fungáčová & Weill (2015)	Understanding financial inclusion in China	Examination of determinants and extent of financial inclusion in China.
Financial inclusion	Jacolin et al., (2021)	Informal sector and mobile financial services in emerging and developing countries: Does financial innovation matter?	Investigates the impact of financial innovations like mobile financial services on informal economies.
Financial inclusion	Kaplinsky (2011)	Schumacher meets Schumpeter: Appropriate technology below the radar	Discusses the development and diffusion of "appropriate technology" for underserved populations.
Financial inclusion	Mas & Porteous (2015)	Pathways to smarter digital financial inclusion	Proposes strategies for achieving smarter digital financial inclusion globally.
Financial inclusion	Mhlanga et al., (2021)	Understanding the drivers of financial inclusion in South Africa	Identifies key factors driving financial inclusion in South Africa.
Financial inclusion	Ozili (2020)	Theories of financial inclusion	Exploration of financial inclusion theories and frameworks.
Financial inclusion	Ozili (2021)	Measuring financial inclusion and financial exclusion	Measurement approaches for financial inclusion and exclusion.
Financial inclusion	Senyo & Osabutey (2020)	Unearthing antecedents to financial inclusion through FinTech innovations	Role of FinTech innovations in driving financial inclusion.

Category	Author (Year)	Article Name	Key Area of Insight
Financial inclusion	Simatele & Maciko (2022)	Financial inclusion in Rural South Africa: A qualitative approach	Review of financial inclusion status
Financial inclusion	Zins & Weill (2016)	The determinants of financial inclusion in Africa	Identifies factors that influence financial inclusion in Africa, including regulatory and economic barriers.
Mobile Money; Financial inclusion	Ahmad, Green, & Jiang (2020)	Mobile money, financial inclusion and development: A review with reference to African experience	Reviews mobile money's role in advancing financial inclusion and development in Africa.
Mobile Money; Financial inclusion	Eijkman et al., (2010)	Bridges to cash: The retail end of M-PESA	Analysis of M-PESA's retail network and its role in bridging cash-based and digital systems.
Mobile Money; Financial inclusion	Fabregas & Yokossi (2022)	Mobile money and economic activity: Evidence from Kenya	Impact of mobile money on economic activities in Kenya.
Mobile money, interoperability and financial inclusion	Brunnermeier et al., (2023)	Mobile money, interoperability and financial inclusion	Explores the role of interoperability in enhancing financial inclusion through mobile money platforms.
Mobile Money, Financial inclusion, Interoperability	Maune et al., (2022)	Financial inclusion: A review of mobile money interoperability in Zimbabwe	Reviews the role of mobile money interoperability in improving financial inclusion in Zimbabwe.
Mobile Money, Financial inclusion	Lwanga & Adong (2016)	A pathway to financial inclusion: Mobile money and individual savings in Uganda	Analyses mobile money's role in improving individual savings and financial inclusion in Uganda.

Category	Author (Year)	Article Name	Key Area of Insight
Mobile Money, Financial inclusion	Okello et al., (2018)	Mobile money and financial inclusion in sub-Saharan Africa: The moderating role of social networks	Role of social networks in enhancing mobile money adoption for financial inclusion.
Mobile Money, Financial inclusion	Shaikh et al., (2023)	Mobile money as a driver of digital financial inclusion	Digital financial inclusion driven by mobile money services.
Mobile Money Interoperability	Bianchi et al., (2022)	Mobile payments and interoperability: Insights from the academic literature	Analyses the challenges and opportunities of interoperability in mobile payment systems.
Mobile Money Interoperability	Bourreau & Valletti (2015)	Competition and interoperability in mobile money platform markets	Examines competition and interoperability in mobile money platforms and their implications for market efficiency.
Mobile Money Interoperability	Bourreau & Verdier (2010)	Cooperation for innovation in payment system: The case of mobile payment	Discusses cooperative strategies in mobile payment innovations and their role in technology adoption.
Mobile Money Interoperability	Davidson & Keishman (2012)	The case for interoperability: Assessing the value that the interconnection of mobile money services would create for customers and operators	Value and implications of mobile money service interoperability for stakeholders.
Mobile Money Interoperability	Mswahili (2022)	Factors for acceptance and use of mobile money interoperability services	Examines factors influencing acceptance and usage of mobile money interoperability in Tanzania.
Mobile Money	Adaba & Ayoung (2017)	The development of a mobile money service: an exploratory actor-network study	Explores the development of mobile money services using actor-network theory, focusing on stakeholder interactions.

Category	Author (Year)	Article Name	Key Area of Insight
Mobile Money	Aker et al., (2016)	Payment mechanisms and antipoverty programs: Evidence from a mobile money cash transfer experiment	Examines the impact of mobile money cash transfers on poverty alleviation in Niger.
Mobile Money	Aron (2017)	Leapfrogging: A survey of the nature and economic implications of mobile money	Surveys how mobile money contributes to economic development and its potential for leapfrogging traditional financial systems.
Mobile Money	Avom et al., (2023)	Do financial innovations improve financial inclusion? Evidence from mobile money adoption in Africa	Examines how financial innovations like mobile money enhance financial inclusion in Africa.
Mobile Money	Beuermann et al., (2012)	Mobile phones and economic development in rural Peru	Assesses the impact of mobile phones on rural economic development in Peru.
Mobile Money	Bizah (2017)	Mobile money users' challenges: Evidence from developing countries	Highlights the challenges mobile money users face in developing countries, including regulatory and infrastructural barriers.
Mobile Money	Iheanachor et al., (2021)	Business model innovation at the bottom of the pyramid–A case of mobile money agents	Examines mobile money agents' business model innovations for serving bottom-of-the-pyramid markets.
Mobile Money	Jack & Suri (2011)	Mobile money: The economics of M-PESA	Analyses M-PESA's impact on financial systems and economic activity.
Mobile Money	Kodom et al., (2022)	Mobile money: A gateway to achieving financial inclusion in Ghana	Investigates mobile money's role in promoting financial inclusion in Ghana.
Mobile Money	Koloseni & Mandari (2017)	Why mobile money users keep increasing? Investigating the continuance usage of mobile money services in Tanzania	Examines factors influencing sustained usage of mobile money services in Tanzania.

Category	Author (Year)	Article Name	Key Area of Insight
Mobile Money	Kumar & Palanisamy (2019)	Examining the consumers' preference towards adopting the mobile payment system	Explores consumer preferences and factors driving the adoption of mobile payment systems.
Mobile Money	Mas & Sullivan (2011)	Mobile money as an information utility that touches everyone	Refines the vision of mobile money as a utility driving widespread financial inclusion.
Mobile Money	Mogaji & Nguyen (2022)	The dark side of mobile money: Perspectives from an emerging economy	Investigate the unintended negative consequences of mobile money usage in emerging economies.
Mobile Money	Molla & Heeks (2007)	Exploring e-commerce benefits for businesses in a developing country	Explores the benefits of e-commerce for businesses in developing countries.
Mobile Money	Neves & Du Toit (2012)	Money and sociality in South Africa's informal economy	Analyses the role of money in social relations within South Africa's informal economy.
Mobile Money	Olaleye et al., (2017)	Users experience of mobile money in Nigeria	User experience and adoption factors for mobile money in Nigeria.
Mobile Money	Pelletier et al., (2020)	Innovations in emerging markets: The case of mobile money	Examination of mobile money innovations in emerging markets.
Mobile Money	Shaikh et al., (2019)	How is the use of mobile money services transforming lives in Ghana?	Impact of mobile money services on livelihoods and social inclusion in Ghana.
Mobile Money	Slade et al., (2013)	Mobile payment adoption: Classification and review of the extant literature	Offers a classification of mobile payment adoption, identifying key barriers and drivers.

Category	Author (Year)	Article Name	Key Area of Insight
Mobile Money	Suri (2017)	Mobile money	Reviews the economic impact and adoption trends of mobile money in developing countries.
Mobile Money	Tengeh & Gahapa (2020)	Mobile money as a sustainable alternative for SMEs in less developed financial markets	Explores mobile money's potential as a sustainable financial tool for SMEs in underdeveloped markets.
Mobile Money	Tsanga (2018)	What about acceptability of mobile money in sub-Saharan Africa? The case of Cameroon	Studies the acceptability and challenges of mobile money adoption in Cameroon.
Mobile Money	Waris et al., (2024)	Effects of Mobile Money Services on the Performance of Small and Medium Size Enterprises	Investigates the impact of mobile money on SME performance in emerging economies.
Decision Factors on Collaboration or/and Innovation	Chesbrough (2003)	The era of open innovation	Conceptualization of open innovation as a framework for business development.
Decision Factors on Collaboration or/and Innovation	Drechsler & Natter (2012)	Understanding a firm’s openness decisions in innovation	Factors influencing firms' decisions on innovation openness.
Decision Factors on Collaboration or/and Innovation	Fuentelsaz et al., (2023)	Intrafirm diffusion of new technologies: An empirical application	Study of how new technologies spread within firms.
Decision Factors on Collaboration or/and Innovation	Von Hippel (1988)	The sources of innovation	Explores the sources of innovation, emphasising user-driven and open innovation models.
Decision Factors on Collaboration or/and Innovation	Aloini et al., (2017)	IP, openness, and innovation performance: An empirical study	Investigates the relationship between intellectual property, openness, and innovation performance in firms.

Category	Author (Year)	Article Name	Key Area of Insight
Decision Factors on Collaboration or/and Innovation	Gnyawali & Park (2011)	Co-opetition between giants: Collaboration with competitors for technological innovation	Exploration of strategic collaboration among competitors for innovation.
Decision Factors on Collaboration or/and Innovation	González-Benito et al., (2016)	Role of collaboration in innovation success: differences for large and small businesses	Analysis of collaborative factors impacting innovation success by firm size.
Decision Factors on Collaboration or/and Innovation	Hagedoorn (1993)	Understanding the rationale of strategic technology partnering: Interorganizational modes of cooperation and sectoral differences	Insights into strategic technology partnerships and their sectoral variations.
Decision Factors on Collaboration or/and Innovation	Hambrick (1983)	High profit strategies in mature capital goods industries: A contingency approach	Examination of contingency strategies for profitability in mature industries.
Decision Factors on Collaboration or/and Innovation	Hamel & Prahalad (1989)	Collaborate with your competitors and win	Framework for effective collaboration with competitors to achieve competitive advantage.
Decision Factors on Collaboration or/and Innovation	Jackson & Dunn-Jense (2020)	Leadership succession planning for today's digital transformation economy	Explores leadership succession planning in the context of digital transformation and innovation.
Decision Factors on Collaboration or/and Innovation	Jonassen (2012)	Designing for decision making	Examines decision-making processes and frameworks for effective design in educational technology.
Decision Factors on Collaboration or/and Innovation	Kimberly & Evanisko (1981)	Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations	Studies factors influencing the adoption of innovations in hospital settings.

Category	Author (Year)	Article Name	Key Area of Insight
Decision Factors on Collaboration or/and Innovation	Kline (2003)	Sharing the corporate crown jewels	Explores strategies for corporate intellectual property sharing and partnerships for innovation.
Decision Factors on Collaboration or/and Innovation	Lichtenthaler (2007)	Hierarchical strategies and strategic fit in the keep-or-sell decision	Explores strategies for making "keep-or-sell" decisions for organizational assets.
Decision Factors on Collaboration or/and Innovation	Lichtenthaler & Holger (2009)	Opening up the innovation process: The role of technology aggressiveness	Explores how firms' technology aggressiveness affects open innovation processes.
Decision Factors on Collaboration or/and Innovation	Moore (1996)	The death of competition: Leadership and strategy in the age of business ecosystems	Introduces the concept of business ecosystems and strategies for success in interconnected markets.
Decision Factors on Collaboration or/and Innovation	Nalmpanti et al., (2024)	Collaborating for innovation: The inhibiting role of constraints	Investigates how constraints can inhibit collaboration and innovation.
Decision Factors on Collaboration or/and Innovation	Odorović (2023)	Open banking: Between cooperation and competition	Discusses the dual roles of cooperation and competition in open banking frameworks.
Decision Factors on Collaboration or/and Innovation	Zhong (2016)	Research on multi-parties' competition and cooperation in mobile payment market	Analyses the competition and cooperation dynamics in the mobile payment market.

(Source: Author)

Appendix D: Instruments: Interview Protocols

The original set of interview questions is listed below with a very high level of explanation to what this research is about.

"The interview will focus on exploring the considerations and factors related to interoperability in the MMSP sector. The following open-ended questions will guide the discussion:
(i) How do you envision the growth of the mobile money sector in South Africa?
(ii) What is your view in terms of competition and collaboration in the mobile money sector?
(iii) What do you think about the interoperability for the mobile money sector?
(iv) What are the challenges and benefits of mobile money interoperability?
(v) From the sector and company's standpoint, what are the key considerations and factors influencing the adoption of interoperability in your sector? "

After the first round of interviews, the researcher recognised the need for more specificity. Definitions and descriptions were added to improve clarity and ensure participants fully understood the research purpose and context of the questions. This adjustment was intended to enhance the participants' comprehension and engagement with the research objectives.

The revised interview protocols are as per below:

"*These questions aim to delve into the specific context of the South African informal economy, the mobile money sector, and its future prospects while considering the potential impact of interoperability enhancement. The purpose of the interview is to gather insights and perspectives on these topics to contribute to a comprehensive understanding of the factors influencing interoperability adoption and its implications for the MMSP sector.*

The interview will focus on exploring the considerations and factors related to interoperability in the Mobile Money Service Providers (MMSP)' sector. The below definition is important for the understanding of the terms used in this interview.
Mobile Money - related to mobile wallet, which refers to a digital electronic money on mobile devices, allowing peer-to-peer transactions between mobile devices from users of the same service. The mobile money user does not need to have a bank account.

Interoperability - referring to different ecosystem, providers allowing customers or agents of different services to send mobile money to each other, respectively, i.e. A user can transfer freely to another user in different systems - Open API and Open ecosystem referred

The following open-ended questions will guide the discussion:

1. *Tell me your experience or knowledge about the mobile money industry.*
2. *What are the key elements of a mobile money services provider, to be successful in the mobile money sector?*
3. *What is your view in terms of competition and collaboration status in the mobile money sector?*
4. *What do you think about the interoperability of the mobile money sector?*
5. *What are the challenges and benefits of mobile money interoperability, in your view?*
6. *What are the key considerations and factors influencing the adoption of mobile money service providers?*
    a. *(Or, why business does not interconnect the ecosystem)*
7. *How would you comment on how policymakers and other sectors may affect the mobile money sector's growth and development?*
8. *How do you view the future of the mobile money sector in South Africa?*
9. *Is there anything else you would like to discuss regarding mobile money interoperability?"*

Appendix E: Codes

Table 7 below lists all the code names, and their descriptions used in the analysis of this study. These codes were defined in NVivo as they emerged during the data analysis process, facilitating a structured approach to identifying key themes and insights.

Table 7: The Codes and Description

Name	Description	Files	References
(MRQ) Mobile Money in South Africa	What is it about SA that is different than other countries	13	261
Benefit for SA	From the SA country perspective for mobile money interoperability adoption	5	14
Business acceptance as payment method	How market acceptance determines the need and usage	3	10
Formal channel	How formal business accept mobile money as a payment method	1	3
SMEs drive	Small business offers the mobile money as an acceptable payment method	3	6
Cash	Cash is the king	3	4
Consumer type	Type of consumer profile that use mobile money	3	13
Age	How the age of consumer affects their keenness to sue mobile money	3	10
Income level	Income level affects whether people use the mobile money or not	2	3
Financial exclusion	Reason for financial exclusion	3	4
Integration with bank	It is beneficial to connect with formal banking	5	7
Informal banking	People use mobile money as a way of controlling their money separate from the bank	7	10
Infrastructure	How a developed the infrastructure affects the adoption and usage of MM	8	16

Name	Description	Files	References
Cost of data	The cost of using mobile money, and the cost of data to connect to the internet	3	8
Internet connect	Internet connection is a consideration in terms of using MM	3	4
Location	Location effects the usage of the MM	1	1
Key element to MMSP	What are the important factors for the current MMSP market to be successful, and what are their goal to achieve this	13	145
Agent size or Trader base	The number of mobile money agents	1	1
Consumer needs	Often business start with what is good for them, rather than looking at the consumer needs first. However it is important to deliver a product that meets consumer needs and to understand that consumer needs may change over time	13	129
Convenience and accessibility	Convenience and accessibility drive the use of mobile money	5	14
Good services	People want their money's worth for what they pay	1	2
low cost, less Fees and Savings	Consumers want the financial service that saves the costs and assists them with their savings	8	24
Security and reliability	In terms of how safe their money is	5	9
Speed	Customer needs product quickly	6	15
Tax benefit	To pay no tax	1	1
Transparent to consumer	Consumer can view the real transactions	2	2
Trust by consumer	Consumers need to trust the product before they use the product	8	19
User friendly	How user prefer the interfaces is a drive for the using mobile money	6	29

Name	Description	Files	References
Set up account	Easy to set up account and easy to follow the process	3	7
Consumer or user base	The direct out reach to the consumer without the facilitation with an agent, size of the consumers for using the MM	5	9
Good commercial set up	That has financial incentive and can earn bigger base	2	3
Speed into the market - product	The quicker a product is introduced to the market, or the first of a new type of product is introduced, the sooner the consumer numbers will increase.	2	2
New form of MM	New form of Mobile money is needed compared to other countries	6	21
(RQ1) Interoperability adoption benefits	What are the challenges and potential benefits for MMSPs associated with implementing interoperability in South Africa?	13	62
Collaboration is needed to gain more consumer base	Competitor collaboration is needed for the consumer	7	14
Deliver new solution together	Being able to build a new relationship with the consumer to deliver an all-around new business solution	6	17
Improve product offer	Able to provide products that the business is currently not offering	2	3
Improve speed	Deliver the new product as soon as possible by selecting the partner that already has the products an offer, instead of pursuing new development for these	3	4
External influence	A business requirement or subsidy/incentive, will incentivize business to connect	6	12

Name	Description	Files	References
Good technology	Have good technology in the system, able to back up digital changes and development	5	6
Shared benefit approach	Shared benefit and shared profit	4	13
(RQ1) Interoperability adoption challenges	What are the factors influencing interoperability adoption in South Africa's MMSP sector?	11	69
Business focus	Business is not focussing results challenge for adoption	4	7
Card instead of MM	Maybe consumers presently needing cards, can be replace them with the mobile money	1	2
Cost and benefit	There are costs involved for making collaboration	7	25
Fees	Fees charge for using the services	2	2
Legal and regulation requirement	More legal requirement for collaboration	6	13
More competition in the market	More competition between business in the market is a challenge for business to collaborate	6	13
Cannibalise own	Business will not partner with others if they will cannibalise their own business product, margin and earnings	3	6
Not unique offer	Product offer is very similar to the other business in the market	1	1
No demand from consumer	Do not believe that consumer needs the mobile money Interoperability	3	7
(RQ2) Key consideration factor	What are the key considerations for interoperability adoption by stakeholders with decision-making power from MMSP sector?	13	133
Business strategy	What is the business focus in terms of strategy level	8	25
Business repositions	How will the business reposition its strategy with FinTech development growth	4	4

Name	Description	Files	References
Control	Control the close ecosystem, control the transactions	2	4
Long-term	Consider what is long term business strategy	4	7
Size of economics	Consumer focus on grow the size of sector	3	8
External impact	Such as government, reserve bank, mobile network etc that influence the MMSP consideration	6	19
Market needs	How market changes and needs is a key factor for business to adopt and address it	2	6
Partner value proposition	what value proposition can be offered to the consumer or business partner with business interoperability	8	25
Enhance each other	Choose business support and enhance each other's product	6	13
Not one business does all	It needs many businesses interoperate together and not have one hero	2	3
Offer unique product		3	3
Profitability	How profitable if they with the collaborate?	9	21
Size of the business		8	15
Footprint size	Number of the traders that are already in the system	5	6
Technology for adoption	What is the technology effect in terms of the adoption and how influential is it as a consideration factor	7	14
Time	It takes time to start something, and it matters when the right time is to start something new and to interconnect	4	8

(Source: Author)

Appendix F: Data Analysis

The first round of data analysis in NVivo was exported as per Figure 7 in Section 8.1. The details can be broken down into the primary research question and its sub-questions, clearly outlining how each code was applied across the files and highlighting the frequency of each code's occurrence. This initial coding process served as the foundation for the analysis, setting the stage for a structured approach to exploring and interpreting the data in accordance with the research objectives. Refer to Table 8 below for the list.

Table 8: The 1st round codes and identified:

Name	Files(Case count)	References(Code count)
(MRQ) Mobile Money in South Africa	6	114
Benefit for SA	3	12
Business acceptance as payment method	3	10
Cash	2	3
Consumer type	2	10
Financial exclusion	2	3
Inergration with bank	1	2
Informal banking	3	6
Infrastructure	3	4
New form of MM	3	5
Understand Consumer needs	6	54
(RQ1) Interoperability adoption benefits	5	25
Deliver new solution together	4	14
External inflence	3	8
Good technology	2	3
(RQ1) Interoperability adoption challenges	5	38
Business focus	2	5
Card instead of MM	1	2
Cost and benefit	3	7
Fees	0	0
Legal and regulation requirement	2	8
More competition in the market	4	9
No demand from consumer	3	7
(RQ2) Key consideration factor	6	48
Business stragegy	3	10
Market needs	1	5
Partner value proposition	4	12
Profitability	3	6
Size of the business	5	9
Technology for adoption	3	6

(Source: Author)

Appendix G: Interrelationship Analysis

Refer to Section 8.4 for a comprehensive analysis of each theme associated with interoperability adoption. The Table below is colour-coded for clarity: grey signifies non-applicability, blue indicates no direct interrelationship between themes, green represents a causal relationship, and red highlights the root cause. To interpret the Table effectively, read the columns to identify the sequence of themes to prioritise and the rows to comprehend the interactions between the themes. For further details, please see Table 8.

Table 9: Detailed Interrelationship Analysis

Red is in and green is out, blue has no relation and grey is not applicable

Level of interoperability adoption	Size of the footprint	User Needs	Degree of risk and control	Strategy Integration and timing	Profitability
Size of the footprint	o it influences the level of interoperability consideration as discussed in section 8.3, the larger the footprint size, the unlikely business would interest in interoperability.	o Meeting the needs of users would directly improve of size of the footprint	o The degree of risk and control has a direct impact on the footprint size, through the regulation, internal technology capabilities and business risk	o Strategy Integration and timing do not directly influence the size of the footprint or vice versa	o it also discussed in section 8.3, the size of the footprint has a direct influence on profitability, more footprint, more revenue
User Needs	o Meeting the needs of users would directly improve of size of the footprint.	o it influences the level of interoperability consideration as discussed in section 8.3, the consideration of the users needs would lead to business interest in interoperability.	o The degree of risk and control is based on business level, do not have a direct relationship with need of users, or vice versa	o Strategy Integration and timing do not have a direct relationship with need of users, or vice versa	o it also discussed in section 8.3, the more profitable business is do have a certain degree of consider on meeting users' need
Degree of risk and control	o The degree of risk and control has a direct impact on the footprint size, through the regulation, internal technology capabilities and business risk	o The degree of risk and control is based on business level, do not have a direct relationship with need of users, or vice versa	o it influences the level of interoperability consideration as discussed in section 8.3, the better managed environment is likely interest in interoperability.	o Strategy Integration and timing implication internally regarding how much control the business have and what risk the business willing to take	o Risk and control has a directly impact on the profitability, internally or externally would impact the cost
Strategy Integration and timing	o Strategy Integration and timing do not directly influence the size of the footprint or vice versa	o Strategy Integration and timing do not have a direct relationship with need of users, or vice versa	o Strategy Integration and timing implication internally regarding how much control the business have and what risk the business willing to take	o it influences the level of interoperability consideration as discussed in section 8.3, long term strategy is likely to involve with interoperability	o it also discussed in section 8.3, current strategy is focus on win- win partnership and competitor with competitors, which will be reflected in profitability. Long term strategy involve the investment and innovation, which incur more cost
Profitability	o it also discussed in section 8.3, the size of the footprint has a direct influence on profitability, more footprint, more revenue	o it also discussed in section 8.3, the more profitable business is do have a certain degree of consider on meeting users' need	o Risk and control has a directly impact on the profitability, internally or externally would impact the cost	o it also discussed in section 8.3, current strategy is focus on win-win partnership and competitor with competitors, which will be reflected in profitability. Long term strategy involve the investment and innovation, which incur more cost	o it influences the level of interoperability consideration as discussed in section 8.3, depends on how profitable current is

(Source: Author)

To visually represent these relationships, the researcher applied a colour-coded assumption scale: green indicates the root cause, assigned a measurement of '1'; blue (no relationship) and grey (not applicable) are assigned '0'; while red represents the cause, measured at '-1'. This approach allowed for a structured analysis summarised in Table 10 below.

Table 10: Measurement Assumption for Interrelationship

Themes	Size of the footprint	User needs	Degree of Risk and Control	Strategy intergreations and timing	Profitability
Size of the footprint	0	-1	-1	0	1
User needs	1	0	0	-1	-1
Degree of Risk and Control	1	0	0	-1	1
Strategy intergreations and timing	0	0	1	0	1
Profitability	1	-1	1	1	0

(Source: Author)

A graph was developed using the aforementioned measurement scale to visualise the themes and their connections. Consequently, the graph in Section 8.4.1 presents these themes alongside the key drivers.

Appendix H: Personal Reflection of the MPhil Journey

Concluding this research project signifies a substantial milestone, both academically and personally. This section summarises a personal reflective journey through the researcher's experience and perspective on this study.

This journey has been not only about completing a master's thesis but also about the growth and self-development of the researcher, whose mother tongue is not English. Over the past two years, this journey has been filled with challenges and emotions, making completing this dissertation particularly rewarding. Having spent more than six years working in the mobile money sector in South Africa, this research marks the closure of a meaningful professional chapter and the beginning of an academic journey. It is an emotional moment as I reflect on the experiences of embarking on an MPhil, studying and exploring Inclusive Innovation while accomplishing this research project.

This study has prompted significant personal reflection. The concept of inclusivity was not fully realised in the researcher's mind despite being aware of the informal sector. The inequities faced by individuals in these environments only became evident when the MPhil class visited informal housing and listened to residents as they described how they navigated their daily challenges. This moment was a profound realisation to the researcher that "*what we take for granted may not be the norm in the rest of the world"* (Kim & Mauborgne, 2023, p. 9). This then further highlights the importance of inclusive innovation as a critical topic in addressing these disparities.

Writing this thesis in an academic manner proved to be a challenging endeavour. Engaging in research was a new experience, requiring countless hours mastering research methodologies, content flow, and effective writing techniques, as well as not forgetting the moments going down the rabbit hole of endless reading and research but with nothing to write. The researcher is deeply grateful for the support from the supervisor, the UCT(GSB) writing centre, the GSB librarian, the MPhil 2023 cohort, and the invaluable support structure at home. However, the process was not without disappointments, particularly when some former colleagues who had agreed to participate in the study did not follow through or failed to respond after the initial contact. Additionally, frustrations arose from the challenges of tracking the research process, which involved countless revisions, adjustments and rewrites. Ultimately, this journey has been a profound learning experience, teaching the researcher the importance of adjusting expectations and cultivating patience.

The researcher experienced considerable enjoyment and excitement upon witnessing signs of progress, particularly when completing the coding and finalising the themes, which brought a profound sense of happiness. Completing this research marks a deeply meaningful milestone that extends beyond academia into personal growth and understanding. This journey has been transformative, revealing the profound impact of inclusive innovation on lives and livelihoods. The challenges of writing in a non-native language, adapting to academic standards, and navigating setbacks have all underscored resilience and tolerance. Above all, this thesis represents not just the end of a project but a heartfelt commitment to fostering change and inclusivity. This commitment will guide future endeavours and continue to shape the researcher's perspective and purpose, hoping that this research will inspire someone to contribute in any way to the greater societal good through inclusion and value creation.