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**UNDERSTANDING THE DYNAMICS OF VALUE CO-CREATION IN A DIGITAL
PLATFORM ECOSYSTEM: THE CASE OF MOBILE MONEY IN MALAWI**

By:

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Abstract

In the new global economy, digital innovations and their related platforms are becoming pervasive and powerful primarily because they enable transactions between different actors and facilitate value co-creation. Mobile money is a digital innovation with potential transformative power, particularly for societies in the global South, such as Sub-Saharan Africa. This has resulted in governments, such as Malawi, supporting the introduction of mobile money as a digital innovation that can assist in tackling various social challenges, including financial inclusion. Despite the numerous benefits that mobile money offers, as evidenced by the M-Pesa story in Kenya, replicating its success across various countries in the global South has been challenging.

The reasons for the variable results of mobile money deployments largely remain unclear. However, extensive research conducted suggests that the successful adoption and uptake of mobile money as a digital innovation has largely been country-specific and unbalanced. Literature conceptualises mobile money as a digital innovation organised around an ecosystem and operates in different ways across distinct contexts to create value. Perhaps one of the contributing factors to the variable outcomes of mobile money is due to the fact that the digital innovation involves different actors and elements who interact to co-create value in the ecosystem. Therefore, to understand these variable outcomes, this study proposes using an ecosystem lens to explore how different actors and components are involved in value co-creation in a mobile money ecosystem. Consequently, the aim of this study is to understand the dynamics of value co-creation in a mobile money ecosystem in a Global South context and Malawi in particular.

The study adopted a qualitative research design underpinned by an interpretivist philosophical paradigm using an inductive approach to theory development. The case study has been defined as exploratory in nature due to the opportunity such an approach offers to research a complex phenomenon within their contexts. A reflexive thematic analysis was adopted for the data analysis to give the research process in general and analysis in particular credibility through critical questioning of various researcher actions.

The research findings reveal challenges in the structural elements and constraints caused by the governance practices of the platform owner that impacted ecosystem value co-creation across the three stages of the ecosystem lifecycle. The challenges include insufficient attention given to the role of the digital platform in facilitating value co-creation, co-innovation issues due to the platform architecture and diminished role of end users in the innovation process. The results further indicate that although value co-creation was nurtured by partially opening the digital platform, the control mechanisms adopted for the platform at various levels of the ecosystem hindered the ecosystem interactions and thus affected value co-creation with third parties. The findings further show that other contextual factors and transparency challenges prevented complementors from fully harnessing the generativity of the platform to co-create value. These constraints include regulatory barriers and lack of visibility of the boundary resources and acceptance criteria to be allowed access to the platform which prevented participation of third party actors in value co-creation. These challenges contributed to the emergence of a disintermediating governance role of a gatekeeper to platform functionality through a hub solution. The results enable the development of an integrative framework which can assist in understanding the dynamics of value co-creation in the mobile money ecosystem.

The research concludes by providing the theoretical and practical implications of the study. The proposed integrative framework offers three main areas that could be analysed to explore the dynamics of value co-creation in mobile money ecosystems: governance of value co-creation, ecosystem value co-creation and context. Most notably, the integrative framework helps to identify the opportunities, challenges, bottlenecks or tensions that may exist between and across the different ecosystem actors and elements. The implications offer guidance on the need for practitioners in the Global South to engage and support end users and local entrepreneurs in building inclusive services, endeavour to optimally open access to platforms and develop enabling policy and regulation that supports value co-creation.

List of Publications

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List of Abbreviations

API	Application Programming Interfaces
BoP	Bottom of the Pyramid
CBN	Central Bank of Nigeria
DFSCG	Digital Financial Services Coordinating Group
DHIS2	District Health Information Software 2
Fintech	Financial Technology
GOM	Government of Malawi
GSMA	Global
HISP	Health Information Service Provider
ICT	Information and Communication Technology
ICT4D	Information and Communication Technology for Development
IS	Information Systems
ITU	International Telecommunications Union
MNO	Mobile Network Operator
MMO	Mobile Money Operator
NSO	National Statistics Office
RBM	Reserve Bank of Malawi
S-DL	Service-Dominant Logic
SDG	Sustainable Development Goals
SDK	Software Development Kit
SLTI	Social Learning in Technological Innovation
UN	United Nations
UNCDF	United Nations Capital Development Fund
UNCTAD	United Nations Conference on Trade and Development
VCC	Value co-creation
WB	World Bank

Chapter 1: Introduction

1.1. Research Background

In the new Global economy, digital platforms are becoming pervasive and powerful primarily because they enable transactions between different groups of actors and facilitate the innovation of products and services (Cusumano, Gawer, & Yoffie, 2019). This is the result of the introduction of a wide variety of digital technologies and the continuously growing digital infrastructure they make up, which have fundamentally changed the nature, process, and results of innovation (Nambisan, Lyytinen, & Yoo, 2020). Recent evidence suggests that there is rising acceptance across disciplines that digital innovations are an emerging phenomenon with enormous potential to impact societies all over the world (Markus & Nan, 2020; Nambisan et al., 2020). The fundamental properties of digital technology and infrastructure have transformed the nature of innovation, making it complex and dynamic, as it has become less bounded—occurring beyond the focal firm and involving multiple actors with diverse goals (Nambisan, Lyytinen, Majchrzak, & Michael, 2017; Yoo, Boland, Lyytinen, & Majchrzak, 2012). Additionally, the distributed development that characterises digital innovation has allowed multiple actors, including end users, to participate in the value co-creation process through the integration of innovations and technology into their social practices (Markus & Nan, 2020; Williams, Stewart, & Slack, 2005).

The unique properties of digital technologies and infrastructure have given rise to a new organising logic in the form of digital platforms and their associated business ecosystems (Cusumano et al., 2019; Haki, 2021). Digital platforms are described as a sociotechnical collection that includes the technical hardware, software, and related organisational processes and standards (Tilson, Sørensen, & Lyytinen, 2012). Platform studies show that while not every ecosystem relies on a digital platform for its technical underpinnings, many do, and that a digital platform cannot operate in isolation from an ecosystem (Gawer, 2020). Additionally, research shows that new digital approaches like digitalization and digital transformation have woven themselves into the very fabric of modern organizations, in the process incorporating new forms of economic exchange that permit new institutional logics (Haki, 2021). It has been observed that using digital platforms as a base upon which outside parties can create additional services, goods, and technology is one of the most popular strategies for digital transformation (Gawer, 2021). The widespread use and proliferation of digital platforms has facilitated novel

business operations and given rise to new institutional arrangements leading to the birth of the platform economy (Parker, Alstyne, & Jiang, 2017). Platforms and their ecosystems, which consist of a complex web of actor-to-actor interactions mediated by the digital platform, leverage the platform's capabilities to provide innovative value propositions for end users (Blaschke, Haki, Aier, & Winter, 2019; Wareham, Fox, & Giner, 2014). In general terms, a wide range of actors who contribute to a given platform's operation and value creation make up the platform ecosystem (Ceccagnoli, Forman, Huang, & Wu, 2012). According to Stonig et al. (2022), in platform ecosystems value propositions change from autonomous offerings by individual ecosystem actors to integrated solutions jointly developed by a variety of ecosystem actors. Digital platforms thus attract a large number of business actors with distinct ecosystem organising logics to sustain the success of the platform ecosystem.

While these digital innovations and related digital platform ecosystems offer enormous value to large platform enterprises on a Global scale, it is unclear how these platforms may have a positive influence on social and economic development in the Global South (Bonina, Koskinen, Eaton, & Gawer, 2021). For instance, according to Gawer (2020), platform enterprises represented by Alphabet/Google, Apple, Microsoft, and Amazon were the top four companies globally by market capitalisation as of August 2019. Despite these large platform corporations gaining great wealth and power in a short period of time, there is rising concern about the potential developmental effects of these digital platforms on the Global South (Bonina et al., 2021; Gawer, 2020). This is because the majority of the wealth belongs to a small number of companies that are established in a few countries and have amassed enormous power through digital platforms (Gawer, 2020). Despite the fact that many of these platforms first emerged in the Global North, Koskinen et al. (2019) pointed out that they have also gained wide usage in the Global South due to the proliferation of mobile devices and ubiquitous connectivity. The Global South has adopted a variety of digital platforms, some of which have been developed within the Global South (such as mobile money platforms) and others which have originated from the Global North, such as Facebook (Bonina et al., 2021; David-West & Evans, 2015).

This study is premised on investigating mobile money, a digital innovation that functions on a digital platform ecosystem and comprises sociotechnical elements that combine and interact in different ways to co-create value. Mobile money is viewed as a digital innovation because it utilises digital technologies and infrastructure that recombine a variety of sociotechnical elements that were previously disconnected; digitalisation enables linking together these

components to develop various products, services, and new business models that increase the accessibility and scope of essential financial services (Jacobides, Cennamo, & Gawer, 2018; Markus & Nan, 2020; Tilson, Lyytinen, & Sørensen, 2010; Yoo et al., 2012). Mobile money providers orchestrate various components to carry out distributed innovation, which may occur outside of the focal firm and involves multiple actors who co-create value by using the organising logic provided by the digital platform and its ecosystem. In doing so, the mobile money leverages on the material properties of digital technologies and infrastructures as well as the immaterial properties of digital data or information (Faulkner & Runde, 2011). Haki (2021) argues that a heterogeneous set of actors leverage on the technology and infrastructure properties to create and shape a digital platform ecosystem that develops innovative value propositions for the end-users. Value is described as the capability of a service to address the needs of an individual as per their perceived expectations and preferences, usually expressed in terms that include experience and benefit (Gummerus, 2013; Lee, Olson, & Trimi, 2012).

The ultimate goal of innovation is to create value, whose purpose includes meeting societal and individual needs, sustaining competitive advantage for firms, and spurring economic growth and development for nations (Adner & Kapoor, 2010a; Bessant, Lamming, Noke, & Phillips, 2005; Gummerus, 2013; Haki, Blaschke, Aier, & Winter, 2019; Porter, 1985). Haki et. al (2019) point out that value occurs when the offering is useful to the customer and addresses unique challenges. Value co-creation is defined as “the processes and activities that underlie resource integration and incorporate different actor roles in the service ecosystem” (Lusch and Nambisan, 2015, p. 162). Therefore, understanding the dynamics of value co-creation from diverse perspectives and how value creation shapes the adoption and uptake of innovations is fundamental to digital innovation. Mobile money platform ecosystems provide integrated value propositions jointly created by a set of heterogeneous ecosystem actors to produce different services and products that address different societal` needs.

There is broad recognition that mobile money offers convenient, affordable, and secure financial services and its uptake has increased access to basic financial services for underserved low-income people in both urban and rural locations (Aron, 2018; Jack & Suri, 2014). Suri (2021) points out how mobile money platforms are providing rails for digital innovation through value co-creation with third party actors by granting access to the core asset of the platform through application programming interfaces (APIs interface (API). Mobile money platforms have thus enabled the development of value-added services such as digital lending

and payment services. For example, in Malawi, the mobile money platform has enabled the development of a digital credit product that offers microloans to end users and the process is wholly transacted over the mobile money platform (Brailovskaya, Dupas, & Robinson, 2022). The capability of the mobile money digital platform has enabled collaboration between the platform owner, a bank and a software development company to develop this micro loan service. Thus, the technological capabilities of mobile money platform have enabled integration with third parties to create new products and services. Another example of how mobile money platforms have fostered digital innovations is how they have facilitated seamless digital payments to small entrepreneurs that offer utility services like solar power to rural communities that, for the most part, lack formal bank accounts that would make it simple for them to sign up for such a service (GSMA, 2017b). This example shows the new functionality that mobile money enables, such as altering the interaction pattern between various actors in novel ways that were inconceivable and thus opening up opportunities for value co-creation. Additionally, Suri (2021) demonstrates how mobile money platforms have evolved to offer application programming interfaces (API) that enable value co-creation through the development of new functionalities.

Scholars from various disciplines have started to investigate how the ecosystem phenomenon acts as a contextual force on platforms and beyond to enable interactions between various actors and elements to create value that is mutually beneficial (Autio, Nambisan, Thomas, & Wright, 2018; Autio & Thomas, 2019; Tilson et al., 2010; Vargo, 2008). Studies have shown that digital platforms are a sociotechnical collection of organisational actors, processes, and digital infrastructures; thus, they are entangled with the institutions, markets, and technologies in their context (Constantinides, Henfridsson, & Parker, 2018; De Reuver, Sørensen, & Basole, 2018; Tilson et al., 2010). Moreover, Nambisan et al. (2017) point out that because digital innovation is distinct from other innovations, it requires matching the unique functionalities it offers with the features of the usage context. To this end, the literature indicates that exploring digital innovations that create highly complex sociotechnical systems requires deeper engagement with the ecosystem context in which the digital innovations are embedded (Lyytinen, Sørensen, & Tilson, 2017; Markus & Nan, 2020). Thus, the ecosystem phenomenon has played a prominent role in the exploration of how its different perspectives shape the dynamics of value co-creation (Autio & Thomas, 2019).

Three perspectives of ecosystems have been explored in this study: the structural approach applied in the strategic management of ecosystems as production systems; the service-dominant approach borrowed from the field of service marketing of ecosystems as consumption systems; and the technological approach inspired by the information systems of ecosystems as digital platforms. According to Autio and Thomas (2019), understanding each distinct disciplinary perspective aids in explaining the complexity of ecosystem value co-creation and provides deep insights into the broader phenomenon. The ecosystem provides an enabling context for various economic and societal activities to take place, which shape the dynamics of value co-creation (Adner, 2017; Autio & Thomas, 2014; Nambisan, Siegel, & Kenney, 2018). Because each discipline uses a distinct value co-creation approach, each ecosystem perspective produces a unique kind of value that helps explain the different approach and to identify complementarity between the approaches (Autio & Thomas, 2019).

Each perspective on ecosystem value creation considers a unique type of value. Such that, the strategy perspective on ecosystems explores the structural elements and governance mechanisms that allow ecosystems to support the collaboration of hierarchically interdependent actors to create instrumental value (Adner, 2017; Jacobides et al., 2018). The service marketing view of ecosystems considers the interactions between end users and the service provider in the ecosystem to create experiential value (Lusch & Nambisan, 2015). Finally, the technological perspective focuses on the technical properties of the digital platform that facilitate the generation of inputs and resources from uncoordinated audiences to provide functional value (Yoo et al., 2012; Zittrain, 2006). In other words, the exploration of these distinct perspectives on ecosystem value co-creation is crucial for understanding the implications and complexity of the ecosystem phenomenon.

1.2. Research Problem

The literature has identified a number of barriers to understanding how digital platforms contribute to socioeconomic development, one of the reasons for which is the lack of coverage in seminal Information Systems (IS) research papers on the significance of platforms in creating value for development (Bonina et al., 2021; De Reuver et al., 2018). Additionally, research has drawn attention to the issue of separating platforms from the complex sociocultural dynamics of the context in which they operate (Bonina et al., 2021; Cusumano et al., 2019).

However, studies have shown that there is a rise of firms in the Global South that are increasingly adopting and utilising digital platforms promoting interactive ecosystems that allow efficient exchange, matching, and innovation amongst individuals, organisations, and resources (Bonina et al., 2021; David-West & Evans, 2015; Nielsen, 2017). Additionally, the literature recognises the potential transformative power of digital platforms and their business ecosystems for societies in the Global South (Bonina et al., 2021; David-West & Evans, 2015; Nielsen, 2017). Mobile money is one such example of a widely deployed digital platform in the Global South offering fintech digital innovation (Ahmad, Green, & Jiang, 2020; D. Evans & Pirchio, 2015; Markus & Nan, 2020; Senyo, Karanasios, Gozman, & Baba, 2022).

Mobile money services refer to financial transactions carried out over mobile phone networks utilising customer funds maintained by the service provider. Customers do not need to hold an account with a financial institution in order to own a mobile money account (Ahmad et al., 2020). In sub-Saharan Africa, mobile money digital platforms also play a crucial role in offering the foundation on which other firms and individuals can build and deliver other digital innovations (Kendall, Maurer, Machoka, & Veniard, 2011; Suri, 2021). One of the most successful and popular mobile money platforms in sub-Saharan Africa is Kenya's M-Pesa, which was launched in March 2007. Research reveals that within 10 years of the service's introduction, 96% of Kenya's 5 million households had at least one user of M-Pesa (Hughes & Lonie, 2007; Suri & Jack, 2016).

Despite the success story of M-Pesa as a mobile money platform in Kenya, studies suggest that the successful adoption and uptake of these digital innovations have largely been country-specific and very unbalanced in the Global South (Chishti & Barberis, 2016; Lepoutre & Oguntoye, 2018). It has been shown that when introduced in other contexts, in sub-Saharan Africa in particular, the outcomes of mobile deployments have been inconsistent, and the reasons for this are not immediately apparent (Evans & Pirchio, 2015; Lepoutre & Oguntoye, 2018). Heeks (2012) noted that it has been challenging to translate M-Pesa's success in other nations. Many mobile money services did not take off as quickly as previously predicted, according to Evans et al. (2015). The reasons for the failure to replicate the success story of M-Pesa have been widely researched, and most studies tend to point to issues around infrastructure, the regulatory environment, and the market (Ahmad et al., 2020; Evans & Pirchio, 2015). For instance, according to Evans and Pirchio (2015), people use mobile phones

to send and receive money in Zimbabwe, a country where the service became a success, but not in South Africa, which is far richer than Zimbabwe and where the system ultimately collapsed. These examples present some of the challenges facing the replication of mobile money as a digital innovation into different contexts.

Evidence shows that the majority of studies on mobile money in general and M-Pesa in particular have largely focused on the outcomes, emphasising the adoption or implementation challenges rather than the process of digital innovation (Kingiri & Fu, 2019). Kingiri and Fu (2019) further demonstrated that despite the numerous studies on the intricacies behind the success of M-Pesa, the ones investigating the micro-level dynamics of digital innovation have been limited.

To gain insights into the reasons why the outcomes of mobile money ecosystems have varied across different countries in the Global South, there is a need to explore the dynamics of value co-creation in mobile money platform ecosystems. Studies have demonstrated that mobile money can be conceptualised as a digital innovation that works in an ecosystem and exploits the capabilities of digital technologies to coordinate different components and reconfigure existing sociotechnical elements that were not previously connected to create value (Kallinikos, Aaltonen, & Marton, 2013; Markus & Nan, 2020; Yoo et al., 2012). Previous research has also shown that understanding ecosystem value co-creation requires an exploration of how interaction and collaboration in the ecosystem shape the dynamics of value co-creation (Autio & Thomas, 2019). This includes examining the implications of the different perspectives on the ecosystem phenomenon and the type of value co-created by the ecosystem. In addition, digital platforms and their associated ecosystems represent complex sociotechnical systems that require deeper engagement and matching between the digital innovation and the specific context of use (Nambisan et al., 2017).

Mobile money services are seen as a digital innovation organised around ecosystems, involving multiple actors external to the focal firm, themselves organised in complex networks. A fundamental issue noted is that research is lacking to understand how a mobile money ecosystem can be successful in one context of similar nature but when transferred to another context of similar nature in the global South, it does not work. Therefore, this research puts an argument that perhaps if we look at how value is co-created in mobile money ecosystems by different actors, including end users, perhaps it could help us understand the reason why

ecosystems evolve in different ways in different contexts. It could help us identify what different ecosystem actors such as governments and service providers could possibly do to enhance their chances of mobile money platforms working to achieve their social outcomes such as financial inclusion. Therefore, understanding the dynamics of value co-creation in an ecosystem can shed light on the variability of outcomes of mobile money deployment in different contexts in the Global South.

Another issue affecting research on digital innovations, such as mobile money in the Global South, is the lack of theorisation (Nielsen, 2017; Orlikowski & Iacono, 2001). This, in turn, affects the understanding of the dynamics between digital technologies, the process of digital innovation, the ecosystem context, and other related dimensions that might influence value co-creation in a Global South context. Additionally, the lack of conceptual clarity surrounding exactly what constitutes a digital platform may also cause problems in understanding its implications for development (Bonina et al., 2021; De Reuver et al., 2018).

1.3. Research Motivation

Given the lack of research on innovation platforms and their potential for application in achieving developmental goals in the global South, Bonina et al.'s (2021) call for more research on digital platforms is a source of motivation for this study. While mobile money platforms are primarily considered transactional platforms, evidence shows that some are slowly evolving into hybrid platforms, as they open access to third-party developers for value co-creation (Finextra, 2015; Grasser, Nyaga, del Ser, & Mas, 2016; Kendall, Maurer, et al., 2011; Suri, 2021). Another challenge noted in previous studies is that the bulk of the research conducted in this area has focused on digital innovations emerging from and connected with perspectives from the Global North (Kiss, Danis, & Cavusgil, 2011; Van der Boor, 2014; Xiao, Califf, Sarker, & Sarker, 2013). According to Nielsen (2017), one of the issues with previous studies on digital innovation in developing countries is their primary focus on Global South countries as mere recipients of digital innovations, where the issue is the scaling and sustainability of the innovation. As a result, Nielsen (2017) argued whether such passive participation in digital innovation could be viewed as democratising innovation and urged researchers to undertake more studies that not only concentrate on the role of people and organisations in digital innovation but also examine the true impact of digital innovations in these settings.

The success of Kenya's M-Pesa mobile money platform led to a wave of deployments throughout sub-Saharan Africa, with Malawi being one of the countries to roll out the service in an effort to emulate M-Pesa's success model. Although Malawi attempted to emulate the success story of M-Pesa, its efforts had variable outcomes that seemed to depend on what value was sought after and what value was ultimately realised. Malawi was selected as the study's target country in order to better understand the dynamics of value co-creation in a mobile money digital platform ecosystem in a global South context. Malawi is one of the least developed countries in the world according to the recent data from the United Nations (UNDP, 2022). According to the Global Findex Database of 2021, 43% of the population in Malawi has a formal bank account, up from 34% in 2017; the growing uptake of mobile money has largely been responsible for this increase. Therefore, this percentage of account ownership and the population's high level of vulnerability to poverty offers the scope for mobile money to potentially improve financial inclusion in Malawi (UNCDF, 2018).

Additionally, Malawi offers a unique opportunity to understand what happens when one country tries to implement a digital innovation, such as mobile money, that has been successful in another country, into their settings. Malawi's status provides an intrinsically interesting case since it presents a chance to research a digital innovation that offers an intervention that, among other things, attempts to solve societal challenges impacting people at the base of the pyramid. In its pursuit to deepen its financial inclusion goals, the Malawi government committed to promote the development and usage of digital financial services such as mobile money (GOM, 2020). Therefore Malawi presents ideal context to identify what governments and other actors could possibly do to enhance their chances of mobile money platforms and their ecosystems working to achieve social outcomes such as financial inclusion. Furthermore, the engagement of various stakeholders in the evolution of mobile money in Malawi enables the study to explore and understand the complex interactions of the heterogeneous actors and their perspectives in the development of the ecosystem. The complex ecosystem of actors on mobile money platform in Malawi provides numerous prospects for financial inclusion opportunities emanating from interactions within the dynamic environment that produce different financial services and products. Additionally, whilst achieving social outcomes such as financial inclusion may represent value to some ecosystem constituents, it may also conflict with other forms of value that other actors in the ecosystem may seek to achieve, thus creating contradictions due to divergent objectives of the ecosystem actors. This is the case since the ecosystem has a focal actor; as a result, problems will arise that can be attributed to who is in

a position of power to advance what the ecosystem considers as value. These dynamics in the mobile money ecosystem leads to the need for further for research.

To the best of my knowledge, there is a lack of empirical studies exploring the dynamics of value co-creation in mobile money platforms using the ecosystem lens in Malawi. The few studies on mobile money in Malawi have concentrated more on the regulatory, financial, and economic aspects of mobile money than on the digital ones (Greenacre, Malady, & Buckley, 2014; Madise, 2019; Majanga, 2016). Being from Malawi and working for a central bank allowed me to get involved in a variety of financial technology initiatives, which revealed the existence of challenges in the process of digital innovation. This background provided personal motivation for me to pursue this study.

1.4. Research Context

The widespread introduction of mobile money services has been partially attributed to the fact that they fill a gap caused by a lack of fundamental banking infrastructure (Evans & Pirchio, 2015). Thus, it has been argued that mobile money has the ability to support the financial inclusion agenda and socioeconomic development in the Global South (Ahmad et al., 2020). Financial inclusion is the provision and use of appropriate and affordable financial services by individuals and businesses through sustainable and responsible means (World Bank [WB], 2022). According to previous studies, financial inclusion can help alleviate poverty and reduce inequality by enabling access to transaction accounts through banks or mobile money platforms, as well as by making credit and insurance products available (Ahmad et al., 2020; Demirgüç-Kunt, Klapper, & Singer, 2017). These factors are said to ultimately promote economic development and growth (Levine, 2005).

Demirgüç-Kunt et al. (2018) indicated that mobile money provides an entry point into the formal financial system. The WB's study on the Global Findex Database (Findex), which tracks Global progress on financial inclusion fostered by digital financial services generally, and mobile money specifically, confirms this (Demirgüç-Kunt et al., 2017). The recent Global Findex report for 2021 demonstrates how mobile money has a greater impact on financial inclusion in sub-Saharan Africa by arguing that of the 55% of adults who have a formal bank account, 33% are using a mobile money account (Demirgüç-Kunt, Klapper, Singer, & Ansar, 2021). The 2021 Findex report also shows that from 2017 to 2021, there has been a significant rise in account ownership in developing economies, rising from 63% to 71% of the adult

population. The report points out that this growth primarily resulted from the introduction of mobile money in sub-Saharan Africa.

Due to its role as an enabler of account ownership and account usage through mobile payments, savings, and borrowing, mobile money has also emerged as a crucial service for facilitating financial inclusion in sub-Saharan Africa, particularly for women (Demirgüç-Kunt et al., 2021). This highlights the important role that mobile money plays in the Global South, more specifically in sub-Saharan Africa. However, challenges remain, as the 2021 Findex report also shows that globally, 1.4 billion adults remain financially excluded for a variety of reasons, such as a lack of access to financial services. To improve financial inclusion, the report urges governments, financial service providers, and fintechs, among others, to support the expansion of financial access and usage among the unbanked.

As an example, despite being introduced around the same time in Kenya and Tanzania, mobile money in Kenya took off at an explosive rate, reaching 90% of Kenyans by 2016, while Tanzania registered only 32.4% of adults using these services during the same period (Evans & Pirchio, 2015; Gilman, 2016; Jack & Suri, 2014; Suri & Jack, 2016). Suri and Jack's (2016) research further elaborates on the success of M-Pesa as being judged on both the adoption and uptake of the service and its direct and indirect impacts on households in Kenya from both economic and social well-being perspectives. Due to the success of mobile money in Kenya, various governments, such as that of Malawi, supported its adoption and developed policies and strategies that could take advantage of its accessibility to support social goals, such as financial inclusion (MoF, 2016). Correspondingly, international organisations, such as the WB and the United Nations (UN), have highlighted the catalytic role that financial inclusion plays in the attainment of a number of sustainable development goals (SDGs) (UNCDF, 2019; UN, 2015; WB, 2017).

Malawi is located in Southern Africa and has a population of 17.6 million, of which the 0–24 years age group comprises over 65% of the population (Malawi, 2018). Approximately 84% of Malawi's inhabitants reside in rural areas, and their main source of income is predominantly agriculture (Malawi, 2018). The International Telecommunication Union (ITU), which measures ICT access, use, and skills, placed Malawi at 165 out of 181 countries in its 2018 report on ICT development (ITU, 2018). The recent census report on Malawi also highlights

that internet penetration is at 14.6% of the population (NSO, 2019), while 52% have access to a mobile phone subscription (Malawi, 2018).

The Government of Malawi has formulated the Malawi Vision 2063 to serve as a blueprint for the country's socioeconomic transformation into a prosperous and self-reliant industrialised upper-middle-income nation by the year 2063 (GOM, 2020). One of the objectives of this vision document is the development of a thriving digital economy. To this end, among its main goals is the creation of a robust ICT infrastructure and the provision of affordable digital services that can increase technological adoption and digital access. In the strategy, the Malawian government also committed to facilitating the growth and use of digital financial services in order to further its goal of financial inclusion. One example of a digital financial service with the potential capability for socioeconomic transformation is the use of mobile money platform. The mobile money service selected for the study has the larger subscriber base of the two major MNOs in Malawi, with roughly 4.8 million subscribers in a nation with about 19 million people (Brailovskaya et al., 2022). Malawi has two leading mobile money operators, and this study is based on the mobile money platform that pioneered the service in the country.

1.5. Research Questions

To attain these goals, this research will seek to explore the dynamics of value co-creation in the evolution of the mobile money ecosystem in Malawi. The research questions asked in this study are as follows:

- i. What role do structural elements and governance mechanisms play in influencing value co-creation in the mobile money ecosystem in Malawi?
- ii. How does a digital platform influence value co-creation in the mobile money ecosystem?
- iii. What role do end users play in value co-creation within mobile money ecosystems?

1.6. Research Aim and Objectives

Based on the previous sections, the aim of this research is *to understand the dynamics of value co-creation in a mobile money ecosystem in a Global South context*. The study will focus on Malawi. To achieve this aim, the objectives of this study are as follows:

- i. To conduct a literature review that will assist in understanding the interplay between mobile money ecosystems, digital platforms, and value co-creation in the context of mobile money in Malawi;
- ii. To undertake desk research and explore mobile money ecosystems in the Global South in general and Malawi in particular;
- iii. To carry out an empirical analysis to understand the dynamics of value co-creation in mobile money ecosystem in Malawi;
- iv. To develop an integrative framework that explains the dynamics of value co-creation in mobile money ecosystems;
- v. To provide theoretical and practical implications for researchers and policy makers on mobile money ecosystems in the Global South.

1.7. Expected Contribution

The study is expected to offer contribution to both theory and practice. In terms of theory, the study aims to contribute several ways to the understanding of the dynamics of value co-creation in a mobile money ecosystem. First, it is expected that the study will formulate a conceptual framework that explains the role of different actors in the co-creation of value in a mobile money ecosystem for a Global South context. Moreover, the use of ecosystem as the context for exploring the linkages between the different elements will provide an opportunity to understand the interdependence of the actors and their influence on value co-creation. Finally, exploring the dynamics shaping value co-creation in mobile money ecosystems is expected to provide conceptual clarity in understanding issues around platform ecosystems in these contexts, potentially improving the use of such platforms for development.

In terms of practical contribution, this study is expected to identify opportunities and challenges in mobile money platform ecosystems, which can be developed into solutions by practitioners, including policy makers, service providers and development partners. The practical contribution have potential to be developed into guidelines and recommendations that can potentially address contextual challenges for the Global South.

1.8. Thesis Organisation

This thesis comprises six chapters, with their content described below;

Chapter 1 provides the background and motivation for the research. The chapter then focuses on the context, presents a statement of the problem, and then describes the aim and research questions. The last section highlights the thesis organisation.

Chapter 2 develops a practical, theoretical, and contextual understanding of the topic under study based on the existing literature. The review includes a critical analysis and synthesis of the key concepts that underpin this research area and will thus include digital innovation, digital platforms, ecosystem value, and value co-creation. This chapter also explains the conceptual lens developed to understand and make sense of the research problem.

Chapter 3 describes the methodological approaches adopted for the research. The main topics of this chapter are the philosophical assumptions, research approach and strategy, data collection, data analysis, research quality, and ethical considerations for the study.

Chapter 4 presents the findings of the research using a chronological and thematic approach. The use of these two approaches in presenting the findings of the case study provides a way of connecting various structural elements, activities, and events in the evolution of the ecosystem to more specifically illustrate how value co-creation evolved over three stages.

Chapter 5 presents the synthesis and integration of the findings. The primary themes that were developed from the data, which revealed how the created value changed over the three stages of the ecosystem lifecycle, are used to frame this discussion chapter. Thereafter, an integrated theoretical framework based on this discussion is developed as a major contribution of the study.

Chapter 6 concludes by reviewing the initial aims and research questions and how this empirical work has addressed them. The theoretical and empirical contributions of the study are then listed. The last section discusses the study's limitations and provides suggestions for future research.

Chapter 2: Literature Review

2.1. Introduction

This chapter provides a theoretical and contextual understanding of the literature that underpins the core areas of this research. The review involves undertaking a critical analysis and synthesis of significant constructs that form the basis of the research. The core research areas that are crucial for comprehending the phenomenon under investigation are illustrated in Figure 2.1 and include structures of ecosystems, digital platforms, consumption systems and value co-creation. The rationale for choosing these different areas is couched in the research questions, which necessitate understanding how the constellation of actors and elements work together in an ecosystem to deliver the IS innovation. The ecosystem context provides a compelling reason to engage literature from distinct disciplines that cover the different ecosystem perspectives. These views include the structural elements of ecosystem actors, the technology artefact as the digital platform and the end users of the IS offering. Taking into consideration these many ecosystem views provides a full picture of how the various ecosystem actors and components interact and work together to co-create value. To elucidate other relevant debates and challenges related to ecosystem value co-creation in different contexts, the literature review also looks at these subject areas in the context of the Global South.

The literature review begins by providing a background and definition of the key concept underlying this study – innovation – and how organisational structures and approaches have evolved to give rise to the associated concept of digital innovation. The chapter then presents the foundational constructs driving this research, including a presentation of ecosystems as value co-producing structures. Next, it explores the role of the end user as a consumption constituent that provides experiential value in ecosystems. It then presents the literature on digital platforms to underscore the role of digital technology and infrastructure in facilitating ecosystem value co-creation. The following section on value co-creation highlights the interplay and dynamics between the different ecosystem actors and elements as a collaborative process whose resultant outcome is value. To outline the contextual underpinnings of the research, the literature review also delves into digital innovation as a research agenda for the Global South, explicating current debates and issues, and outlines the contours of mobile money as a digital innovation in the Global South.

The final section discusses the relationships between the chosen theories and concepts of the study and presents the conceptual framework that guided the research.

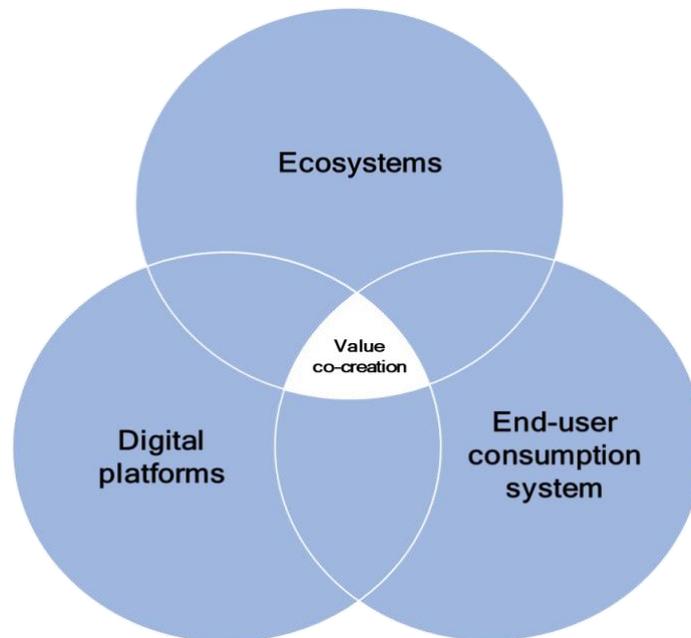


Figure 2.1: Overview of the literature

2.2. Innovation

This section provides a general overview of innovation, including a wide array of discipline-specific definitions. It also explores the evolution of innovation approaches from “general innovation” to “digital innovation”, expounding on the role of digital technologies and the ever-expanding digital infrastructures in innovation. It then discusses the rise of new organisational forms of innovation, such as platforms and their related ecosystems.

2.2.1. Defining Innovation

Despite the term’s common usage, widely varying discipline-oriented definitions of “innovation” have emerged over the years (Baregheh, Rowley, & Sambrook, 2009; Rogers, 2003). Schumpeter (1934) argued that invention is related to the conception of new ideas, while innovation is characterised by the application of those ideas to products and services. Schumpeter (1934) further described innovation as novelty that creates economical value.

In more recent debates, Hoyrup (2010) claimed that although Schumpeter's definition is frequently used as the point of departure for innovation discussions and encompasses both newness and value as essential criteria for innovation, it requires broadening in two aspects. These include extending the term "value" to include concepts other than economic value alone and including a benchmark for comparison of what "novelty" means. Rogers (1998), another influential scholar in this area, also based his definition on Schumpeter's conceptualisation and described innovation as "the process of commercialising or extracting value from ideas" (p. 5). Both Schumpeter's and Rogers's definitions of innovation largely support the long-held view on the linearity of the innovation process. Rogers's description also considered innovation from a firm perspective, with technological determinism playing a crucial role in its adoption and diffusion, and saw innovation and diffusion as distinct processes (Williams, Stewart, & Slack, 2005).

In more recent years, the innovation construct has evolved to offer different perspectives (Garud, Gehman, & Kumaraswamy, 2011; Garud, Tuertscher, & Van De Ven, 2013). Crossan and Apadin (2010), for example, proposed a more current and comprehensive definition of innovation, describing it as "production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems; it is both a process and an outcome" (p. 1155). This definition recognises certain crucial characteristics of innovation, which include the idea being generated internally within a firm or adopted from an outside source. The definition also clearly distinguishes innovation from creativity by reinforcing the fact that in innovation, the ideas are put into practice at various levels in an economic or social context. The idea of value addition as a key output of innovation and that novelty of the innovation is relative to a unit of analysis and not absolute are crucial insights. Lastly, this definition identifies two key roles that an innovation can play: being either a *process* or an *outcome*.

This study adopts the definition of innovation by Crossan and Apaydin (2010) as it covers crucial attributes of innovation relevant to this research. The definition reaffirms the analytical description of innovation by Garud et al. (2013) as a complex phenomenon influenced by several elements, including social actors, material and digital aspects of technology and contextual settings. This definition also suggests that these elements influence innovation either internally within a firm or through external societal sources from individuals or communities.

Value addition is an essential part of any innovation process, and this definition tackles this aspect by emphasising the multiple occurrences of value addition at different levels of economic and social spheres. Furthermore, the definition dwells on the processual nature of innovation, although it does not provide details on the various stages that innovation might take. Garud et al. (2013) broadly describe these stages of the innovation process as a progression of events from the emergence of an idea as an invention to the development and implementation of the idea and lastly to the acceptance of the innovation, which can take place within an organisation, a society or indeed communities. Van de Ven et al. (1999) isolated the following five key concepts that constitute an analytical framework they considered crucial in determining the trajectory of the innovation process: ideas, people, transactions, outcomes and contexts. To fully comprehend the innovation process, it is essential to grasp the contextualised propagation of innovation, which Rogers (1983) refers to as the alteration of the innovation by its adopters to suit their conditions during its diffusion. Similar notions include *innofusion* (Fleck, 1988) and *social learning in technical innovation* (Williams et al., 2005), which describe how innovation happens within firms, across multi-party networks and societies to share ideas across various fields of study and practice. Subsequent sections of this literature review expound on these concepts, but for now, the review focuses on the role of digital technology and digital infrastructure in innovation.

2.2.2. Approaches to Innovation

An equally significant activity in undertaking innovation is the role of innovation management. Innovation management refers to the governance and organisation of the innovation process or outcome, whereas the innovation process itself focuses on the actions conducted at each stage (Kusiak, 2007; Oke, 2007; Ortt & Van Der Duin, 2008; Schuurman et al., 2011). A considerable amount of literature has established the various approaches taken to innovation management. This study explores these varied approaches as they assist in explicating the evolution of the management of innovation. Although there are differences in how different authors classify the approaches to innovation eras, the crucial factors for consideration, according to Ortt et al. (2008), are contextual settings and managerial choices. Ortt et al. (2008) argue that the initial innovation era, which arguably commenced in the mid-1960s, was dominated by the “technology push” approach when the diffusion of the innovation was considered a linear progression and firm-led and no consideration was given to the end users’ needs and the innovation process. This technological determinism connoted the autonomy of

technological change and emphasised technological capabilities shaping societal change. As Ortt et al. (2008) explain, the next era, termed the “market pull” era, continued up to the mid-1970s and was predominantly based on market surveys to identify users’ needs. Schuurman et al. (2011) state that a key challenge with this approach was that needs were being drawn from users, and thus, most innovations were not radical but incremental in their design.

The next period from the mid-1970s to the 1990s, as Ortt et al. (2008) show, was dominated by the “interactionist approach” to innovation, where end users were considered a potential source of innovation through utilisation of their knowledge and ideas, which was a shift from considering end users as simply passive recipients of innovation. The linear progression model of innovation and technological determinism were also challenged by theories about the social shaping of technology (W. Bijker & Law, 1992; MacKenzie & Wajcman, 1999). The key challenge of this era was its focus on the innovation design stage without due consideration of further developments to the innovations as they were being used.

The “open innovation” phase, which occurred when businesses realised that knowledge for innovation is a widely dispersed, non-linear innovation process, is described as the fourth era in the evolution of innovation approaches. Effective innovation necessitates utilising both internal and external knowledge, creating an approach termed “open innovation” (Chesbrough, 2003; Cossetta & Palumbo, 2014; Ortt & Van Der Duin, 2008). Further studies have shown that innovations are no longer restricted to the boundaries of a single firm; rather, they result from the interaction and collaborative efforts of a constellation of actors, with end users bringing the experiential value (Chesbrough, 2003; Lusch & Nambisan, 2015).

The different management approaches to innovation may be seen as providing a good understanding of the innovation process. However, most of these approaches are based on Global North perspectives, and contextual and cultural differences exist with the Global South in both social and economic contexts. Thus, applying similar notions of innovation eras and approaches might lead to different outcomes for the Global South. Nonetheless, these various innovation approaches offer a basis for understanding the emergence of digital innovation.

2.2.2.1. Open Innovation

Open innovation refers to an information-sharing approach in the process of innovation whereby organisations share their internal ideas with external entities and vice versa to advance the growth of new technological innovations through the exchange of knowledge (Chesbrough, 2003; Levén & Holmström, 2008). Some factors argued to have led to the open innovation approach include the increased role of firms in the innovation process for co-creating value as external entities, opening up the value chain to customers and suppliers for value co-creation, acceptance that critical knowledge may exist outside a single firm and the flow of knowledge between organisations (Chesbrough, 2003; Levén & Holmström, 2008). The term “democratisation of innovation” was first used by Von Hippel (2005) to describe the growing ability of users of services and products, whether as individuals or businesses, to innovate for themselves. West and Gallagher (2006) highlight some challenges and limitations intrinsic to the management of an open-innovation approach, including how to motivate external entities to provide new ideas and knowledge, how to integrate externally generated ideas into firms’ own activities and how to maximise the use of internal innovation.

Additionally, Chataway et al. (2014) critiqued these western-based technological innovation that depends on developed and thriving markets, established institutions, which must enable adequate information flows between the service providers and end users, but also considers allowing innovators to reap the benefits of the investment as they introduce new technologies. Thus, resource constrained markets, are unable to offer innovators sufficient benefits for their investment. This could be the result a number of factors that include constrained product supply, lack of purchasing power by the targeted end users, challenges in identifying and upholding property rights legally or constrained flow of benefits from one group of paying users to another group of non-paying users (Chataway, Hanlin, & Kaplinsky, 2014). Therefore, studies highlight that such global North based innovation approaches fail to address the needs of the poor (Chataway et al., 2014; Cozzens & Sutz, 2014; Papaioannou, 2012). As a result, studies identified an emerging model for innovation to develop products and services that benefit the poor linked to the global South branded as inclusive innovation (R Heeks, Mirta, Kintu, & Shah, 2013; OECD, 2012).

2.2.2.2. Inclusive Innovation

In recent years, scholars, governments, and development partners among others have since become interested in the idea of inclusive innovation (Chataway et al., 2014; Cozzens & Sutz, 2014; Kaplinsky, 2011a). This interest has been premised on the notion of promoting the idea that innovation may be used to combat social exclusion, such that inclusive innovation mobilizes ideas on social exclusion, poverty, inequality, and innovation systems (Onsongo & Schot, 2017). Inclusive innovation is defined as the “structures and processes required to develop and deliver innovative technologies (goods and services) by incorporating the requirements and interests of the poor” (Foster & Heeks, 2013, p. 333). Additionally, Zanello et al. (2016) claim that while the global approach to development discourse, especially as it relates to innovation, has been largely to transfer technological innovations from advanced economies to the Global South, inclusive innovation advocates the involvement of end users from resource constrained contexts in the technological innovation process. Therefore, inclusive innovation focuses on understanding the influence of innovations on poor sectors of society to ensure the development or delivery of new products and services for and by end users largely excluded from the market. Prahalad (2004, 2012) draws attention to the four billion people at the bottom of the pyramid (BoP), defined as living on less than \$2/day, whom he describes as a potential source of innovation. In expounding on drivers for inclusive innovation, Zanello et al. (2016) note the capabilities of people living at the BoP as co-designers in the indigenous innovation process. Therefore, for the Global South, the inclusive innovation approach is believed to have the potential to contribute to significant economic growth and development.

In order to support the welfare of communities who are excluded and to interpret innovation through the lens of bottom-up innovation that embraces community values, a variety of concepts have emerged that offer new forms of innovation in the global South (Jimenez, Delgado, Merino, & Argumedo, 2022; Kaplinsky, 2011b). These concepts include grassroots innovation, frugal innovation, social innovation, pro-poor innovation and BOP innovation among others (Onsongo & Schot, 2017; Pansera, 2013).

In terms of challenges regarding inclusive innovation and related notions, Jimenez (2018) argues that while inclusive innovation initiatives may superficially be perceived as providing space for inclusivity, they may also harbour underlying inequalities in the wider society setting.

Therefore, designing inclusive innovation requires wider consideration of sociotechnical factors coupled with appropriate structural and contextual settings especially for the global South context.

2.2.3. Impact of framing of innovation approaches based on western perspectives in the context of the global South

Jimenez et al. (2022) argue that although theoretically the broader discourse and concepts on bottom-up innovation are framed for inclusivity in contrast to the western-oriented approach of market-based approaches to innovation. However, in reality it is claimed that these concepts use the theories of inclusion and diversity as a cover to uphold global North perspectives, which only serve to widen disparities and support unsustainable methods of extraction and consumption (Jimenez et al., 2022; Pansera & Owen, 2018). According to Pansera (2018), narratives of inclusive innovation frequently support an apolitical discourse of participation and inclusion that downplays the existence of unfair local and global power structures and norms; that are established to influence the processes of socio-technical change and innovation while uncritically supporting capitalist economic dominance on a global scale. Furthermore, Pansera (2018) points out that by framing innovation and technology as apolitical, the inclusive innovation literature, downplays the socio-economic complexity of the exclusion processes that underlie poverty and underdevelopment. Other studies further confirm that the innovation process typically reflects the innovators' or their communities' prevalent political and ideological ideas (Jimenez & Roberts, 2019; MacKenzie & Wajcman, 1999).

As a result, advocating innovation as a universally positive component in society, represents a perspective that supports colonial logic on power structures defined by rationality, modernity, and knowledge imposition based on global North oriented innovation approaches. (Jimenez et al., 2022). This is exemplified by the literature that supports innovation by emphasizing its impact on economic development and potential source of competitive advantage in a capitalist society. This approach reinforces the argument that lack of innovation is one of the primary factors contributing to underdevelopment and poverty in the global South. Consequently, this results in the imposition of notions and frameworks designed for the global North context to examine and analyse innovation processes in the global South (Jimenez et al., 2022). However, according to some studies, many of these notions and approaches, fall short to expound on the innovation processes and passivity in the global South (Jimenez et al., 2022; Kraemer-Mbula

& Wamae, 2010). According to Jimenez et al. (2022), the innovation process should be reframed to be more inclusive, emphasizing the necessity for active engagement of the most disadvantaged groups and using bottom-up strategies that reduce the likelihood of inadequacies in the inclusion process. This critique on the global North oriented perspectives of innovation demonstrates the limitations that have been highlighted in previous studies on the framing of innovation and its implications on the countries from the global South.

2.2.4. Evolution of Innovation: From general innovation to digital innovation

Digital technologies have influenced changes in the way innovation occurs across the globe, which has had a significant impact on how innovation occurs. Orlikowski and Barley (2001) argue that most earlier studies have focused on IS solutions for automating single organisational processes. Research in IS and organisational studies has since expanded the knowledge on the influence of digital technology in organisations and society (Leonardi, 2011; Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007). Most earlier research, according to Nambisan et al. (2020), was limited to a single IS solution in the context of inter- or intra-organisational processes and structures. However, advances in digital technologies have facilitated the birth of a new set of IS innovations. According to several studies, the intrinsic and seemingly limitless generativity of digital technology can best describe this new breed of IS innovations (Nambisan, Lyytinen, & Yoo, 2020; Parker, Van Alstyne, & Choudary, 2016; Yoo, Boland, Lyytinen, & Majchrzak, 2012; Yoo, Henfridsson, & Lyytinen, 2010). As a result, digital innovation has transformed the nature and structure of new products and services. It has formed new pathways for value creation, facilitated innovation ecosystems with a dynamic group of actors possessing a wide range of objectives and capabilities and created novel innovation processes (Nambisan et al., 2017).

Various authors have attributed many of the significant changes in innovation to the properties of digital technologies, which have given social actors in particular contexts different capabilities that would not have been achievable without the technology object (Kallinikos et al., 2013; Tilson et al., 2010; Yoo et al., 2010). The first of these attributes for digital objects is the ability to be reprogrammed, which loosens the close connection between the form and function that distinguishes physical products. This quality allows digital objects to be reconfigured and carry out various functions (Faulkner & Jochen, 2013; Yoo et al., 2010). Digital technologies can thus offer flexible combinations that support a higher capacity for

spontaneous and unpredictable creative inputs from large, uncoordinated audiences, known as generativity (Yoo et al., 2010; Zittrain, 2006).

The second characteristic is data homogeneity, which enables digital devices to access, store, transmit and display any such digital information using a variety of software and then to use this information for various purposes (Kallinikos, Aaltonen, & Marton, 2010). This endows digital objects with a greater capacity for generative innovation than would happen with physical objects due to constraints in physical asset specificity. The layered modular architecture, which consists of the core components, complimentary elements and the interface that connects these two together, is the third characteristic of digital technologies and infrastructures that promotes digital innovation (Yoo et al., 2010). Baldwin and Woodward (2009) highlight the stability with low flexibility prevalent in the core components, while complementary products remain flexible. These layers correspond to the layers of digital infrastructure that include the device, network, service and content layers. There is upward and downward flexibility and compatibility between the layers, which facilitates distributed innovation among different actors (Tilson et al., 2010). Additionally, the layered modular architecture alters the organisational logic of innovation, allowing it to create structures that support independence, individual action and the generation of variety through the simultaneous capabilities of a digital product that acts both as a product and a platform (Wareham et al., 2014; Yoo et al., 2010). Consequently, Nambisan et al. (2017) conclude that these properties create the potential for distributed recombinant innovation processes to occur between constellations of actors who create new services and products. This is an important characteristic for supporting distributed innovation in digital innovation.

Fuelled by the unique properties of digital technologies and infrastructure, the emergence of digital innovations has given rise to new organisational forms in the form of platforms and their ecosystems. These new organisational structures have cut across traditional organisational sectors and industry boundaries, embracing an ecosystem approach while infusing digital capabilities through the creation of platforms (Gawer, 2021; Kallinikos et al., 2013; Parker & Van Alstyne, 2018). While these technical characteristics of digital objects are crucial in fuelling innovation, Msiska and Nielsen (2018) highlight the criticality of end users participating in these new organisational forms and influencing the sociotechnical generativity of digital technologies. The literature review will now expound on digital platforms and their associated ecosystems as new organisational forms of innovation.

2.3. New Organisational forms of Innovation: Platforms and Ecosystems

Digital platforms and ecosystems are becoming pervasive and powerful primarily because they enable transactions between different actors and facilitate the innovation of products and services. Digital technology has allowed digital innovation to change from a collection of task-specific tools to a contextual force that promotes the reorganisation of value co-creation activities among actors (Nambisan et al., 2018; Tilson et al., 2010). Many recent studies from diverse disciplinary backgrounds have investigated how digital innovation within the context of ecosystems influences the dynamics of value co-creation (Autio & Thomas, 2014; Jacobides et al., 2018; Vargo, 2008). Autio and Thomas (2019) describe an ecosystem as “a community of moderately co-specialised actors, often but not always organised around a digital platform, within which different actors interact to co-create mutual benefits i.e. value” (p. 107). The literature shows that different discipline-specific conceptualisations and definitions exist for the ecosystem phenomenon to explain theoretical orientations and emphasise different aspects of the construct. Gawer (2020) claims that not every ecosystem has a platform at its core, though most do, and that every platform has an ecosystem connected to it.

The notion of the ecosystem was first borrowed from human ecology, in which it was described as “an arrangement of mutual dependencies in a population by which the whole operates as a unit and thereby maintains a viable environmental relationship” (Hawley, 1986, p. 26). Later, Moore (1993) introduced the term in business management and strategy to support an ecological view of understanding strategy and business relationships in contexts in which firms compete and collaborate to create value. Adomavicius et al. (2007) also suggested using the ecosystem concept to explain the relationships and facilitation of interactions by the various technological elements in the IS context. The marketing perspective using service-dominant logic also adopted the ecosystem approach to signify the engagement of the end user with resources from the provider to co-create value (Vargo, 2008; Vargo & Lusch, 2004).

2.3.1. Different perspectives on ecosystems as contexts for innovation

A review of the literature in different disciplines highlights different conceptions of the ecosystem construct. The next section presents three perspectives on the concepts that define the ecosystem phenomenon, as follows: the structural approach from strategic management considers ecosystems as production systems; the service-dominant approach from marketing considers ecosystems as consumption systems; and lastly, the technological approach from IS considers ecosystems as digital platforms.

2.3.1.1. Structural approach to ecosystems as production systems

The strategic management literature considers ecosystems as structures of economic interactions that enable inter-organisational cooperation to create production systems of value creation. Adner (2017) describes ecosystems as “the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialise” (p. 40). This conceptualisation of ecosystems from a strategy perspective incorporates the structural approach to ecosystems and how interdependent sets of actors collaborate and coordinate to attain a focal value proposition. The elements that underpin this ecosystem view include activities that need to be undertaken for the value proposition to materialise. Then, the focal actor, identifies the entities that will undertake the activities. Next, the focal actor specifies the positions and design roles of the different actors in the ecosystem, as well as the interactions and partnerships required for the focal value proposition to materialise. Adner (2017) further explains ecosystem strategy as defined by the goals and leadership approach of the focal actor in aligning the partners in a competitive ecosystem. A more thorough explanation of ecosystem governance mechanisms is provided by Jacobides et al. (2018), who characterise ecosystems as a collection of interdependent firms that are enabled by modularity, are not hierarchically controlled and are held together by the non-redeployability of their resources elsewhere.

The management literature on ecosystems reaffirms the wide variety of actors that make up the ecosystem, including providers of complementary products and services from other industries, who, despite their interdependence, are not restricted by contractual arrangements (Gawer, 2021; Moore, 1993). Adner and Kapoor (2010) argue that interest in ecosystems is growing due to end users’ needs for complex products and services that require a diverse set of capabilities and knowledge that are not confined to a single firm or industry.

Thus, the ecosystem approach broadens the locus of innovation beyond the boundaries of a single firm to a wider set of actors operating with interdependence and complementarity (Kapoor, 2018). This approach inherently requires structural properties and governance mechanisms to manage the different actors and relationships. The ecosystem construct in strategic management considers the co-innovators and other partners in the whole ecosystem for the successful delivery of the solution to end users (Adner & Kapoor, 2010a). Kapoor (2018) argues that the ecosystem reinforces the powerful concept that the ultimate success of an innovation effort depends on more than a single firm; thus, it considers the relationship between the provider and end user as contributing towards value creation. The ecosystem construct from the strategic perspective considers the evolving nature of complex relationships as entities in the ecosystem collaborate, compete and evolve. Adner (2006) states that the success of an offering is dependent on the collaborative nature by which actors from diverse backgrounds work together and form an innovation ecosystem that contributes to an offering that is customer-focused. These key theoretical underpinnings on which ecosystem research is based include the co-evolution and interaction between various actors of the ecosystem, which are termed “complementarities” and “interdependencies” (Kapoor, 2018). Although the ecosystem concept has been debated and critiqued, such as for its ambiguity in how it is used (Oh, Phillips, Park, & Lee, 2016), it has become a well-established discipline within the strategic management literature (Granstrand & Holgersson, 2020).

Gawer (2020) describes ecosystems as new structures of economic linkages that facilitate certain types of interorganisational collaboration. Several studies support this theory and describe ecosystems as characterised by interdependence among a group of actors who co-evolve their capabilities as they cooperate and compete to attain a common set of objectives (Adner & Kapoor, 2010a; Granstrand & Holgersson, 2020; Iansiti & Levien, 2004).

The current research adopts the definition of ecosystem offered by Adner (2017) as well as the ecosystem-as-structure conceptualisation as its foundational and guiding theory. The ecosystem-as-structure approach is couched in the strategic management literature and focuses on the structural properties and governance mechanisms for coordination that allow the examination of ecosystem elements and actors as they interact in the ecosystem (Adner, 2017; Jacobides et al., 2018). However, the literature also shows that the ecosystem-as-structure view contains blind spots in understanding different roles and components of the ecosystem.

For example, Autio and Thomas (2019) argue that the strategic perspective of the innovation ecosystem construct affords a diminished role to the end user, who is considered a passive recipient of the supplier-orchestrated offering. Moreover, while the ecosystem-as-structure approach emphasises governance mechanisms and a structural view of ecosystem value co-creation, it overlooks the role of digital platform generativity in value co-creation. For example, studies show that the structural view of ecosystems advocates the existence of a predefined value proposition that the focal firm champions and that establishes all roles and relationships in the ecosystem (Hannah & Eisenhardt, 2018; Iansiti & Levien, 2004). However, in this case, the ecosystem ignores the role of the digital platform in facilitating unplanned and unprompted innovative inputs that other actors may contribute to the value co-creation process (Autio & Thomas, 2019).

This perspective on ecosystems presents significant differences from conventional firm-supplier relationships, such as the value systems or strategic networks of Porter (1980). Kapoor (2018) argues that an ecosystem gives a macro view of the firm's external actions and interactions with other entities that contribute to the value creation process, in contrast to a value chain perspective, which examines the micro view of a company's internal actions regarding its performance against competitors. Adner (2017) further states that although both supply and value chains involve multiple parties, often the relationships are decomposable into bilateral arrangements. Other studies comparing value chain and ecosystem perspectives claim that the most important finding is that both perspectives emphasise the demand side of how businesses can innovate successfully to create value (Adner, 2017; Kapoor, 2018). Therefore, for the current research, the ecosystem perspective is important to understanding the focal firm approach as it pertains to working with a constellation of other actors and explaining the outcomes through the lens of competition and/or cooperation.

2.3.1.2. Service-based approach to ecosystems as consumption systems

The service-based perspective, which considers an ecosystem as a consumption system based on service-dominant logic (S-DL), is couched in the service marketing literature and delineates theoretical differences between goods and services. The two main constructs that underlie ecosystems from an S-DL perspective are economic exchange and value creation (Vargo & Lusch, 2004, 2008a). This approach places the end user at the heart of service creation and consumption, characterising these processes as collaborative in nature (Vargo, Maglio, &

Akaka, 2008). Autio and Thomas (2019) argue that “service-dominant logic conceptualises ecosystems as resource integration systems where ecosystem constituents create benefits from their interactions with others through the resource integration” (p. 116). Using the concept of service innovation, Lusch and Nambisan (2015) explain how it serves as the cornerstone of service ecosystems into which actor-to-actor networks are integrated.

Service ecosystems offer shared organisational logics and guiding principles to enable resource integration and service exchange among actors. Studies show that service ecosystems built around digital platforms act as vital accelerators of service innovation due to their capabilities to facilitate the recombinant innovation of service exchange (Lusch & Nambisan, 2015). Fundamentally, service ecosystems are conceptualised as end user consumption systems that play a crucial role in the dynamics of value co-creation with end users. Autio and Lusch (2019) highlight that although the S-DL perspective of ecosystems offers significant insights into the active and varied end user roles in the ecosystem, more attention should be given to the ecosystem-level governance processes that have the potential to influence ecosystem value co-creation.

2.3.1.3. Technological approach to ecosystems as digital platforms that afford new functions and capabilities

The third perspective on ecosystems is couched in the IS literature and takes into account digital platforms and software artefacts, as well as the architecture and functionalities that enable various actors to interact (Adomavicius, Bockstedt, Gupta, & Kauffman, 2007). The IS landscape has adopted the utilisation of an ecosystem approach to illustrate interrelationships between its many technologies (Adomavicius, Bockstedt, Gupta, & Kauffman, 2008). This has been essential in providing a lens that elucidates the evolution of innovation associated with various groups of technology landscape (Liu, Kauffman, & Ma, 2015). Adomavicius et al. (2008) define a technology ecosystem as a set of interrelated technologies operating within an information technology environment in a specific context of use. Adomavicius et al. (2007) suggest the following three key constructs to represent three unique groups of technologies with specific roles: components, services and business infrastructure. The services represent the technological innovations that comprise the information flows, the business infrastructure comprises the technological innovations coordinating the information flow, and the

components are the elements that constitute the technological innovation. These constructs provide the core elements that underpin digital platforms and associated ecosystems.

As more businesses and other actors utilise digital platforms, new organisational forms are developing that are reshaping social and economic landscapes. The concept of digital platforms has generated various meanings and connotations (Baldwin & Woodard, 2009; De Reuver et al., 2018; Gawer, 2021). Moreover, various typologies have been developed to represent the extensive usage and wide range of applications that represent different perspectives on platforms. Earlier perspectives of grouping platforms included industry platform, market transaction and product design (Gawer, 2009). To simplify the typology of platforms, Cusumano et al. (2019) categorised platforms as innovation, transaction and hybrid platforms.

Innovation platforms are characterised as those that provide the building blocks for innovation and enable the recombination of heterogeneous functionality on the platform from different ecosystem actors (Gawer, 2021). This conceptualisation of platforms centres on the use of a set of core stable components that can be reused and shared while also supporting variety and evolvability across the platform (Baldwin & Woodard, 2009). The architecture of the platform adopts rules and standards that follow a set of low-variety elements at the core of the platform that are surrounded by multiple high-variety elements in the name of third-parties as complementors to the platform. As a result, these platforms typically share a core technology foundation that the platform owner and other ecosystem participants can use to collaborate on the development of new complementary products and services (Gawer, 2020). This complementarity ensures that the innovations add functionality or access to core platform assets, ultimately making the platform more valuable. Consequently, the increasing utility of the complementors adds network effects to the platform.

Typically, digital platforms are centrally governed by the platform owner (Ghazawneh & Henfridsson, 2013; Wareham et al., 2014). The platform owner provides application programming interfaces (API) via which third parties can access the modules of the platform's core architecture and co-create new applications and services (Tiwana, 2014). To grant this access, the platform owner undertakes a balancing act between opening up the platform functionalities to complementors with resources for value co-creation and maintaining optimal control over the platform ecosystem through boundary resources (Eaton, Elaluf-Calderwood, Sørensen, & Yoo, 2015; Ghazawneh & Henfridsson, 2013; Huber, Kude, & Dibbern, 2017).

Boundary resources are defined as “the software tools and regulations that serve as the interface for the arm’s length relationship between the platform owner and the application developer” (Ghazawneh & Henfriddson, 2013, p. 174). Boundary resources provide governance mechanisms that help manage the sociotechnical interactions between actors and serve as the interface between platform owners and complementors in the value co-creation process (Bianco, Myllarniemi, Komssi, & Raatikainen, 2014; Eaton et al., 2015).

Consequently, because boundary resources facilitate access to core platform services and fuel generative value co-creation in digital ecosystems, they also play an important role in shaping complementor outcomes. Examples of innovation platform that use boundary resource tools to allow the co-creation of value with other third-party developers are Apple iOS and Android (Cusumano et al., 2019). Another method of acquiring access to multiple platforms is through cross-platform boundary resources, where a dedicated software framework facilitates the delivery of the same application functionality across various platforms (Kang, Aaltonen, & Henfridsson, 2019). The cross platform boundary resources are primarily employed by complement providers to create services for multiple platforms with the aim of reaching as many prospective customers as possible (Cennamo, Ozalp, & Kretschmer, 2018).

The second type of platform, a **transaction platform**, largely comprises those that play an intermediary role or provide marketplaces for interactions between various parts of a market. The multi-sided nature of these platforms facilitates the creation of value by enabling interaction between two or more parties who may not be able to transact otherwise (Eisenmann, Parker, & Van Alstyne, 2006). On a multi-sided market platform, the owner draws in two or more user groups and benefits from playing the intermediary function in managing users on both sides of the platform, while end users benefit from lower search and transaction costs (Gawer & Cusumano, 2008; Rochet & Tirole, 2003). One of the significant characteristics of transaction platforms is the advantage of indirect network effects that result from additional participants, features or information available on one side mutually benefitting the other side (Gawer, 2020). Good examples of platforms that exhibit transaction platform characteristics include the WhatsApp and Uber platforms, which both act as multi-sided markets or exchange platforms.

The third group includes companies that provide platforms that exhibit and support both innovation and transaction characteristics. Gawer (2020) argues that recent years have seen a

proliferation of innovation platforms that have incorporated transaction platforms into their business models, and many transaction platforms have opened up access to third-party innovation. Some driving reasons behind this shift in approach include the need for innovation platforms to preserve the customer experience and the acknowledgement of transaction platforms that not all innovation should be internally driven (Cusumano et al., 2019). Gawer (2020) refers to firms that support both types of platforms as “**hybrids**”, examples of which include the Google and Amazon platforms, as well as mobile money platforms that allow external developers to build apps and services on top of their platforms.

2.3.1.3.1 Defining Digital platforms

A common feature among all these types of digital platforms is that they are underpinned by the material properties of digital technologies and infrastructures as well as the immaterial properties of digital data or information (Faulkner & Runde, 2011). Tilson et al. (2010) describe digital infrastructures as “basic information technologies and organisational structures, along with the related services and facilities necessary for an enterprise or industry to function” (748). Haki (2021) characterises digital platforms as a sociotechnical phenomenon that is the central hub of within business ecosystem. Thus, digital platforms represent a sociotechnical collection comprising digital infrastructures and associated organisational agents, processes and standards that enable different actors to orchestrate their service and content needs (Constantinides et al., 2018; De Reuver et al., 2018; Tilson et al., 2010). Digital infrastructures inherently possess properties that facilitate generative value co-creation, which can be harnessed by the wider community in the ecosystem. The combinable and recombinable characteristics of non-material digital objects, such as digital data or information, enable digital platforms to benefit from the generative potential of digital technologies (Faulkner & Runde, 2011; Zittrain, 2006). These generative potentialities are enabled by the digital capabilities offered by digital infrastructures (Majchrzak & Markus, 2013; Nambisan et al., 2017). Autio and Thomas (2019) argue that ultimately, ecosystem generativity is underpinned by the indeterminacy of these new functionalities and capabilities available in digital platforms.

2.3.1.3.2 Platform ecosystem dynamics

Developments in IT have led to changes in value creation axis, moving from a single firm to supply chains and, more recently, to dynamic and distributed ecosystems (Schreieck, Wiesche, & Krcmar, 2021). Globally standardized protocols and technologies have made it possible for

processes and services within and across industries to be digitally interconnected (Bharadwaj, El Sawy, Pavlov, & Venkatraman, 2013; Schrieck et al., 2021). As a result, an increasing number of firms from many industries are making an effort to create platform ecosystems by exploiting this interconnectedness. Platform ecosystems, according to Tiwana (2014), include the platform foundation, any platform-specific apps, as well as any relevant ecosystem actors, such as the platform's owner, complementors, and end users; it will also be referred to as “digital platform ecosystem” in this thesis. As a result, in platform ecosystems, the owner orchestrates the output of businesses rather than just producing their own production by leveraging an ecosystem of complementors in addition to their own internal resources (Parker et al., 2017; L. Thomas, Autio, & Gann, 2014). De Reuver et al. (2018) points out that platform ecosystems experience a shift in the nature of collaboration as conventional principal-agent interactions between actors in supply chains are replaced by arm's-length relations between the platform owner and third-party developers. According to Stoning et al. (2022), platform ecosystems go from value propositions that represent autonomous solutions created by each ecosystem actor to integrated ones created by several ecosystem actors.

Haki (2021) highlights the processes that affect the viability and sustainability of platform ecosystems. These dynamics include the capability to balance the tensions between structural stability that supports business activities and also facilitate change and innovation which attracts and opens the platform to new actors. Platform ecosystem organising logic must therefore balance autonomy of the independent actors for generativity with top-down, centralized control governed by the platform owner in order to succeed over time (De Reuver et al., 2018; Haki, Blaschke, Aier, Winter, & Tilson, 2022). Previous studies point out some crucial factors for consideration in order to attain ecosystem success. These elements include resolving identity tensions in the ecosystem's organizing logics, adopting a strategic reorientation to platform thinking, luring third-parties to the platform and addressing complexity of interactions between ecosystem actors (Haki et al., 2022; Lindgren, Eriksson, & Lyytinen, 2015; Matzner et al., 2021; Sandberg, Holmström, & Lyytinen, 2020; Schmid, Aier, & Schmid, 2021).

According to earlier research, platform ecosystem success depends on how interactions between various actors and their various ecosystem roles are dynamically configured in order to co-create value for the unique needs of particular end users (Haki, 2021; Sarker, Sarker, Sahaym, & Bjorn-andersen, 2012; Tiwana, Konsynski, & Bush, 2010). This is because

ecosystem actors evolve over time in a variety of patterns. As a result of digital platforms' ability to bring together a critical mass of resource sets from diverse actors, the nature of value co-creation in ecosystems is networked and emergent (Grover & Kohli, 2012; Haki, 2021). Therefore, the platform's ability to provide efficient and effective value co-creation processes across ecosystem participants will determine its continued evolution and success (Blaschke et al., 2019; Grover & Kohli, 2012; Haki et al., 2019). Adner (2017) contends that the ecosystem approach hinges on undertaking various activities for the attainment of the focal value proposition, and the focal actor is essential in an ecosystem since they help identify critical actors who will play the various roles and occupy specific positions in the ecosystem. These actions also aid in determining the boundaries for the ecosystem as the focal actor specifies the interactions and partnerships required for the focal value proposition to materialise.

Although not every ecosystem has a platform as its technical foundation, many ecosystems operate on a digital platform, and few platforms exist in isolation from an ecosystem (Gawer, 2020). Therefore, digital platform ecosystems comprise structures of economic interactions in which various governance mechanisms are used to facilitate different types of interorganisational, institutional and spatial forces of collaboration for value co-creation (Ceccagnoli et al., 2012; Cusumano et al., 2019; Jacobides et al., 2018). As a result, platform ecosystems utilise a hub-and-spoke strategy in which a collection of businesses are connected to the central platform authority through uniform interfaces (Gawer & Cusumano, 2008; Jacobides et al., 2018).

As a result of this relationship, the complementors can create value through complementary innovation and have access to platform customers (Gawer, 2020). Platform ecosystems comprise both technical and sociotechnical components that co-evolve and produce complex and dynamic structures as a result of the interdependencies between technologies and the complementors' ability to innovate (Ceccagnoli et al., 2012; Gawer, 2020). Due to the involvement of so many actors in the platform ecosystem, the success and continued evolution of the platform depends significantly on the ability of the digital platform to carefully balance control by the owner and the autonomy of other actors (Haki, 2021).

One significant property of digital platforms is platform ecosystem governance (also referred to as platform governance), which enables generative value co-creation (Svahn, Mathiassen, & Lindgren, 2017; Wareham et al., 2014). Platform governance is defined as the "partitioning of

decision making authority between the platform owners and the application developers, control mechanisms, and pricing and pie-sharing structures” (Tiwana, 2014, p. 25). The platform owner balances the act of maintaining centralised control to keep the digital platform stable and acceptable to other actors, while also encouraging autonomous individual action that supports the creation of unintended, innovative inputs (Tiwana et al., 2010; Wareham et al., 2014). Tiwana (2014) identifies certain areas that require attention by the platform owner as part of governing the platform, including (a) gatekeeping – how actors that are part of, or external to, the platform must behave; (b) platform evolution – decisions on how the platform’s function must evolve and who is responsible for such decisions; and (c) decision rights – who makes the decisions on the platform and the delegation of authority and responsibilities. The literature also shows that tension and governance challenges exist between the logic of technological flexibility and that of control (Eaton et al., 2015). Tilson et al. (2010) refer to the governance challenge of balancing different interests of ecosystem participants with platforms’ stability and flexibility as this determines the realisation of ecosystem value co-creation. In such cases, boundary resources are utilised. Boundary resources facilitate access to core platform services and fuel generative value co-creation in digital ecosystems. They also play an important role in shaping complementor outcomes. The boundary resource model provides a tool for analysing two vital roles in platform governance: resourcing and securing the platform.

This thesis will argue that the platform on which this research is based possesses the characteristics of a hybrid platform as it exhibits properties of both an innovation and transaction platform, as outlined in Cusumano et al., 2019. It will also argue that the platform is underpinned by a digital technology and infrastructure that provides a core platform and has also been enabled to support some third parties in developing complementary products and services, as discussed in Tiwana, (2014). The research will also demonstrate that the platform is also linked to an ecosystem that is largely influenced by the properties of digital technologies, including digital capabilities and generativity.

2.4. Ecosystem Value Co-creation

This section delves into the constructs that underpin the processes of ecosystem value co-creation. The section starts by conceptualising value and value co-creation. It then elaborates on value proposition as a pluralistic construct that passes through several valuations to address

a variety of requirements, indicating that value is experiential in nature. Next, it provides a brief explanation of the notion of regimes of value, which claim to explain the different value propositions offered by organisations addressing different needs. Lastly, the section gives a detailed explanation of the organisation of the processes, roles and activities that underlie ecosystem value co-creation.

2.4.1. Value and Value Co-creation

2.4.1.1. Conceptualisation of value and value co-creation

Studies show that a firm's competitive advantage stems from its ability to create unique value (Adner & Kapoor, 2010b; Porter, 1985). Value creation depends on the firm's ability to successfully innovate, and both digital innovation and the broader ecosystem context are important factors in the value creation process (Lusch & Nambisan, 2015; Nambisan & Sawhney, 2007). Although the concept of value has been crucial in different disciplines, it has gained particular prominence in economics and marketing, where the majority of its theories have been developed (Ambrosini & Bowman, 2000). Despite such extensive usage, the notion of value has attracted various discipline-specific meanings and definitions over the years (Grönroos, 2008). Woodall (2003), for example, observes that value has remained an ambiguous concept, lacking solid theoretical underpinnings. Studies show that earlier classical economists claimed that value was embedded into products during the manufacturing or production processes (Ambrosini & Bowman, 2000). As more conceptualisations of value have developed over the years, the emphasis has shifted to the relative usefulness experienced by an end user and a good's capacity to satisfy a need (Ambrosini & Bowman, 2000). However, there has been a move in modern theories towards value co-creating interactions between actor and actor dyads, which is supported by S-DL and claims that the end user is the ultimate arbiter of value based on their experiences and preferences (Lusch & Nambisan, 2015). From this perspective, an offering is not embedded with value through exchange, but instead, value emerges when the offering is beneficial to the end user who derives value-in-use, which occurs in a particular context (Chandler & Vargo, 2011; Vargo & Lusch, 2004, 2008b). Bowman and Ambrosini (2000) provide a clear distinction between use value and exchange value: the former is described as the perceived value validated by end users according to how the offering satisfies their needs and wants, while the latter is the economic price paid for the offering by the end user to the resource provider. Exchange value is suggested to, in essence, be derived

from value-in-use and is also an essential part of the value creation process (Lusch & Vargo, 2014).

An S-DL perspective has several implications, the first of which is that firms cannot provide value to end users; instead, they can only offer value propositions as invitations to interact with the offering and other actors for value co-creation (Vargo & Lusch, 2004). The second implication is that all actors are connected to one another and to resources and that these linkages provide the context in which the actors experience value (Chandler & Vargo, 2011). The third implication is, as Lusch and Nambisan (2015) point out, that actors continuously drop and create new linkages, creating a continually changing context that results in a dynamic value experience. These assertions mean that value is context-dependent. These formulations also imply that the value construct means various things to different stakeholders and their value judgements are reflected in their satisfaction (Bowman & Ambrosini, 2010). In general, S-DL identifies the end user as the creator of value, which is a consequence of their subjective judgement (Vargo et al., 2008). Autio and Thomas (2019) observe that although the S-DL conceptualisation of value offers broad and inclusive perspectives on ecosystem sustainability, its subjectivity in value determination is ambiguous, which may prevent the theory from making practical contributions.

2.4.1.2. Conceptualisation of value co-creation

Another concept fundamental to this research is the actual process of value co-creation and how it is organised, the activities that occur in the ecosystem and the process of interaction, as well as the roles of the different actors. The concept of value co-creation is grounded in S-DL, which essentially asserts that all economies are service economies and all firms are service businesses that integrate multiple resources between different actors to co-create value, as opposed to a goods-dominant logic (Lusch & Nambisan, 2015; Saha, Mani, & Goyal, 2020). The concept of co-creation emerges from the theorisation advanced by Vargo and Lusch (2004, 2008) that firms can only offer a value proposition and end users are always the co-creators of value. Value proposition describes the promised benefit offered by the service provider. Value is described as the capability of a service to address the needs of an individual as per their perceived expectations and preferences, usually expressed through terms that include experience and benefit (Gummerus, 2013; Lee, Olson, & Trimi, 2012). The foundation of the value co-creation concept is the value-in-use concept, which states that businesses can only

deliver value propositions and cannot independently create value (Saha et al., 2020). This study adopts the definition of value co-creation proposed by Grönroos (2012) as the joint collaborative activities that a customer (or another beneficiary) and a service provider engage in during their direct interaction, with the aim of contributing to the value for one or both sides. Grönroos (2012) specifies that the term “value co-creation” should not be taken literally and that the value co-creation process may contain a variety of different sub-processes. These include (a) the service provider acting independently and facilitating the end user’s creation of value-in-use; (b) the end user acting independently by integrating available resources, thus creating value-in-use; and (c) the service provider and end user acting jointly in an interactive process that creates value for both parties. These sub-processes reaffirm the contention of Vargo and Lusch (2008) that when a service provider offers a service to a customer, they receive a service in return, such as actionable information that may be utilised to create new services. In summary, Grönroos (2012) observes that the same interactions that customers utilise to create value also have the potential to produce value for the service provider. However, for this to be achieved, firms need to create conducive support structures that process information from customers and use it for the development of new services.

Although there are mixed views on how the value co-creation process occurs, Gummerus (2013) claims that value is co-created through three types of approaches: organisation created, end user created and co-creation, which is collaboratively undertaken. Customers’ perceptions of value have also been argued to be determined through terms such as the experience, benefit, personalisation and quality of the products or services (Gummerus, 2013; Ranjan & Read, 2016). For the individual, value co-creation aims to address their wants and needs, and Gummerus (2013) argues that end users may co-create value through their practices or through processes.

Gummerus (2013) further states that the goal for a firm in undertaking the value co-creation process is to increase its competitive advantage through resource integration interactions. The aim of value co-creation is to generate mutual benefit for the entities involved in the process. This includes the active participation of customers both as contributors regarding their needs and as arbiters of the experience, while firms benefit from knowledge and information from the end users (Prahalad & Ramaswamy, 2004). One problem with the value co-creation concept in some parts of the world is the mechanisms for developing an interaction system that enables value co-creation between firms, end users and communities. (Dey, Babu, Rahman, Dora, &

Mishra, 2018). For example, Dey et al. (2018) highlight the challenge of value co-creation in developing countries, where interaction between end users and producers is sometimes problematic; thus, small businesses within the communities become intermediaries and, therefore, key players in the value co-creation process. Howell et al. (2018) note that for the co-creation of value to succeed, local businesses or entrepreneurs often play a significant role, becoming part of the ecosystem, especially in developing world contexts.

Some studies have also challenged the conceptualisation of value co-creation process, disputing the idea that it is always advantageous and therefore they introduce the concept of value co-destruction (Plé & Cáceres, 2010). They contend that in an interactive value co-creation process where the service provider and the end user are jointly involved, value is not always created but can also be destroyed (Echeverri & Skålén, 2011; Plé & Cáceres, 2010). Hansen (2019) argues that S-D logic terminology's emphasis on benefits to both parties in the interaction and doing something beneficial is underpinned by the positive perspectives that co-creation espouses that almost ignores the likelihood of negative outcomes connected with the value co-creation process. Value co-destruction is a concept that provides a framework for analyzing both positive and negative aspects of the value co-creation process, proving that value creation is not always the end result (Smith, 2013). Ecosystems with an emphasis on value co-creation must therefore consider elements of value co-destruction. Due to the wide range actors involved in the co-creation and co-destruction context in an ecosystem, a more complex analysis must be conducted (Plé, 2017). Research has also identified some challenges in ecosystems that emphasise the co-creation of value as other stakeholders frequently aim at maximising own value creation at the expense of other ecosystem constituents (Buhalis, Andreu, & Gnoth, 2020).

Studies have also identified the collective-conflictual perspective in the value co-creation process (Laamanen & Skålén, 2015). This view argues that due to the diverse ecosystem actors that are represented by unequal power relations and disparate goals, interactions can result in both collective action that is oriented toward mutual benefit and discordant components of conflict (Grönroos & Voima, 2013; Laamanen & Skålén, 2015; Plé & Cáceres, 2010).

2.4.1.3. Value propositions and regimes of value

Several research studies show that value is never absolute, reaffirming its pluralistic character and socially constructed nature and occurrence across varied institutionalised valuation settings based on context (Appadurai, 1986; Corvellec & Hultman, 2014; Edvardsson, Tronvoll, & Gruber, 2011). This state implies that service providers do not provide their offerings with intrinsic value but rather serve as value facilitators by promising benefits that may or may not come to pass (Grönroos & Ravald, 2011). Grönroos and Ravald (2011) describe value proposition as “a promise about potential future value creation” (p. 14). Corvellec and Hultman (2014) observe that this characterisation of value proposition substantiates the notion that value is experiential in nature, should be defined in use rather than in exchange within a social context.

Corvellec and Hultman (2014) cite various authors to support their assertion that businesses often provide multiple value propositions that speak to diverse regimes of value. Appadurai (1986) defines a regime of value as a socially consistent and situated method to determine value. A regime of value incorporates frameworks, beliefs and behaviours in a particular context that provide a clear understanding of what counts or not to both the service provider and beneficiary (Corvellec & Hultman, 2014; Stark, 2009). Therefore, various regimes of value define value in different ways. This necessitates the establishment of institutionalised criteria for evaluating and communicating value that are unique to a community, viewpoint or location and that support the various value propositions in use (Corvellec & Hultman, 2014). The literature also demonstrates that firms offer concurrent value propositions that foster the coexistence of regimes of value that are not always similar and may cause tensions that lead to conflict and competitiveness (Barrett, Oborn, & Orlikowski, 2016; Corvellec & Hultman, 2014). Despite the fact that these tensions may lead to problems, Stark (2009) points out the potential for generative innovative interactions to emanate from the different value propositions.

Diverse actors in ecosystems engage in both strategic collective action and conflictual events in a particular context and environment. In the process of value co-creation in the ecosystem, conflicts and tensions arise due to the varied regimes of value and goals (Corvellec & Hultman, 2014; Laamanen & Skålén, 2015). Power disparities that confirm dominance and conflict within the ecosystem establish distinct regimes of value that serve as the foundation for the

interactions between the actors (Corvellec & Hultman, 2014; Laamanen & Skålén, 2015). As a result, the dynamics of the value co-creation process are rife with both harmonic and conflictual components caused by the power differentials between the ecosystem actors.

Because value is socially constructed and context-based, this study will assert that understanding the local preferences and values of end users in BoP contexts can assist designers in creating digital innovations that appropriately satisfy user needs (Corvellec & Hultman, 2014; Edvardsson et al., 2011; Howell, van Beers, & Doorn, 2018). This is consistent with research that suggests that for businesses to successfully innovate in the Global South, they must have access to important BoP market and needs information, which necessitates local embeddedness to comprehend these needs (London, 2008; Nakata & Weidner, 2012; Viswanathan & Sridharan, 2012). This study will also show that undertaking business in the BoP context requires looking beyond the end user of the digital innovation to other intermediaries in the ecosystem, such as local producers and distributors (Howell et al., 2018). The study also supports the idea that value in contexts with limited resources extends beyond merely consumption of goods and involves integration into the customs and practises of the community (Howell et al., 2018; Simanis & Hart, 2009).

2.4.2. Organisation of roles and activities in ecosystem value co-creation

2.4.2.1. Structural properties and governance mechanisms for ecosystem value co-creation

The structural properties and governance mechanisms for ecosystem value co-creation originate from the strategic management literature on ecosystems, with a focus on supply-side value co-creation systems (Autio & Thomas, 2019). To emphasise the primary distinction between ecosystems and conventional supply chains, Adner (2017) argues that despite the fact that not all supplier relationships are governed by contracts in ecosystems, value co-creation is dependent on suppliers. Therefore, the focal firm's main focus is the development of appropriate structures and governance mechanisms that will support the creation of a collaborative value production system of interdependent ecosystem constituents. The major goal of ecosystem strategy, as emphasised by the definition of an ecosystem-as-structure proposed by Adner (2017) and adopted in this research, is to ensure that the focal actors' value proposition materialises. To attain this value proposition, the focal actor identifies the discrete actions required and the entities to undertake them, designs different roles to achieve ecosystem

functionality and develops partnerships for value co-creation (Adner, 2017; Dedehayir, Mäkinen, & Roland Ortt, 2018). However, the influence of linear value chains and traditional industrial organisation in this strategic ecosystem approach, which has a production-centric emphasis, has led to increasing supply-push value creation (Adner & Kapoor, 2010a; Hannah & Eisenhardt, 2018; Jacobides et al., 2018). Autio and Thomas (2019) argue that this structural approach causes the development of transactional relationships with other ecosystem actors that may hinder generative inputs towards ecosystem value co-creation from other constituents.

The hierarchical view that dominates the strategy literature with regard to governance practices of transactions is also reflected in the ecosystem-as-structure perspective, where particular attention has been paid to formal governance practices aimed at providing instrumental value (Autio & Thomas, 2019). The transactional role assigned to ecosystem actors, coupled with the focus on the ecosystem providing instrumental value, limits the potential of other ecosystem actors to contribute to value co-creation (Jacobides et al., 2018). Furthermore, formulating a value proposition to be offered to end users with similar preferences entails identifying a group of actors with a shared understanding of the ecosystem goals formulated and defined through an ecosystem blueprint (Dattée, Alexy, & Autio, 2018; Hannah & Eisenhardt, 2018). However, research indicates that the difficulty for the focal actor in this scenario is defining and regulating the blueprint and persuading other actors to participate in the ecosystem and co-create value (Adner & Kapoor, 2010b; Hannah & Eisenhardt, 2018). Hannah and Eisenhardt (2018) argue that in these situations, the focal actor's ability to provide appropriate governance mechanisms and ecosystem orchestration that enhance user instrumental utility and meet their needs is key. Autio and Thomas (2019) also assert that the focus on a blueprint approach, which places a strong emphasis on formal governance structures, risks failing to recognise the importance of informal interactions in the co-creation of value.

Several studies have suggested strategies to address some of the governance and orchestration challenges identified in ecosystem value co-creation under strategic management. For instance, Dattée et al. (2018) propose that focal firms utilise dynamic control strategies rather than strict control blueprints to promote the creation of a shared vision of the ecosystem. This would help overcome the uncertainty present when ecosystems are being formed and facilitate the shaping of a common vision. Ansari et al. (2018) argue against designing and implementing an ecosystem blueprint and propose business model experimentation among ecosystem actors to encourage co-discovery and validate a new blueprint that other ecosystem constituents may

accept. In summary, the blueprint approach espoused by the ecosystem-as-structure approach has a number of drawbacks as it ignores the crucial role that generativity and emergence play in the growth and evolution of ecosystems.

2.4.2.2. End user role in value co-creation

S-DL, which drives the exploration of value co-creation that occurs when the service provider and end user integrate resources through interaction, generally encompasses the processes and activities related to the end user's role in ecosystem value co-creation (Lusch & Nambisan, 2015). This perspective explores the roles of different actors in co-creating value during resource-integration interactions. Studies show that different actors, including end users, significantly influence innovation and value co-creation (Lusch & Nambisan, 2015; Von Hippel, 1988). The S-DL literature identifies various roles for the end user in value co-creation beyond that of a resource integrator (Lusch & Nambisan, 2015). Lusch and Nambisan (2015) identify the roles of ideators, designers and intermediaries. Ideators provide knowledge about their needs and unique contexts and suggest novel ways to create value; among the main areas for this concept are knowledge sharing within the ecosystem and knowledge translation from tacit to explicit. Designers continuously come up with fresh combinations that allow for many interpretations of the components of pre-existing knowledge. Intermediaries support the non-obvious linkages among the diverse actors and resources. These various roles offer end users the opportunity to experience different types of value (Lusch & Nambisan, 2015). The fundamental concept underpinning this S-DL perspective of value co-creation is the experiential value judged by the end user through the act of consuming the offering (Vargo & Lusch, 2008a). S-DL ensures that the end user is considered an active participant in resource integration within the ecosystem, which is achieved through the focus on the experiential value of the end user. However, Autio and Thomas (2019) note that these conceptual approaches often bring some uncertainty because it can be difficult to formally define or even quantify the phenomenological experience that the approach espouses. To overcome some of the challenges, recent studies have looked at service ecosystems as actor-to-actor configurations in which service innovation is supported by resource integration and the provision of services (Lusch & Nambisan, 2015). This approach ensures that all ecosystem participants are viewed as resource integrators, making them all potential value innovators or co-creators. In this conceptualisation of service innovation, Lusch and Nambisan (2015) highlight the enhanced role of the end user as an active constituent in the innovation process.

To better understand the dynamics of value co-creation and to take into account the larger environment of value co-creation around the interaction of the end user and service provider, recent research has looked beyond the dyad of the end user and service provider (Chandler & Vargo, 2011). The concept of value-in-context considers the impact of elements such as culture, social norms and institutional logics on how value is experienced by the end-user (Chandler & Vargo, 2011; Edvardsson et al., 2011; Vargo et al., 2008).

2.4.2.3. How digital platforms support value co-creation

The IS perspective considers digital platforms to have capabilities that support and facilitate ecosystem value co-creation (Majchrzak & Markus, 2013; Nambisan, Lyytinen, & Majchrzak, 2017). On the one hand, value co-creation on digital platforms is facilitated by recombinant innovation supported by generativity – a concept that describes the “overall capacity to produce unprompted change driven by large, varied and uncoordinated audiences” (Zittrain, 2006, p. 1980). On the other hand, the properties of digital infrastructure and technology open up the digital platform and offer digital functionalities and capabilities, giving a subject the potential to carry out desired actions and execute new functions (Felin, Kauffman, Mastrogiorgio, & Mastrogiorgio, 2016; Leonardi, 2011). The IS literature describes the functional value that platforms offer by facilitating interactions between various innovative inputs and resources as generative value co-creation (Autio & Thomas, 2019; Ceccagnoli et al., 2012).

To reiterate, IS research has identified several characteristics that facilitate the co-creation of value in a digital ecosystem: reprogrammability, data homogeneity, layered modularity and governance practices (Kallinikos et al., 2010; Tilson et al., 2010; Wareham et al., 2014; Yoo et al., 2010). The co-creation of value in digital platforms is enabled by governance practices prevalent in the platform ecosystem. Some essential acts required to support generative value co-creation include the development of suitable governance structures that permit autonomy, individual action and the generation of variety (Autio & Thomas, 2019; Kazan, Tan, Lim, Sørensen, & Damsgaard, 2018; Wareham et al., 2014). However, the degree to which ecosystem value co-creation occurs is determined by the extent to which platform owners can resolve the tension between the technological flexibility that supports the generative capacity of autonomous actors and the logic of centralised control to maintain stability (Eaton et al., 2015; Huber et al., 2017; Wareham et al., 2014). Tilson et al. (2010) refer to this as a governance challenge. This tension is one of the critical challenges in developing digital

platforms' innovations and entails a wide role for platform owners that involves platform governance. Previous studies have defined platform governance as the fundamental decisions undertaken by the platform owner in relation to complementors, including the ownership of the platform and the interactions with the ecosystem of complementors (Boudreau, 2012; Gawer, 2014; Wareham et al., 2014).

Although research has ascertained the rising importance of platform ecosystems in facilitating value co-creation, platform owners may still encounter challenges in addressing the context-specific needs of distant and unknown end user communities due to a lack of familiarity with them (Bosch, 2009; Henfridsson & Lindgren, 2010). The challenges are exacerbated by the contrasting requirements of different groups of end users, which may be beyond the focus or core expertise of the platform owner (Boudreau, 2010; Ghazawneh & Henfridsson, 2013). Accordingly, extending platform functionality to complementors close to the end user contexts is becoming increasingly appealing to platform owners as it enables third-party developers to address context-specific needs (Ghazawneh & Henfridsson, 2013; Msiska, 2018). Foerderer et al. (2019) argue that examining the complex and dynamic sociotechnical interactions at the boundary between platform owners and complementors offers an opportunity to gain more insights into platform governance and ecosystem-related tensions.

Autio and Thomas (2019) highlight some of the shortcomings of the IS perspective of ecosystems in terms of the process of value co-creation. On the one hand, they applaud the attention to the conceptualisation of value as a function and the insights that IS literature offers into how digital platform ecosystems can be developed and configured to maximise value co-creation. On the other hand, they draw attention to conceptual uncertainties around generativity that provide little consistency when examining the underlying mechanisms and motivations. The emphasis on platform functionality also runs the risk of giving the digital platform too much agency while, in the process, undervaluing the role of other ecosystem actors and co-creation drivers. Finally, they highlight the shortcomings of studying the dynamics of the interaction between ecosystem governance and other non-technical factors and how this influences the co-creation of ecosystem value.

2.5. Fintechs as a new frontier for digital innovation

Fintech is a contraction of the terms “financial services” and “information technology” (Gimpel et al., 2018). Despite its wide usage and impact on the financial services sector, a consensus on the definition of this phenomenon has not yet been reached (Basole & Patel, 2018; Schueffel, 2016). The term “fintech” embodies different concepts, which can be viewed from multiple perspectives and comprise varying characteristics. Studies have considered fintech from various perspectives, including as a technology, a sector or indeed new financial technology firms (Gomber, Kauffman, Parker, & Weber, 2018; Puschmann, 2017). Gomber et al. (2018) define fintech as the provision of new and improved technology-enabled financial services. The fintech era is claimed to have been ushered in by three main drivers: digital innovation, process disruption and services transformation (Gomber et al., 2018). Gozman et al. (2018) assert that the fintech revolution is characterised by the use and integration of digital innovation to lower barriers to entry and help newcomers insert themselves into value chains as providers of innovative products and services. Fintechs are driven by the characteristics and dynamics of digital innovation, such as distributed development that promotes value co-creation, recombinant innovation, generativity and embeddedness in social practices of usage (Kallinikos et al., 2013; Markus & Nan, 2020; Tilson et al., 2010; Yoo et al., 2012).

Mobile money services embody all three main drivers of fintech in the context of the Global South. This is due to the fact that mobile money services, powered by digital innovation, digitalise cash into electronic money and enable the digital reconfiguration of a variety of physical sociotechnical elements not previously connected in end-to-end financial services (Markus & Nan, 2020). Their status as fintechs entails that mobile money services embrace digital innovation, disrupt the process of undertaking financial services and transform the delivery and reach of financial services. Thus, mobile money is a fintech innovation that enables individuals to undertake financial transactions without the need for a bank account, especially in the Global South (Senyo et al., 2022).

2.5.1. Defining Fintech

There remains a lack of consensus over whether the definition of fintech includes only fintech start-ups or also established financial service companies that use innovative technologies to supply goods and services (Varga, 2017). This study isolates three of the wide range of perspectives identified in the literature about the fintech phenomenon, as follows:

- i. ***Fintech as a sector or firm:*** Zavolokina et al. (2016) describe fintech as established firms or start-ups that utilise technological innovation to provide financial solutions, either in collaboration or in competition with others. The emphasis is on fintech described as a firm or sector whose ultimate goal is to provide financial services enabled by digital innovation.
- ii. ***Fintech from a technological perspective:*** Gimpel et al. (2018) and Gulamhuseinwala et al. (2015) define fintech as the application of emerging digital technologies to deliver innovative financial services; these technologies include artificial intelligence, data analytics, cloud computing platforms, the internet and social media. The focus is on leveraging the applicable capabilities of these technologies in the design, implementation and delivery of innovative financial solutions, emphasising the technological perspective of fintech.
- iii. ***Fintech as a new paradigm for financial innovation:*** Fintech is described as a new paradigm created by changes in end user needs, regulatory changes and transformation of the economic environment and capital investments. These changes have enabled the provision of technological innovative financial objects, such as new products and services, organisational structures, processes, systems and business models (Gimpel et al., 2018; Hua, 2016; I. Lee & Shin, 2018; Puschmann, 2017). Nicoletti (2017) and Puschmann (2017) argue that financial solutions are closely linked to financial innovations; thus, different categories of fintech innovation objects can be used to distinguish them from each other. These categories include:
 - Service or product innovation, e.g. mobile payments;
 - Process innovation, e.g. customer engagement process, online credit application;
 - Organisation innovation, e.g. social networks;
 - Business model innovation, e.g. crowdfunding, crowd lending;
 - System innovation, e.g. blockchain.

Minto et al. (2017) argue that fintech is not a clear concept as it has multiple meanings dependent on context. The definition adopted by this study must, therefore, be guided by the context of the research. Therefore, restricting the fintech definition to only a firm approach or a technological perspective, as in the first two descriptions above, is too restrictive. Because the context of this study is broad, it goes beyond technological factors or a grouping of firms alone and requires an all-encompassing approach. Therefore, the third perspective of a “new

paradigm for financial innovation” provides a broader lens that is all-encompassing and captures the various spheres that fintech may impact upon as a solution to address end user needs and challenges. In this regard, the “new paradigm for financial innovation perspective” can be adopted and used as a broad term to refer to financial firms comprising incumbent and new entrants. This term can also refer to services offered by the sector, innovative solutions for the financial services sector and enablers of financial innovation (Puschmann, 2017).

Gozman et al. (2018) describe the shift in the landscape of innovation that characterises the fintech era as a source of tensions between established financial institutions and new entrants over governance systems, relationships, services and market regulation. Studies reveal that incumbents are also on a mission to defend their interests by, for example, redesigning their services, business models and processes (Drummer, Feuerriegel, & Neumann, 2017; Senyo et al., 2022). As a result, new strategies for value co-creation have emerged that are technologically enabled to support competition and collaboration between the incumbents and new entrants.

2.5.2. Fintech innovations as ecosystems

Fintech innovations operate in an ecosystem of a multilateral set of partners that interact to realise the focal value proposition (Adner, 2017; Lee & Shin, 2018). The ecosystem comprises either a single or a set of focal actors, who play(s) the central role in the leadership of the ecosystem and is/are referred to by different labels, such as “ecosystem leader” (Moore, 1993), “keystone” (Iansiti & Levien, 2004) or “platform leader” (Gawer, 2002). The leadership role entails undertaking several tasks, such as coordinating interactions, governing the ecosystem, forging partnerships and managing the platform (Dedehayir et al., 2018). Jacobides et al. (2018) elaborate on the additional roles of the focal actor, such as setting system-level goals and managing membership and relationships within the ecosystem. Studies show that it is common practice not to have hierarchical control in an ecosystem but for members to combine their capabilities to co-create value (Adner, 2017; Jacobides et al., 2018). According to Lee and Shin (2018), a fintech ecosystem is comprised of five interdependent components: fintech start-ups, government, technology developers, customers and traditional financial institutions. The interaction of these actors in the ecosystem offers a unique opportunity to integrate resources and co-create ecosystem value.

2.5.3. Mobile money as an exemplar of a fintech innovation

Mobile money refers to financial transactions carried out over mobile phone networks utilising customer funds that are maintained by the mobile network operators (MNOs), where customers do not need to hold an account with a financial institution to own a mobile money account (Ahmad et al., 2020). Many countries in the Global South have witnessed a significant rise in mobile money services as they allow customers who are frequently unbanked or underbanked to transact and keep money more efficiently (Pelletier, Khavul, & Estrin, 2019). Nan (2019) argues that mobile money has amassed widespread usage in the Global South due to its capabilities to support financial inclusion and socioeconomic development. These capabilities aid end users who do not necessarily need to have a formal bank account and can be offered by banks or other non-financial institutions, depending on the regulatory framework (Ahmad et al., 2020; Nan, 2019). For example, Safaricom, a mobile network operator, offered Kenya's popular and most successful M-Pesa mobile money service in Africa (Ahmad et al., 2020).

Mobile money, as a fintech innovation with potential societal transformation capabilities, is seen to allow the reorganisation of value co-creation processes in financial services (Aron, 2018; Markus & Nan, 2020; Pelletier et al., 2019). This is because the ubiquity of mobile phone usage across many countries has enabled the diffusion of mobile money services, potentially giving more people access to financial services (Jack & Suri, 2011). Because they are enabled by digital innovation, mobile money services can exploit the capabilities of digital technologies to coordinate different ecosystem components and reconfigure existing sociotechnical elements that were not previously connected (Kallinikos et al., 2013; Nan, 2019; Yoo et al., 2012).

The next sections consider three perspectives on mobile money ecosystems. The first perspective considers mobile money ecosystems as structures comprising a multilateral set of partners who interact but are not hierarchically organised. It is assumed that this constellation of actors aims to realise a focal value proposition and that value is considered instrumental utility (Adner, 2017; Jacobides et al., 2018). The second perspective is that of the mobile money ecosystem as a consumption system, which takes into consideration numerous ecosystem processes and activities that allow resource integration through interactions between various ecosystem actors (Lusch & Nambisan, 2015; Vargo & Lusch, 2004, 2008a). The final

perspective considers mobile money to be a digital platform with technical functionalities that facilitate generative value co-creation (Yoo et al., 2010; Zittrain, 2006).

2.5.3.1. Ecosystem structure for mobile money services

A complex ecosystem structure and associated governance mechanisms are required to deliver mobile money services, which include mobile network operators, banks, service providers, retailers, utility providers, technology firms, regulators, development partners and civil society organisations (Eijkman, Kendall, & Mas, 2009; Jenkins, 2008). The composition of the ecosystem involves diverse actors that span across different sectors, with telecommunication companies mostly providing the core technical foundation and service agents offering touch-points with end users; the actors also include regulators, development partners and fintech companies (Jenkins, 2008). Studies indicate that the structures of mobile money ecosystems have been largely influenced by the varied competing licensing models that different regulators have adopted (Ahmad et al., 2020; Evans & Pirchio, 2015). For instance, the three following licensing models have been widely adopted in the licensing of mobile money services across different jurisdictions: bank-led, MNO-led and hybrid models (Dermish, Kneiding, Leishman, & Mas, 2012; Evans & Pirchio, 2015). A regulatory model that solely permits MNOs to take the lead in the implementation of mobile money is referred to as MNO-led, while strategies that only permit banks to do so are known as bank-led, and hybrid models combine the two. Each of these approaches has had varying forms of influence on the emergence of mobile money ecosystems. For example, the Kenyan regulatory environment does not impose a specific model or require a formal partnership between a bank and an MNO to lead the deployment of mobile money services (Ahmad et al., 2020; Aron, 2018). In Nigeria, where the situation has evolved over time, the regulator initially imposed a requirement that the deployment of mobile money had to be bank-led, although a few years later, after an outcry, this was modified to allow MNOs to take the lead as well, with some conditions (Evans & Pirchio, 2015). Evans and Pirchio (2015) claim that MNO-led models have had better success than bank-led models. Global System for Mobile Communications Association (GSMA) undertook a survey that supports the view on MNO-led models in their survey GSMA (2016) survey, in which they state that wealthier nations with greater population density also have greater adoption rates for mobile money. However, other studies contend that while these factors do influence the adoption of mobile money services, there is inadequate comparative data to ascertain the factors and the extent of their influence on the uptake of mobile money

services (Ahmad et al., 2020). As a result, the focal actor in the mobile money ecosystem – be it a bank or an MNO – has potentially greater influence as they take on the leadership position and manage essential governance tasks, such as designing roles for other ecosystem actors, coordinating interactions and relationships and orchestrating flows between actors (Dedehayir et al., 2018). Additional roles of the ecosystem leader include forging partnerships, facilitating collaboration with other actors and managing the core technical platform on which the system is based (Dedehayir et al., 2018).

2.5.3.2. Mobile money as a consumption system

In the mobile money service, end users serve as a crucial ecosystem component for the consumption system. As well as the critical structures, governance mechanisms and the technical platform upon which the mobile money service can function, the other important value co-creation component is that of the end users who act as the consumption system. S-DL, which centres on the idea that all economic and social actors integrate various resources to co-create value, provides the foundation for the co-creation of value in this perspective (Lusch & Nambisan, 2015; Vargo & Lusch, 2004, 2008a). Therefore, this perspective considers the end users as ideators who define problems that the ecosystem endeavours to solve as the end users take into account their specific context, share their requirements with other ecosystem actors and translate tacit information into explicit knowledge (Dedehayir et al., 2018; Lusch & Nambisan, 2015). This includes sharing knowledge on how they use the offered services and potential new services that they envision. The rollout of M-Pesa mobile money in Kenya provided vivid examples of how end users undertook this role, enabling the focal firm and other ecosystem actors to learn from the end users, who provided a consumption system perspective.

According to Hughes and Lonie (2007), M-Pesa was originally designed to target microfinance companies and their clients for loan repayments, but it was later repurposed as a mobile money system to target the unbanked due to the lessons learned from end users as they engaged in new, unanticipated usages with the offering. In this case, end users, as a consumption system, presented a need that served as the primary catalyst for the emergence of a mobile money ecosystem that would require a variety of actors (Dedehayir et al., 2018). The focal firm's flexibility in responding and repositioning the service proved to be a game-changer as the repurposed service appeared to address the latent demand for money transfer services from

urban workers and those in rural areas (Mas & Morawczynski, 2009). The collaborative activities between the end user and service provider (Safaricom) during their direct interaction through the initial IS offering resulted in value being co-created for both sides and some contextual societal challenges being addressed in the process (Grönroos, 2012). End users utilising M-Pesa as an “overnight bank” whereby they deposited money in the evening and withdrew in the morning also compelled the focal firm to redesign the mobile money service to operate without requiring that its end users own a formal bank account but to provide some crucial financial services, such as “saving” and “sending” money (Eijkman et al., 2009; Heyer & Mas, 2009). This example illustrates how end users assumed the role of designers by combining and repurposing existing knowledge resources from the ecosystem to reconfigure a new service made possible by integrating various resources (Lusch & Nambisan, 2015). These roles undertaken by end users during the rollout of M-Pesa mobile money are similar to those described in the user innovation literature, where the service recipient is an active constituent in innovation as a buyer, user, co-producer and products (Autio & Thomas, 2019; Baldwin & von Hippel, 2011; Kaulio, 1998). Mwiti (2015) demonstrates that mobile money as a consumption system offers deep insights into the vital role of end users in providing feedback to the ecosystem that can assist in reconfiguring digital innovations to suit particular contexts.

2.5.3.3. Mobile money as a digital platform

Following the definition and classification by Cusumano et al. (2019) of platforms based on their primary function and the conceptualisation of digital platforms used in this study, as described in Section 2.3.1.3, mobile money can be said to exhibit characteristics of both transaction and innovation platforms. As a transaction platform, mobile money serves as a multisided platform with two interconnected functionalities. On one side is the agent platform, which enables users to deposit or withdraw money from mobile money accounts; on the other is the electronic money platform, which links mobile money senders and recipients (Cusumano et al., 2019; Evans & Pirchio, 2015). This functionality of mobile money platforms as multisided marketplaces with the intermediary role of facilitating transactions through direct exchange is the widely recognised role of platforms such as M-Pesa.

The second purpose of mobile money platforms is to serve as an innovation platform. As innovation platforms, mobile money services are considered the “foundation on which other firms build complementary products, services and technologies” (Gawer, 2009, p. 54). M-Pesa

mobile money provides various cases in which the digital platform has been opened up using APIs that give complementors access to develop apps and services on top of the platform (Kendall, Machoka, Veniard, & Maurer, 2011; Suri, 2021). In such instances, mobile money as a digital platform facilitates generative value co-creation (Kendall, Machoka, et al., 2011; Suri, 2021; Yoo et al., 2010; Zittrain, 2006). The digital platform provides functional utility for other complementors in the ecosystem to undertake the value co-creation afforded by the properties of the underlying digital infrastructure (Autio & Thomas, 2019; Cusumano et al., 2019). In sub-Saharan Africa, mobile money digital platforms play the crucial role of offering the foundation on which other firms and individuals can build and deliver other digital innovations (Kendall, Maurer, et al., 2011; Suri, 2021). The mobile money platform and its associated ecosystem comprise the focal firm, complementary providers, end users, the government, development partners and any other peripheral actors participating on the digital platform.

As previous research has demonstrated, such ecosystems offer new types of economic relationships and organisational structures that allow for various forms of collaboration (Gawer, 2020). Mobile money platform ecosystems include the platform owner and other complementary actors who enhance the platform's value for its end users (Cusumano et al., 2019). Complementary actors for mobile money services connect to the platform through shared technologies to facilitate the generation of complementary innovation and allow access to the platform's end users (Gawer, 2020). In this respect, mobile money as an innovation platform in the Global South has the potential to foster innovation that can create value for development. Therefore, this study argues that mobile money, although a largely commercially driven innovation platform, provides the foundations for the indigenous co-creation of value in local contexts in the Global South.

2.6. The context of digital innovation in the Global South and Malawi

Context is an important aspect of the current research as it plays an influential role in the implementation and functioning of IS innovations. Other concepts impacted by context include value and the value co-creation process, as examined in Section 2.4.2. Therefore, this section conceptualises the context for this study and its implications for research in the Global South.

2.6.1. Conceptualisation of context

Several studies have highlighted the critical role that context plays in providing meaningful insights in IS research (Avgerou, 2019; Davison & Martinsons, 2016; Hayes & Westrup, 2012). Research has shown that lack of context specificity causes IS solutions to be designed with a disconnect between those that design the solution and the realities of the intended users, which has traditionally resulted in project failures (Richard Heeks, 2002). Research has shown that understanding how context interacts with digital technologies and how this affects IS processes is essential for maximising the use of digital technologies; ignoring context may result in technologies not being as beneficial (Nielsen & Sahay, 2022). As a result, scholars working on IS research are constantly required to pay closer attention to appropriately account for the influence of context in their studies (Avgerou, 2001). In relation to the Global South, several scholars have argued that contextual awareness increases the applicability of IS innovations to socioeconomic development (Avgerou, 2010; Diga & May, 2016; Nielsen, 2017). It is also essential to identify areas of enquiry to be considered relevant contexts beyond the phenomenon of study that contribute conditions that enable or restrict IS implementations (Avgerou, 2010, 2019). This process is known as contextualisation. However, due to the vagueness of what is to be recognised as the pertinent context in a specific study, it is challenging to assess whether a research study has appropriately identified the relevant components of context (Avgerou, 2019). Winter et al. (2014) have highlighted the dynamic nature of the organisational environment for sociotechnical systems, underlining the significance of trans-organisational informational digital infrastructures in addition to the technical and social aspects of the organisational context. Avgerou (2010) also underlines the challenges of neglecting pertinent context in IS implementations in earlier work, such as e-government systems, which are thought to be applied differently across countries and with varied results in countries with diverse public administration traditions. According to Davison and Martinsons (2016), particularism versus universalism is another challenge that affects the generalisability of results produced for a specific context but that need to be extended to another setting. Therefore, to provide clarity, this section presents the main ideas underpinning the context pertaining to this enquiry.

Although context can be viewed from many different perspectives using varying definitions, this study focuses on how it has been described in the literature on ICT4D. Hayes and Westrup (2012) describe context as a “dynamic concept produced out of processes of connection and

disconnection and not an entity out there” (p. 24). Avgerou (2019) suggests two approaches to contextualisation – namely, the layered and relational views. In layered contextualisation, the domains of enquiry are identified through the interaction of actors at the same or higher levels of aggregation to that at which the phenomenon is believed to take place. Avegrou (2019) describes relational contextualisation as “networks with which the constitutive parts of a phenomenon are connected” (p. 987). Instead of emphasising the accuracy of the representation of context, Hayes and Westrup (2012) promote focusing on the processes by which it is represented, proposing three processual principles to help define context (Hayes & Westrup, 2012). The first principle is that context should be represented as a relational process that necessitates gathering several narratives from various actors at both the macro and micro levels to comprehend it. The second principle is that research must recognise that macro actor context accounts are products of the development process rather than self-evident narratives. The third principle is that studies need to look at how various actors construct their descriptions of context. Hayes and Westrup (2012), who support a relational approach to contextualising ICT4D, which this study adopts, argue that the formation of an IS context is not assumed; rather, it evolves as the phenomena develop in relation to socioeconomic development processes.

Moreover, while studies into the role of context in IS studies have established a number of methods by which IS researchers might connect a phenomenon to its surroundings, critics of contextual research have highlighted limitations of these approaches. For instance, Pollock and William (2009) assert that there are disparities between scale and explanation detail in contextual studies, leading them, by their very nature, to provide partial accounts when they should provide comprehensive analysis. However, Avgerou (2019) counters this claim by arguing that partiality is a common occurrence in IS research as each IS study only examines a small subset of the conditions and processes that contribute to the phenomenon.

Various categories of contextual conditions have been conceptualised as relevant domains of enquiry. These categories include digital infrastructures, institutional, economic, social-cultural, material settings and sustainability (Aanestad, Monteiro, & Nielsen, 2007; Braa, Monteiro, & Sahay, 2004; Madon, Reinhard, Roode, & Walsham, 2009). Concerning context for ICT4D research, Nielsen (2017) cites a number of studies that examine potential influencing elements that should be taken into account when considering domains of enquiry as relevant context. The study on M-Pesa by Hayes and Westrup (2012) highlights additional

context-related components considered relevant, such as political stability and regulatory influence. The M-Pesa study also presented multiple and evolving context narratives crafted by other groups, which then originated their own strategies to advance the innovation in novel ways. These approaches emphasise the significance of viewing IS innovations as dynamic and processual engagements with context, highlighting how the IS phenomenon emerges from the interactions of actors in the ecosystem.

Avgerou (2019) points out that organisational structures and processes, managerial characteristics and governance methods for making choices are types of contextual conditions that fall under the institutional theme. The theories associated with institutional conditions are also largely derived from organisational theories on strategy, such as a resource-based view of the firm, organisational behaviour, organisational structures and institutional theory (Avgerou, 2019). Institutional conditions are underpinned by institutional theory, which likewise concerns the interactions between the different actors within the context.

The other category of economic contextual conditions derives from micro and macro concepts, such as network economics and market competition, to satisfy the conditions of demand and supply, transaction costs, labour and markets (Avgerou, 2019). These concepts are underpinned by economic theories that include ICT and the productivity of the firm, transaction costs and market competition theories. These factors influence the implementation and functioning of the IS offering. The third category of sociocultural factors covers the social orders that IS phenomena sustain or defy, including the standards and principles held by organisations and other social groups that have an impact on the development of the IS phenomenon. This category also includes aspects of policy and regulation (Gibbs & Kraemer, 2004). The ideas of culture and innovation are primarily the theoretical foundations of conceptions in this sociocultural context. The final category of contextual conditions comprises material and spatial elements, such as technological infrastructures, physical conditions and time-related aspects.

2.6.2. Digital innovation in the Global South

Numerous studies have acknowledged the potential transformative role that digital innovations can have on societies in the Global South, including their developmental impact (Bonina et al., 2021; Nielsen, 2017; Walsham, 2017). Various authors have also pointed out the criticality of

accounting for the context in which digital innovations are implemented and used to make them relevant (Avgerou, 2001, 2010; Nielsen, 2017). One goal of this section is to understand how the literature on ICT4D captures the relationship between the context and its influence on the functioning of IS phenomena.

Heeks (2002) provides an example of the mismatch between the developers' approach to design and the users' local reality as a contextual constraint for ICT4D along various dimensions, such as information, technology, processes, objectives and values, staffing and skills, management systems and structures and other resources. Therefore, Heeks (2002) advocates adopting practices at the national level that impose fewer systemic components to address these contextual issues.

While some studies on ICT4D have focused on the design arena of digital innovations to address some contextual challenges in the Global South, others have suggested the importance of looking at the process by which innovations are adopted and used (Nielsen, 2017). Riggins and Dewan (2005) argue that solving the problem of the digital divide requires more than just resolving access issues; it also calls for giving individuals who already have access to technology the skills they need to use it effectively. Illustrating the use and adoption of mobile phones, Porter (2020) reveals a complex interplay between phone ownership and usage, female empowerment and persistent poverty in Africa. The current study also explicates how social and cultural structures, such as context, influence the processes of technology adoption and use.

Diga and May (2016) explain the role of context and characterise ICTs and their applications as embedded in a broader socioeconomic, political and dynamic spatial context that frames their implementation and usage. Despite the enormous benefits that digital technologies can bring to the Global South, other studies have shown that understanding contextual issues is crucial as these innovations may also introduce new challenges and reintroduce old ones depending on the context in which they are applied (Madon et al., 2009; Nielsen, 2017). Nielsen (2017) finds the idea that digital technologies have democratised innovation in relation to the Global South oversimplified, noting that it can only be true if digital innovation is accessible to all and knowledge capacity is distributed equitably. These observations present a variety of research opportunities to better understand the relationship between context, the application of digital innovation and their role in promoting socioeconomic development. Moreover, to

understand the value co-creation process within ecosystems, there is a need to understand the influence of context as the process takes place.

2.6.3. Opportunities and challenges from digital platform ecosystems in the Global South

This section examines the role of digital platform ecosystems in the Global South. As explained in Section 2.3.1.3, platform ecosystems are composed of both technical and sociotechnical elements that co-evolve and produce complex and dynamic structures that co-create value with potential developmental impact. Although the potential influence of digital platform ecosystems to generate socioeconomic value for development has been recognised, Bonina et al. (2021) point to the paucity of literature examining this topic. Consistent with the approach adopted in the previous sections, the discussion will examine value co-creation from three perspectives on digital platform ecosystems for Global South contexts.

2.6.3.1. Structures and governance mechanisms in platform ecosystems in the Global South

The literature on ICT4D acknowledges the impact of the ICT ecosystem as an emerging and novel concept, suggesting that technology should be viewed as one component in a broader set of interdependent elements that includes non-technical dynamics (Diga & May, 2016; Nguyen & Mahundi, 2019; Nguyen, Nielsen, & Saebo, 2017). Bonina et al. (2021) relate digital platform ecosystems to ICT ecosystems, emphasising how both are comprised of technical features but influenced by the dynamics of social, political and spatial components in their use and existence. A number of studies from the Global South provide examples of how the structures of the sociotechnical elements and governance mechanisms influence the functioning of digital platform ecosystems.

Bonina et al. (2021) identify the District Health Information Software 2 (DHIS2) as a good example of a digital platform ecosystem that offers various insights into the sociotechnical and governance factors that influence the dynamics of the platform in a Global South setting. The global open-source project DHIS2, which is built on a digital platform and utilised in more than 73 countries to collect and analyse health data, is managed by the Health Information Service Provider (HISP) Centre at the University of Oslo (UiO), with each setting using a variety of local actors (DHIS2, 2022).

Nguyen and Mahund (2019) highlight the key actors involved in various ecosystem structures of DHIS2, such as government entities, development partners, civil society, academic researchers and end users, and the activities that they undertake in the ecosystem. The study demonstrates the dynamics of co-evolution and co-adaptation in the DHIS2 ecosystem, highlighting the interdependencies that surround the identified sociotechnical elements (Nguyen & Mahundi, 2019). The dynamic co-evolution is exemplified by the incremental and progressive steps taken through policy changes, skills and knowledge communications and self-evaluations, which collectively form new sociotechnical structures in the ecosystem. The growing influence of the DHIS2 program cannot be attributed to the digital platform alone but rather includes sociotechnical elements, such as structures and governance mechanisms. As examples of these sociotechnical elements, Bonina et al. (2021) point to hiring local developers to take advantage of local expertise for the immediate environment and the straightforward transferability of the innovation platform to other governments within the Global South to aid development in non-commercial environments.

The story of eKutir, an ICT platform used by an Indian social enterprise to progressively develop a self-sustaining ecosystem and solve aspects of smallholder farmer poverty, also illustrates the sociotechnical elements in digital platform ecosystems (Jha, Pinsonneault, & Dubé, 2016). Bonina et al. (2021) claim that the ICT4D literature considers digital platforms as typically including government, the private sector and non-governmental organisations as their traditional stakeholders and creating partnerships, networks and hybrid organisations. The eKutir example demonstrates how the platform's facilitation of collaboration and partnerships between various players within its ecosystem can prompt the creation of ecosystem structures that can deal with complex challenges in the Global South. The study by Jha et al. (2016) offers insights into how a digital platform ecosystem develops, emphasising its success characteristics and their effects on society at large and showing how digital platform ecosystems can unleash coordinated and multifaceted actions to tackle societal problems.

2.6.3.2. Platform ecosystem governance in the Global South

Platform ecosystem governance strategies, including resourcing the platform and securing with boundary resource tools, may have benefits for development in the Global South, according to some ICT4D studies. Bonina et al. (2021) argue that boundary resources allow platforms to

efficiently provide services and create applications suitable to the local context, which in turn enable platforms to be administered responsibly, affordably and at scale. Through an example from Latin America, Bonina and Eaton (2020) illustrate how the effective use of boundary resources in an open governance data platform supported the creation of a dynamic and cohesive platform ecosystem, demonstrating how governance approaches, such as the use of boundary resources, can facilitate an alignment for the platform ecosystem in developing contexts. Msiska and Nielsen (2018) provide an additional example of the usage of boundary resource tools through DHIS2. Similarly, Kapinga et al. (2019) examine a hybrid platform that tackles gender inequalities and inclusion challenges by enabling the co-creation of value and inclusion of underrepresented groups, thus contributing to ICT4D.

While some examples in this thesis showcase the developmental role of digital platform ecosystems, numerous challenges remain. Bonina et al. (2021) point to the dearth of research on platform ecosystems and their connections to development outcomes. Nielsen (2017) also emphasises this lack of focus on digital innovation and its associated effects on development. Studies on innovation platforms underscore the significant difficulties that many parties, including local developers and end users, confront while developing or utilising platform complements in their local contexts (Bonina et al., 2021). This viewpoint is consistent with earlier queries by Nielsen (2017) about whether digital innovation will result in a new digital divide, with Global South contexts positioned as passive recipients, or whether it will open up prospects for innovation from the developing world.

Bonina et al. (2021) also highlight limitations in knowledge regarding the efficacy of the present platform governance strategies in fostering a local ecosystem of third-party innovators in Africa. Other challenges include concerns about the adaptability and openness of digital platforms that can best enable local developers to take advantage of technological advancements. Studies also draw attention to the possibility that when used in certain contexts, digital platforms may help institutionalise new norms, particularly when they are perceived as covering institutional voids (Bonina et al., 2021; Khanna & Palepu, 2010). The studies also note that these results could have both beneficial and detrimental impacts on development. Therefore, Koskinnen et al. (2019) call for research into how digital platforms from the Global South and North differ to understand their implications and address any perceived challenges.

2.6.3.3. End user roles in digital platforms for the Global South

Bonina et al. (2021) identify various roles said to be performed by platforms in the Global South, which include being used as matchmaking tools by giving relevant information or as a means of reducing market friction by providing the pricing of goods to end users. Most of these studies on digital platforms in the Global South consider end users as the recipients of these services, focusing on benefits such as end users receiving relevant information and being connected to other groups. The identified challenges of access include technical constraints, lack of skills and affordability. While there is evidence of the proliferation of both transaction and innovation platforms in the Global South, the bulk of the research focuses on end users as passive recipients of IS innovations. Although, end users contributed important usage patterns during the development of M-Pesa that transformed the development of the initial IS offering (Hughes & Lonie, 2007), but end users' contribution to the innovation process has not received much attention in research. Among few examples, the crowdsourcing platform Ushahidi illustrates end user involvement in digital innovation as it allows for co-creation of value, emphasising the crucial role of end users in facilitating access to information and sharing knowledge (Marsden, 2013). In general, however, considering the critical role that end users need to play in the digital innovation process for ICT4D studies, there is a substantial gap in research addressing this area.

2.7. Conceptual framework for understanding value co-creation in mobile money ecosystems

Following a comprehensive review of the literature, this section seeks to synthesise the different identified theories to ascertain commonalities, differences and complementary elements that pertain to understanding the phenomenon of interest for this research. The outcome is a conceptual framework that will help analyse the dynamics of value co-creation in a mobile money ecosystem in the Global South.

This section discusses the intersection of the literature on value co-creation in platform ecosystems from three perspectives: ecosystem-as-structures, ecosystems as consumption systems and ecosystems as digital platforms (Adner, 2017; Vargo & Lusch, 2004, 2008a; Yoo et al., 2012). Each of these perspectives uses a different set of theories from a particular stream of literature, even though they all deal with ecosystem value co-creation (Autio & Thomas, 2019). Investigating value co-creation at the intersection of these different disciplines offers

opportunities to address aspects of the phenomenon that may be lacking in taking only one perspective. This may lead to an enhanced view of the phenomenon and connect previously unlinked theoretical constructs.

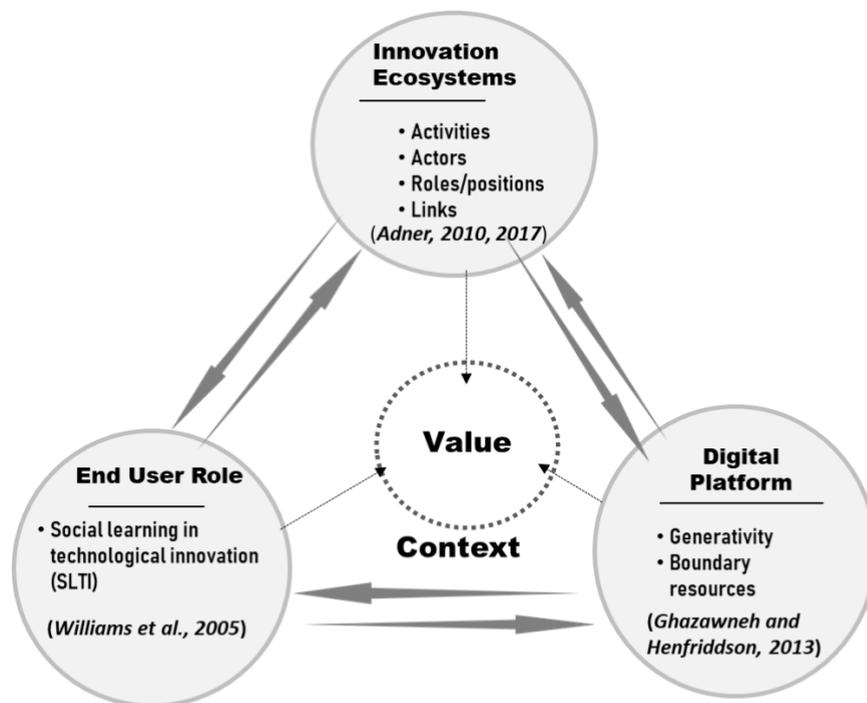
To summarise, digital innovation has significantly transformed the nature of value co-creation by facilitating innovation outside conventional boundaries and embracing collaboration between networks, ecosystems and societies (Nambisan et al., 2020). This has led to the emergence of new organisational forms of value creation, such as platforms and their related network of actors that can facilitate and coordinate interactions enabling various combinations of resources (Cusumano et al., 2019; Vargo & Lusch, 2008a; Yoo et al., 2010).

This examination of the literature has also shown that value is context-dependent and that relationships among ecosystem actors influence not only how value is perceived but also how productive exchanges impact the larger social context in which value is co-created (Chandler & Vargo, 2011). Therefore, the conceptual framework will incorporate the role of context in a Global South setting to support the examination of the value co-creation process.

2.7.1. Synthesising ecosystem structures, digital platforms, consumption systems and value co-creation in a Global South context

The review of the three disciplinary perspectives of ecosystems has revealed some clear distinctions between each viewpoint regarding how they conceptualise ecosystem, value and value co-creation. Despite the fact that each literature stream places a significant emphasis on particular constructs, the literature review also highlighted areas that were either overlooked or inadequately addressed from the perspective of a single discipline. These gaps leave room for knowledge from the other perspectives to construct a more comprehensive understanding of ecosystem value co-creation. The similarities in the fundamental concepts and underpinning constructs within the distinct ecosystem perspectives enable theory synthesis and integration that support the development of new and enhanced conceptualisations (Jaakkola, 2020). As pointed out by Autio and Thomas (2019), some commonalities between the perspectives include the terminology used to characterise the phenomenon, such as “ecosystem”, “value”, and “value co-creation”.

Based on these concepts, a theoretical framework for examining ecosystem value co-creation in mobile money ecosystems is derived, as depicted in Figure 2.2. The framework focuses on how diverse mobile money ecosystem elements and actors influence the dynamics of ecosystem value co-creation. It is guided by a sociotechnical theoretical and analytical view of mobile money platforms and their related ecosystem and context. To understand the unique challenges and constraints that could shape ecosystem value co-creation through the evolution of the ecosystem, the analysis takes into account and examines a wide range of ecosystem aspects. These areas include the role of context, governance mechanisms, digital platform and end user roles across the various lifecycle stages of the ecosystem value co-creation process. The analytical approach also includes the identification of the key enablers in value co-creation and the intersections between the perspectives necessary for sustaining mobile money innovations. It emphasises the ecosystem approach to value co-creation, along with interdependencies within the ecosystem.



Source: Author

Figure 2.2: Conceptual framework for value co-creation in mobile money ecosystems

Conceptually, the ecosystem-as-structure approach is the foundational framework for understanding the structural elements and governance mechanisms that characterise an ecosystem and enable it to co-create value. This strategy framework represents an alignment structure for a constellation of actors who interact and coordinate as they compete and

collaborate to realise a focal value proposition (Adner, 2017; Jacobides et al., 2018). This study draws on this strategy perspective to examine the structures and sociotechnical interactions that govern the value co-creation process at the macro level. However, this strategy lens lacks detail regarding end users as a consumption system and how they create meaning and practical usage from the offerings.

The review has also shown that the structural perspective of ecosystems focuses on maintaining a transactional relationship with end users and that value is considered in terms of instrumental utility for end users (Autio & Thomas, 2019). Therefore, it pays little attention to end users' roles and contributions in the value co-creation process. However, studies show that value co-creation with end users is a crucial component of successful innovation in Global South settings (London, 2008). For digital innovations to be considered relevant, people at the BoP must not be considered passive recipients of IS offerings but given opportunities to influence and shape innovations as active participants in the value co-creation process (London, 2008; Nielsen, 2017). Therefore, to illuminate this end user role in the proposed conceptual framework, we integrate a social learning in technological innovation (SLTI) approach to glean deep and detailed insights into how value is co-created at the micro level by the individual use and appropriation of the technology that filter through to macro-level structures of the ecosystem. The SLTI approach provides an analytical framework for the role of the end user as they adapt technological innovations into daily use in a particular social context (Stewart & Hyssalo, 2008; Williams et al., 2005). Stewart and Hyssalo (2008) argue that embedding technological innovations into daily usage involves a prolonged journey of learning and collaboration between a diverse set of actors.

While the ecosystem-as-structure approach emphasises governance mechanisms and a structural view of ecosystem value co-creation, it also overlooks the role of digital platform generativity in value co-creation. For instance, some studies show the weaknesses embedded in the strategic approach to ecosystem value co-creation through a predefined value proposition or “ecosystem blueprint”, which is championed by a focal actor (Hannah & Eisenhardt, 2018; Iansiti & Levien, 2004). This structural view ignores the digital platforms' roles in facilitating ecosystem value co-creation through generativity, which calls for flexibility in the blueprint approach. Therefore, using the boundary resources model and platform governance approaches, the study examines how platform ecosystems support value co-creation with other actors (Ghazawneh & Henfridsson, 2013; Huber et al., 2017). Consequently, the next two

sections focus on explaining how SLTI and boundary resources theories complement the ecosystem-as-structure approach to offer useful insights on the dynamics of value co-creation in ecosystems.

2.7.1.1. Social learning in technological innovation

SLTI involves understanding the roles of end users and intermediaries in the development and appropriation of digital innovations during the value co-creation process (Williams et al., 2005). SLTI is a sociotechnical analytical framework that explores how end users understand technological innovations and interpret and bring meaning to their usage. The SLTI model incorporates “innofusion”, which refers to the continuation of innovation during the implementation and use of the offering (Fleck, 1988), and “domestication”, which is the process of integrating the offering into end users’ daily usage (Schuurman, De Moor, et al., 2011; Silverstone & Haddon, 1996). The focus of the social learning in technological (SLTI) model is on determining how generic ICT capabilities and functionalities are applied and used through collaboration and knowledge flows between the actors (Rip, Misa, & Schot, 1995; Williams et al., 2005). Stewart and Hyssalo (2008) argue that embedding technological innovations into daily usage involves a prolonged journey of learning and collaboration among a diverse set of actors. Thus, technological innovation is a process involving periods of interaction and negotiation among various actors in interrelated cycles of development and is subject to divergences of power and interest (Rip et al., 1995; Stewart & Hyssalo, 2008). The SLTI approach allows for representations of end users and uses, as well as their interpretation, which ultimately assists in defining both the innovation designs and relationships between sets of actors.

Caneque and Hart (2017) argue that the success of innovations in BoP markets is contingent on firms harnessing the opportunities and knowledge available by interacting with other actors during the innovation process. In this value co-creation process, the end user has an important role to play in defining their needs and providing ideas on how the innovation can be developed further (Dedehayir et al., 2018). At the micro level, co-creating solutions with the poor is crucial during the innovation process in BoP markets (Cañeque & Hart, 2017). It has been argued that for products and services to address the needs of BoP markets, they should be largely shaped by the life experiences, literacy levels and social barriers, among other aspects, of the end users, rather than being end user driven (Viswanathan & Sridharan, 2012). Chandler

and Vargo (2011) highlight the criticality of context during the value co-creation process. Global South countries are thought to provide significantly different contexts from Global North countries for end user innovation under various constraints, such as low levels of literacy, availability of meagre resources and poor access to new technologies (Nakata & Weidner, 2012; Praceus, 2014). Thus, the SLTI framework provides an opportunity to capture the socially informed perspectives visible when digital innovations are embedded into daily usages, while acknowledging the role of human agency in shaping the innovation process (Poole, Ven, Kevin, & Holmes, 2000; Williams et al., 2005).

The SLTI framework conceptualises innovation as a learning process to understand the active role and involvement of end users as they contribute to the evolution of the innovation during the innovation process. However, the SLTI approach considers the innovation venture from a stand-alone firm perspective, with its success or failure driven by the firm's strategy, business model or value proposition, among other aspects. However, as Caneque and Hart (2017) argue, to address the unmet needs of BoP contexts, innovation cannot occur only within a single firm but must be integrated into ecosystems on the ground that comprise different actors, such as value-demanding end users, creative entrepreneurs and other similar entities in the Global South.

By integrating SLTI framework into the ecosystem-as-structure, the study can leverage on the strengths of the theories to understand the innovation process in these BoP contexts. While the ecosystem-as-structure approach allows us to focus on the structures and actors needed for the innovation process, the SLTI framework elucidates the activities and processes to be undertaken by the end users and intermediaries during value co-creation process, which are key for successful innovation. The value co-creation process employs generic mechanisms that include learning-by-doing to understand the uses of the innovation, learning-by-interacting for knowledge sharing and learning-by-regulating through rules and policies.

2.7.1.2. Boundary resources

To understand how digital platform facilitate value co-creation in platform ecosystems, the study utilises the boundary resources model (Ghazawneh & Henfridsson, 2013) to explicate the dynamics of generative value co-creation with third party actors. Foerderer et al. (2019) argue that examining the complex and dynamic sociotechnical interactions at the boundary

between platform owners and complementors offers an opportunity to gain further insights into platform governance and ecosystem-related tension. The boundary resources model provides a lens through which to gain insights into how platform owners facilitate ecosystem value co-creation as they manage ecosystem governance by enforcing control and enabling platform generativity. Examples of tools for resourcing include APIs or software development kits (SDK), both of which enable developers to access the platform's core resources (Ghazawneh & Henfridsson, 2013). The second governance role enables the platform owner to secure platform control and maintain platform integrity by providing appropriate rules and regulations that ensure that the overall quality is not compromised and remains in line with the platform's goals (Boudreau, 2010). A typical example of a securing role would include implementing a set of guidelines, rules or activities for platform complementors. The rules and tools provided by boundary resources assist in understanding the platform owner's control and complementors' contributions to innovation.

2.8. Chapter Summary

This chapter has presented a detailed literature review of the key constructs and theories that underpin the mobile money platform ecosystems. The chapter began by elucidating the concept of innovation and how it has evolved from general innovation to digital innovation in the IS discipline. The chapter then explained how the crucial properties of digital technologies and infrastructure had given rise to digital innovation. The following section explained on how digital innovation has led to the emergence of the new organisational forms in the name of digital platforms and their associated ecosystems underpinned. The next section started with expounding on concepts of value and value co-creation linking them to how value is created in ecosystems. The chapter also provided a detailed explanation of ecosystems and how different disciplines have conceptualized ecosystem value co-creation. This was followed by a section on fintech and how it represents a new frontier of digital innovation. After that the chapter presented the context of digital innovation and platforms in the Global South, highlighting the significance of context throughout this research and opportunities and challenges emanating from digital platform ecosystems for the Global South. This chapter has also elaborated and discussed the implications of using theories and approaches based on global North perspectives in understanding the global South context. The chapter concluded by presenting a conceptual framework that was created by synthesizing and integrating the different concepts presented in this chapter. The conceptual framework will help to explore and understand the dynamics of

value co-creation in a mobile money ecosystem in the Global South context. The next chapter will present the methodology adopted for the study.

Chapter 3: Methodology

3.1. Introduction

This chapter provides the research methodology that the study has adopted to accomplish the research objectives. The research methodology comprise the approach, strategy, and methods utilised in the research to address the study questions. The ontological and epistemological assumptions of a researcher guide the selection of the methodology, and any research design should start from these assumptions (Myers, 2013). The development of the research methodology was based on the aim of this study – *to understand the dynamics of value co-creation in a mobile money ecosystem in a Global South context*.

Research methodology describes a series of procedural steps that a researcher undertakes to describe, investigate, justify, and address a specific subject in a specific context (Ritchie, Lewis, Nicholls, & Ormston, 2014). These steps include philosophical assumptions, research design, data collection methods, and the approach to data analysis. The ultimate goal of undertaking these steps is to ensure that the research provides a comprehensive understanding of a complex phenomenon, ultimately producing new knowledge that can inform conclusions and create a pathway to the greater good and social action (Jones, Torres, & Arminio, 2006; Taylor, Bogdan, & DeVault, 2016).

The chapter commences with an explanation of what comprises a research methodology. The discussion then moves into the philosophical assumptions that underpin this research in relation to the research paradigm, ontology and epistemology. This is followed by a discussion of the research strategy that has been adopted for this study and justification for the adoption of a qualitative research approach. Then the next section presents a comparison of the different qualitative methodologies and justification for case study research design. Data collection approaches for the research are then discussed in more detail. The strategy for data analysis is then presented followed by sections on the research design quality and procedures. This chapter's final section describes the ethical considerations that guided this study, and it concludes with a brief summary of the main points from the chapter.

3.2. Research Philosophy, Design and Strategy

3.2.1. Philosophical Stances

A research study's philosophical stance, which outlines the beliefs and underlying philosophical assumptions that will guide it, is an essential part of the research process. Myers (2013) point out that any research must be premised on some fundamental philosophical assumptions pertaining to what would entail it being regarded as “valid”, and which methodologies would be suitable for the study. Creswell and Poth (2018) further argue that these worldviews are an outcome imparted to researchers over time in the course of their educational training, pedagogy through books and papers, knowledge passed on by mentors and advisors and through academic engagement with other scholars and peers. Saunders et al., (2018, p. 130) describe research philosophy as “a system of beliefs and assumptions about the development of knowledge.” Crotty (1998) argues that the understanding of the research questions, the methods you employ, and how you interpret your findings are all necessarily influenced by the research assumptions. Therefore, to develop better research practices academics have suggested that researchers should maintain consistency between their philosophical assumptions and the methodological techniques they use (Myers, 2013). The philosophical assumptions are a key component in the selection of theories and frameworks that guide study and inform the research approach to be adopted (Creswell & Poth, 2018; Crotty, 1998). A framework adapted from Creswell and Poth (2018) that outlines key phases of the research process and the philosophical assumptions and interpretive frameworks to be taken into account at each stage of the research process is presented in Table 3.1

Table 3.1: Phases of the research process and key philosophical considerations to be taken into account

Phase	Key considerations	Key questions that assist in exploring the research
Phase 1: The Researcher	<ul style="list-style-type: none">• Tradition and history of the research• Perspectives of self and others• Research Ethics	What perspectives and experiences does the researcher bring to the study?

Phase	Key considerations	Key questions that assist in exploring the research
Phase 2: Philosophical Assumptions and related frameworks	<ul style="list-style-type: none"> • Ontological • Epistemological • Axiological • Methodological 	How do the researchers' beliefs and assumptions guide the actions of the research?
Phase 3: Research Strategies and Approaches	<ul style="list-style-type: none"> • Case study • Ethnography • Phenomenology • Grounded theory 	Philosophical and theoretical frameworks, which inform the choice of research, approach.
Phase 4: Data Collection Methods and Analysis	<ul style="list-style-type: none"> • Observation • Interviews • Artefacts, documents and records • Visual methods 	In what ways does the research approach influence the data collection methods and analysis?
Phase 5: Interpretation and Evaluation	<ul style="list-style-type: none"> • Evidence, criteria, policy and politics • Rigour • Writing as interpretation 	What contributes to the researchers' decisions related to rigour, inferences and use of findings?

Source: (Adapted from:(Creswell & Poth, 2018; Denzin & Lincoln, 2018))

3.2.1.1. Philosophical Assumptions and Paradigms

Creswell and Poth (2018), provide three reasons on the need for philosophical assumptions in a research study. Creswell and Poth (2018) contend that philosophy is essential to research because it influences the research goals and findings, validates the researcher's training and experience, and provides the framework for judging research-related decisions. Orlikowski and Baroudi (1991) proposed three fundamental beliefs that can be considered as core to research perspectives that researchers adopt towards the research of a particular phenomenon, and these beliefs include:

- Beliefs on the nature of physical and social reality;
- Assumptions and beliefs on knowledge;
- Beliefs regarding the relationship between knowledge and the empirical world.

Myers and Avison (2002) refer to these beliefs as philosophical perspectives on whose assumptions research is based and what constitutes ‘valid’ research and whose methods are appropriate. Table 1.2 below expounds on these beliefs and describes what each one represents (Myers & Avison, 2002).

Table 3.2: Key philosophical beliefs and definitions (Myers & Avison, 2002).

Beliefs	Definition and Description
Beliefs about physical and social reality	<p>Ontology: Described as the assumptions on how to perceive reality and its nature. It characterises reality as having multiple perspectives as seen through human points of view. Either it is objective and freely exists of humans, or subjective and only exist through human perception.</p> <p>Rationality: These are beliefs that determine relatedness that the researcher attributes to the human subjects they study.</p> <p>Social Relations: these are beliefs regarding the social interactions of people in organisations, society or groups.</p>
Beliefs about knowledge	<p>Epistemology: Beliefs regarding the nature of knowledge and how it is acquired. It deals with the acquisition and evaluation of valid knowledge about a phenomenon.</p> <p>Methodology: assumptions that serve as the foundation for determining whether research techniques and processes are appropriate for gathering reliable empirical data.</p>
Beliefs about the relationships between	<p>Theory and Practice: These are assumptions that deal with the purpose of theory in practice and reveal the values and intentions researchers show through their work.</p>

Beliefs	Definition and Description
knowledge and empirical world	

Source: Adapted from (Myers & Avison, 2002)

These underlying philosophical perspectives always guide the research approach. This section focuses on elucidating on three key perspectives, namely, positivist, interpretive, and critical realism:

- **Positivism:** characterised by using a scientific approach to inquiry, is based on the ontology that reality is objective, and exists independently of humans. Positivism believes reality can be accurately measured by an observer and is free from human bias (Saunders et al., 2016). Epistemologically, the positivist perspective is concerned with facts that are practical and measurable (Myers & Avison, 2002). Therefore, positivism focuses more on undertaking deductive theory testing with more focus on conducting an analysis of the measurable observations. Therefore, it is argued that information systems’ research can be categorised as positivist “if there is evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from the sample to a stated population” (Orlikowski & Baroudi, 1991, p.6).
- **Interpretivism:** the core assumption is premised on the existence of multiple and diverse realities which can be understood through the subjective experiences of people and the meanings these individuals potentially attach to them (Creswell & Poth, 2018; Saunders et al., 2016). The understanding is that reality is subjectively created through human action, and hence, given different meanings which are attached to a phenomenon influenced by culture and language (Saunders et al., 2016). Its goals include looking at a phenomenon from different perspectives and understanding the diverse narratives, experiences and interpretations of individuals. The researcher is also considered part of the research, and thus, subjective as their own values and beliefs influence their interpretation of the research (Myers & Avison, 2002). In the context of interpretive methods of research in IS, Walsham (1993, pp.4-5) suggests that these are “aimed at

producing an understanding of the context of the information system, and the process whereby the information system influences and is influenced by the context". Myers and Avison (2002), argue that Interpretivism aims at understanding the participants' interpretation and subjective meanings to a phenomenon. Interpretivism typically adopts an inductive research theory approach in which theories are derived from the research findings.

- **Critical Realism:** this relates to describing the experienced structures of reality that influence noticeable events (Saunders et al., 2016). Its ontology is based on the belief that reality is external and exists independently of humans, although it is not possible to access it within our observation and knowledge; thus, reality comprises what is termed the empirical and the actual (Saunders et al., 2016). The actual is made up of both occurrences and semi-occurrences as manifestations of things formed by the real rather than actual things that may or may not have occurred (Saunders, Lewis, & Thornhill, 2019). As a result, the critical realist places a strong emphasis on explaining institutional occurrences that can be seen or experienced while looking for the underlying reasons for and ways in which fundamental social structures have an impact on day-to-day living (Saunders et al., 2019).

Pragmatism: characterised by non-reliance on one single method or technique and also not committed to philosophical approach or reality, but the belief that emphasis for research is on the issue being studied and the sort of inquiry and solutions that best address the research problem (Creswell & Poth, 2018).

3.2.1.2. Rationale for selecting interpretive research paradigm for this research

This study aims to understand dynamics of value co-creation in a mobile money ecosystem in a Global South context specifically in Malawi. Therefore, selecting an appropriate research paradigm is crucial, as it also influences the selection of research approach. Digital innovations such as mobile money have gained wide usage as they have been deployed across Africa in general and Malawi in particular. Since their emergence, they have generated a novel phenomenon across many countries of the Global South and have a transformational potential impact across various levels of society, ranging from individuals, firms, and governments. This diverse range of actors involved in the implementation and functioning of mobile money ecosystems include: service providers and technology start-ups; government entities that

provide policy and regulatory direction; agents who have an intermediary role and end users who are the ultimate end-users of the system. Thus, each actor in this ecosystem has a unique viewpoint on how to interpret the phenomenon because of the wide ranging roles that each of these actors perform in the process of co-creating value. Therefore, ontologically the researcher will attempt to investigate the studied phenomenon to understand its reality as seen by these different actors. Each of these actors will have different perspectives on the factors influencing the value co-creation process, including the enablers and impediments and how these impact the value co-creation process. Thus, it can be assumed that multiple realities are constructed by the actors through their experiences and their interactions in the ecosystem.

The perceptions and narratives that participants hold, as well as their interpretation of events regarding the phenomenon of interest for this study, are vital in understanding the researched subject. Although, the knowledge gained from the participants will be characterised by researcher subjectivity, attempts will be made to reduce this bias by getting as close as possible to the participants and ensuring that their individual experiences are well understood and contextualised. Reality will, thus, be created between the researcher and the participant, as well as being influenced by these individual experiences. Cognisant that bias is a prevalent issue in any research (Creswell & Poth, 2018), this study therefore recognises that values may influence the narrative and interpretations for both the researcher and participants. Thus, issues will be discussed openly. Lastly, methodologically, the researcher will use inductive logic and will study the topic within its base context. The approach adopted for this inquiry will ensure that field studies are conducted that examine the participants within their own social settings. Therefore, this research adopts an ontological belief of social constructivism from an interpretive framework of study.

3.2.1.3. Approaches to theory development and theory testing

The literature demonstrates the critical role of theory in assisting a researcher to decide on which approach to adopt for the research design. Theory is described as the “systematic body of knowledge grounded in empirical evidence which can be used for explanatory or predictive purposes,” (Saunders et al., 2019, p.47). Theory provides the ability to explain how the concepts relate to one another. According to Saunders et al. (2019), the justification for incorporating theory into research is that it offers an organizing framework for making sense of complexity and the capacity to offer reliable conceptual justifications. There are two

common approaches of reasoning for adopting theory into research, known as deductive and inductive (Bryman, 2016; Myers, 2013).

In a deductive approach, a hypothesis is developed from the body of literature by choosing a clear theoretical position, which is then followed by the design of appropriate testing strategies through collection of empirical data (Saunders et al., 2019). Myers (2013) points out that the deductive approach is sometimes referred to as “top-down” as the researcher commences the study with a broad theory that is then developed into one or two hypotheses which are later tested. Therefore, deductive reasoning is the most effective technique to help researchers support, challenge, or amend theories.

On the contrary, with inductive reasoning, the researcher begins "bottom up" by gathering the study's data in order to examine the issue, and as the data are gathered and analysed, a theoretical explanation is developed (Myers, 2013; Saunders et al., 2019). After analysing the data, some patterns may begin to emerge which can then be used to formulate a hypothesis that can be explored and developed into a general theory. The main distinction between the two approaches is that inductive methods are used to build theories, whilst deductive reasoning is typically employed to test theories (Bryman, 2016; Saunders et al., 2019). Myers (2013) argues that both inductive and deductive logic can be adopted in qualitative research, but inductive is more prevalent because its objectives are wider-ranging and exploratory, whereas the goal of deductive is to test a theory and therefore narrower and more confined.

While it is important to take into account the relationship between theory and research along the lines of deductive and inductive reasoning, Bryman (2016) points out that sometimes the divide is extremely small and not as distinct. Saunders et al. (2019) refer to the iteration between deductive and inductive reasoning in research as abductive approach. In this case, the series of steps may include acquiring empirical data to investigate the phenomenon, developing themes, and explaining patterns. From there, a new or modified version of an existing theory is developed, and it is then put to the test by gathering more data.

3.2.1.4. Rationale for the inductive approach to theory development

This study aims to understand the dynamics of value co-creation in a mobile money ecosystem in a Global South context. As discussed in the literature and the conceptual framework chapter, an ecosystem involves complex sociotechnical interactions and dynamic relationships, which enable value co-creation. There is uncertainty that arises in ecosystems due to the complex interplay that emerges between the various actors during the value co-creation process. This unpredictability produces a dynamic environment that is complex and context dependent. Therefore, given such a complex and dynamic setting that an ecosystem provides and particularly in this Global South context, it would be inappropriate to formulate a hypothesis based on existing literature and theory that could be tested for this setting. Therefore, an inductive reasoning approach is more suitable for this research. Furthermore, the research aim and open-ended nature of the research questions entail that an inductive approach is the most appropriate for the study.

Additionally, to achieve the aim of the research, the study developed an intermediary conceptual framework based on the literature review that provided foundational theories on which the conceptual lens was based. This conceptual framework was used as the lens to guide and familiarise the researcher with relevant background knowledge and theory (Bryman, 2016; Saunders et al., 2019). Saunders et al. (2019) argue that using the inductive approach does not entail ignoring theory while developing the research design or preventing the application of existing theory. Using existing theory in inductive reasoning aims to identify concepts that the study can investigate during the research process and support meanings that arise from the data (Saunders et al., 2019). Therefore, the use of existing theory on ecosystem value co-creation provides the theoretical lens to be used in identifying the key concepts that the research process could explore.

3.2.2. Research Design

The research design includes the methodological decisions and the research strategy selected for the study (Saunders et al., 2019). The choices of the research design are primarily influenced by the research philosophy and the theoretical reasoning approach adopted for the study. The primary objective of the research design is to ensure the researcher builds a research process that successfully translates the initial research questions into a coherent research project (Bryman, 2016; Saunders et al., 2019).

3.2.2.1. Research Approaches - qualitative and quantitative

The research approach comprises the fundamental strategies undertaken in the investigation of a phenomenon within a research study (Crotty, 1998). The research approach is defined as “plans and procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis and interpretation” (Creswell, 2014 p.152). Three fundamental approaches commonly used in research studies in particular are: quantitative, qualitative and mixed methods. A quick way to illustrate how qualitative and quantitative approaches differ from each other is in the representation of the data. Qualitative data are usually presented through text and graphics whilst quantitative data are presented through numerical formats. However, Creswell (2014) argues that a complete understanding of the differences between the two approaches lies in the underlying philosophical assumptions that the researcher brings to the study, the research strategy adopted and the specific research methods selected to conduct the research strategy.

In general terms, the quantitative approach is characterised by the collection of numerical data, the use of a deductive approach to comprehend the relationship between theory and research, typically uses a positivist epistemology and adopts an objectivist understanding of social reality (Bryman, 2016). The qualitative approach, apart from the data comprising words and images, tends to focus on inductive reasoning in understanding the relationship between theory and research and uses an interpretivist epistemological position and a constructionist ontological reality (Bryman, 2016).

3.2.2.2. Methodological choices

A brief explanation and the critical elements supporting each of these research approaches are included:

- ***Quantitative research*** - This approach examines relationships amongst data sets in order to test objective theories; the goal is to have the collected data measured, sorted and classified (Creswell, 2014). MacDonald and Headlan (2008) argue that the main purposes of this research approach are predictions, causal explanations and generalisability to the population of study; the main tools used are surveys; data collection is mostly structured using large samples to represent the object of research interest, and with results expected to be objective, it seeks exact size measurements and

analysis; the role of the researcher is mostly to remain detached from the subject matter with the final analysis based on statistical calculations.

- **Qualitative research** - This approach seeks to investigate and understand a social phenomenon through the interpretations or meanings that people attach to the phenomenon (Creswell, 2014). The aims of qualitative research are to present holistic and detailed descriptions of observations; its purposes include contextualisation, interpretation and understanding issues from multiple perspectives. Additionally, the researcher is the tool used to collect data, with the majority of the data being unstructured; the sample is typically small and not representative of the population; the results anticipated are subjective; the researcher has a subjective stake in the phenomenon being studied; and the final analysis is interpretive (MacDonald & Headlam, 2008).

Mixed methods research - A method that makes use of both quantitative and qualitative methods. According to Creswell (2014), the mixed methods approach is predicated on the idea that combining the two research philosophies results in a solid and superior understanding of the topic being studied than if the two were employed separately.

3.2.2.3. Rationale of Selecting Qualitative Research Paradigm

This study aims to acquire subjective and socially constructed views and perspectives from participants to enable the understanding of the dynamics of value co-creation in mobile money ecosystems in a Global South context. Therefore, the informants are expected to share their experiences and insights through the narratives they present in order to fully understand the meanings that the participants attach to the phenomenon under research. Thus, multiple interpretations and meanings that these participants attach to the phenomenon under study will be obtained. Taylor et al. (2016) state that a fundamental feature of qualitative research is to learn the diverse views and perspectives that the participants attach to the studied phenomenon. Furthermore, in order to understand this phenomenon, it will have to be studied in its natural setting, which is another key characteristic for a qualitative research approach. As Creswell and Poth (2018) observe, in a qualitative research approach, data collection is conducted in the participants' natural settings in order to ensure it is first hand, not filtered and observed face-to-face. By contrast, quantitative approaches may use a tool or instrument such as a survey form for data collection, which may filter some of the data from the participants.

This study will also seek to understand the influence that the contextual features may exert on the experiences of the participants regarding the phenomenon under investigation. Studying the phenomenon within its context enables a better understanding and is an inherent characteristic of qualitative research, but not often regarded in quantitative research (Creswell & Poth, 2018). Understanding the phenomenon under research within its context is essential as it enables the exploration into how and why the phenomenon has occurred in the way it has done from multiple perspectives. This approach also provides an opportunity to understand the evolution of the phenomenon over a period of time. Creswell and Poth (2018) also emphasise that the role of the researcher in a qualitative research approach is to act as a key instrument for data collection themselves and undertake examinations of documents and interviews without reliance on any external questionnaires or instruments provided by other entities. Therefore, the qualitative approach is the most appropriate to be adopted for this study as it enables the researcher to understand different perspectives of the issues relating to the studied phenomenon so as to achieve the research aims. Due to the requirement for an in-depth understanding of the phenomenon over time, some scholars in strategy and innovation have also supported the use of qualitative methodologies in studies that focus on the innovation process (Garud, Berends, & Tuertscher, 2017).

3.2.3. Research Strategy

This section focuses on providing the research strategy adopted for the study whose aim is to provide a plan of action to achieve the goals of the research. According to Denzin and Lincoln (2018), the research strategy, provides a plan that acts as a bridge between the research philosophy and the methodologies that are ultimately chosen to gather and analyse the data. This study's philosophical tenets are an interpretivist epistemology and a constructionist ontology, coupled with an inductive reasoning approach for theory development and a qualitative technique as a methodological choice. A suitable research strategy must be defined to support the selection of a research method, which would allow the attainment of the study goals.

3.2.3.1. Selecting a research strategy

Several qualitative research strategies exist in the social sciences, and key ones include: grounded theory, phenomenology, ethnography, action research and the case study (Creswell & Poth, 2018). Saunders et al. (2019) outlines some key issues that guide the choice of a research strategy in a study and they include: (a) the research questions (b) research objectives; (c) linkages between the underlying philosophy and research objectives/questions; (d) access to potential respondents and to obtaining additional data sources. The researcher's philosophical orientation about what would lead the study to a successful conclusion are some of the additional driving factors that influence the choice of a research strategy (Easterby-Smith, Thorpe, & Jackson, 2015). Table 3.2 below provides several research strategies that exist and brief description of each one, and highlighting suitability in relation to this research.

Table 3.3: Descriptions of some key methodological approaches

Methodological approach	Key characteristics	Suitability for the research
Grounded theory	<ul style="list-style-type: none"> • It is from a sociological background • Typically used to describe the meanings that social actors create to make sense of their everyday experiences in certain circumstances. • Most suitable when a researcher wants to support a theory with views derived from the evidence gathered. • The researcher undertakes several iterations of data collection • An inductively derived theory is constructed using a systematic and structured process. • The researcher can undertake both data collection and analysis concurrently 	Mostly used to develop a theory based on data sets from the views provided by research participants in the field. The method relies on actual everyday experiences to interpret meanings, however, may not adequately provide the required data relevant for our study questions.
Phenomenology	<ul style="list-style-type: none"> • Based on philosophical and psychology background. • The researcher focuses on meaning making from the lived experiences of 	Focus is to understand the substance of the experience and therefore not suitable for our research study as it is not

Methodological approach	Key characteristics	Suitability for the research
	<p>individual participants about the phenomenon.</p> <ul style="list-style-type: none"> • The most common unit of analysis is researching people with a common and shared experience. 	<p>just focusing on understanding lived experience.</p>
Action research	<ul style="list-style-type: none"> • Using iterative research approach for construct institutional development. • Uses a participatory strategy to handle coordination issues between the researcher and the participants. • Results obtained after completing a variety of steps, such as identifying issues, choosing an appropriate course of action, carrying it out, and evaluating the results. 	<p>As there is no collaborative work to be done between the researcher and participants, action research is not appropriate for this study. Additionally, there is no adequate time to undertake such collaboration</p>
Ethnography	<ul style="list-style-type: none"> • Background is in anthropology and sociology and these fields are primarily concerned with cultural phenomena or their interpretations. • In this kind of study, the researcher attempts to comprehend and analyse the behaviour that results from a group's shared characteristics over an extended length of time in a natural context. • Various approaches to data collection, common ones being observations and interviews. 	<p>Its focus is to describe and interpret the culture-shared patterns of a group however, for our research learning and interpreting for a group is not the primary focus so not suitable for our study.</p>
Case Study	<ul style="list-style-type: none"> • Case study methodology common across many fields. • It is used as evaluation criteria, through a detailed analysis of a case, for various issues. • Bounding done on time and activity 	<p>Most suitable for this research as it enables us to examine the phenomenon within its context and in an in-depth with a clear boundary of the case provided.</p>

Methodological approach	Key characteristics	Suitability for the research
	<ul style="list-style-type: none"> • The researcher gathers information using diverse methods and processes within its real-life setting. • Frequently responds to inquiries responding to ‘why’ and ‘how’ questions. 	

Extracted and adapted from : (Creswell & Poth, 2018; R Yin, 2014a)

3.2.3.2. Rationale for selecting case study strategy

Walsham (1995) states that the use of a qualitative case study is a well-established approach in an interpretive research paradigm. Additionally, Yin (2018) argue that a case study as a research strategy provides an opportunity to undertake an empirical study of a phenomenon in detail in its real-life settings. Bryman (2016) points out that adopting the case study as a research strategy enables a researcher to undertake an in-depth investigation of a contextual social phenomenon. Additionally, Yin (2018) highlights that the case study as a research strategy usually addresses questions that seek to explore and explain the “how” and “why” of contemporary events. These characteristics are especially relevant in this study where the aim of the research is to understand the dynamics of value co-creation in a mobile money ecosystem in a Global South context in-situ in Malawi. The case study approach is the most suitable research method to adopt for exploring the mobile money digital platform and its related ecosystem of actors in its real-life setting. To understand the interplay amongst various elements and their actions as they co-evolve to co-create value requires an in-depth understanding of the interactions to identify what is happening and the reasons and implications (Saunders et al., 2019). Furthermore, the case study as the research strategy enables a holistic enquiry in examining a contemporary issue within its established context, when there is a lack of a visible boundary between the phenomenon and its context, and multiple perspectives of evidence are utilised (R Yin, 2014a). Thus, the case study will enable the researcher to investigate and examine the interrelations and interactions between the ecosystem components in detail and within its context and generate rich insights and empirical descriptions from multiple angles (Saunders et al., 2019).

Klein and Myers (1999) and Walsham (1993) argue that the interpretive case study methodology in IS research has become more prevalent especially since the objective of the discipline has transformed from a technical focus to an organisational or human-related contextual and interpretative one; the case study has been widely regarded as an appropriate research strategy and recommended in many such scenarios. Additionally, case study strategy offers an opportunity to unravel high granularity levels when the area of study pertains to understanding a phenomenon that goes beyond what was originally planned to include human meaning. These properties make it suitable to understand the ecosystem context as it comprises interactions at different levels and within a dynamic context.

Benbasat et al. (1987) provide some features inherent in case study research strategies that make it suitable and appropriate as a research strategy for this study, which include: understanding the complexity and nature of the processes underlying the phenomenon; and where it occurs that fewer research studies have been conducted in the area under investigation. These aforementioned characteristics apply in this study; hence, it is the appropriate choice. The ability to enable the researcher to examine this ecosystem phenomenon in its natural settings and then understand in detail the complex interactions that enable value co-creation adds to its suitability.

Kaplan and Maxwell (2005), in justifying the suitability of the case study approach in research, argue that it affords the researcher an opportunity to collect data sets from multiple and diverse perspectives within a specific geographic context. Ritchie et al. (2014) reinforce this view and point out that the drawing of multiple perspectives in case study research strategy is critical in order to understand and explore in a holistic and contextualised manner the researched phenomenon. Furthermore, drawing multiple perspectives provides a better understanding of the phenomenon through various units of analysis, which is similar to what this research study intends to achieve by engaging various actors to gain multiple perspectives. The case study strategy will enable a better understanding of the role of the various actors within the ecosystem. Using a case study as the research strategy will also help to unravel how the ecosystem actors understand the value co-creation process in the ecosystem context and their role in this process.

Despite the advantages that the case study approach seems to highlight, other studies have also pointed out some noted challenges with the methodology (Saunders et al., 2019; Robert Yin,

2018). The challenges include the need to undertake the research study with rigour since some have characterised case study strategy as lacking rigour. Another aspect is the subjectivity of the researcher during the data collection phase, which may affect the analysis of the data. Lastly, another challenge is ensuring clarity on how to deal with generalisability of the conclusions during the research. For our specific research, these concerns will be taken into consideration to ensure they are appropriately addressed.

3.2.3.3. Defining the case study and its applicability to this study

Over time, researchers have developed several definitions of "case study" to reflect the term's richness and the variety of connotations it carries (Denzin & Lincoln, 2018; Myers, 2013). Yin (2018) offers one of the most widely adopted definitions of a case study and describes it in two parts. The first part of the definition focuses on the scope and thus describes the case study as an "empirical method that investigates a contemporary phenomenon in depth and within its real-world context, especially when the boundaries between the phenomenon and context may not be clearly evident" (Yin, 2018, p. 15). The second part focuses on the characteristics of a case study and states that it handles a wide range of distinctive situations, benefits from using prior theoretical propositions, and uses a variety of sources of evidence.

The study adopts this definition by Yin (2018) as it is the most applicable to the study. Some of the key aspects that make it applicable include the aspect of "within its real-world context" implying that the phenomenon being studied is explored within the current settings in Malawi. The phenomenon of interest for this research is integral to the narrative because it cannot be separated from the settings in which it operates. Myers (2013) compares the use of case studies to other research techniques, like experiments, where the major objective is for the researcher to maintain control of a set of predetermined variables and to clearly distinguish the background from the phenomenon being examined. This is not the case in a case study as the researcher has no control over any variables. Another aspect that is crucial in Yin's (2018) definition is that of investigating a contemporary phenomenon, in this case, the topic of understanding the dynamics of value co-creation in a mobile money ecosystem is quite a recent phenomenon thus the case study approach is most suitable for this study. Furthermore, to the best of our knowledge, there have not been many studies that have examined the dynamics of value co-creation in a mobile money ecosystem in the Malawian setting before. In addition, because the research participants will come from a diverse range of actors, this will give the

researcher an in-depth understanding of the phenomenon of interest. Finally, the case study methodology will enable the utilisation of multiple data sources and earlier theoretical conceptualizations during the research process.

3.2.3.4. Designing the case study

Research has shown that numerous case study types and categorization techniques have been conceptualised in the literature (Stake, 1995; G. Thomas, 2016; Robert Yin, 2018). Contrasting approaches have been employed, and in the majority of cases, there is no clear consensus on the most effective way to classify the various case study types. Thomas (2016) claims that multiple case study categories and types exist partly to encourage and assist researchers in framing, contextualising, and determining whether the case study strategy is a suitable choice for the research process. Thus, Thomas (2016) argues that researchers must consider their specific research questions first then determine the appropriate research design when categorising case studies. Therefore, the next section deals with selecting the appropriate research design. Yin (2018) highlights three types of cases used in social science research: (a) explanatory case study, (b) exploratory case study (c) descriptive case studies. The focus is initially placed on defining the case in order to determine a suitable research design that fits a particular research type. Two crucial tasks are undertaken, defining the case and then binding the case (Robert Yin, 2018).

3.2.3.5. Defining the case

To define a case, Thomas (2016) describes the subject as the first condition for defining a case that represents focus for the research. Three types of subjects are presented namely: key, outlier, and local case. These all elucidate the choice of focus for the case study. The key case represents a good example of something when there is inherent interest in the case itself. The second type is the outlier case which signifies a case that is different from the norm. Then the third type is the local case which symbolises a case type of an issue within one's personal experience on which they have an interest to research more on it. For this particular study, the characterisation is a key case considering that there is an inherent interest to understand the dynamics of value co-creation in a mobile money ecosystem in Malawi in its own right. The interest stems from the fact that the case itself is of value to explore and understand the phenomenon from various perspectives.

Thomas' (2016) second criterion for the classification of case studies is based on the purpose of the case which aims to understand the dimensions for the analytical frame for a case study. The description for the kind of cases included in this category are: intrinsic, instrumental, evaluative, exploratory and explanatory (Thomas, 2016). Stake (1995) describes an intrinsic case as one in which the ultimate goal is to understand the case better, not mainly because it is representative of other cases, or has similarities with other issues, but because of its inherent nature which leads researchers to have an interest to understand it. An instrumental case is used to achieve an understanding of a particular situation, which provides knowledge of a phenomenon or helps to test a theory; the case itself is not of primary interest, however, it plays a supportive role, and facilitates the understanding of some other phenomenon (Stake, 1995). In an evaluative case, the main purpose is to assess how well something is working or if it has met its intended objective (Thomas, 2016; Yin, 2018).

An exploratory case study is typically adopted when a researcher wishes to learn more about a phenomenon or subject of interest and understand what is happening by the opportunity it affords for asking open questions. Exploratory case studies are conducted when the researcher is faced with an issue that requires responses to the "how" and "why" of a phenomenon and there is a need to know more of what is happening and why it is happening (Thomas, 2016). According to Saunders et al. (2019), this means that because exploratory investigations take an unstructured approach, there are more opportunities during data collection for researchers to pose open-ended questions and delve deeper into the data. Additionally, Bryman (2016) emphasises that exploratory case studies take a relatively unstructured approach to the research process and are more closely related to developing than testing theories. Therefore, exploratory case studies provide opportunity to examine complex and contextual phenomena where theory may be established; however, it is essential to consider participant experiences and context to understand how the phenomenon has emerged.

An explanatory case study is used when the researcher's objectives are to clarify the underlying links in an intervention so as to offer explanations based on the linkages between the various elements. Explanatory case study is employed when trying to explain the apparent relationships in cases that are too complex for survey or experimental procedures.

After considering the fundamental concepts for each of the various types of cases, this research study's case is defined as follows. This case study has an intrinsic nature since the primary

interest is to understand the phenomenon under study itself (Stake, 1995). Additionally, the case is also of an exploratory nature. To reiterate, the aim of this case is to understand the dynamics of value co-creation in mobile money ecosystems in a Global South context. Therefore, by its nature the case is trying to explore how value gets co-created between the different actors and their roles in the ecosystem with the Global South providing the context. Yin (2018) claims that the exploratory case study methodology is the ideal technique for addressing "how" related questions. As the literature review has shown, a point to bear in mind is that value co-creation among ecosystem actors unfolds in a complex environment inside dynamic contexts. Studies have revealed the metaphorical construction of words like "value," "co-creation," and "ecosystem" and identified this as a barrier to empirical research (Grönroos, 2012; Xie, Wu, Xiao, & Hu, 2016). Other studies have also shown that exploratory case studies offer opportunities to research complex and contextual phenomena by dissecting concepts from challenging processes and evaluating their applicability in specific settings. The exploratory case study provides a chance for participants to provide descriptive substantiation, as the value co-creation approach implies a dynamic interaction process between ecosystem actors. Lastly, to the best of this researcher's knowledge, very few studies have investigated the dynamics of value co-creation in mobile money ecosystems in a global South context and therefore it is new terrain. Therefore, the exploratory case study approach provides an opportunity to gain new theoretical insights and develop theoretical frameworks.

The third classification criteria which Thomas (2016) proposes is based on the approach that a case study adopts when collecting the data, and this is premised on the ultimate goals of the case. The current case adopts an interpretive approach to understand the participants' views from their own perspectives and within their settings, but also evaluates emerging ideas, in order to assess the potential of generating a conceptual framework from the linkages in the outcomes.

The process of constructing the case as part of the design procedure, whether it involves one case or multiple cases, is another classification approach. Yin (2018) describes a single case as an investigation of a phenomenon within a single case, and has two variants for units of analysis: holistic and embedded. In a single case, a holistic design involves a single unit of analysis set at a single level, whilst an embedded single-case design involves units of analysis set at more than one level (see Figure 3.1). The ability to study sub-units that are a part of a larger case is a significant method for conducting various forms of analysis within, between,

and across subunits of analysis (Baxter & Jack, 2008). Studies, however, also emphasise the necessity of giving careful consideration when developing single-case study designs within a particular research environment (Thomas, 2016; Yin, 2018). The capability to conduct such an in-depth analysis only helps to provide deep insights of the case.

A multiple case study is one which involves studying a similar phenomenon at various levels of occurrence within the same cases, in order to understand similarities or differences (Baxter & Jack, 2008). A multiple case study also has two design variants, as shown in Figure 3.1 (Yin, 2014). This is similar to undertaking multiple experiments. Baxter and Jack highlights the key difference between the designs that a researcher will be able to assess both within and between settings using a multiple case study. This is unlike a holistic case study which only enables the researcher to comprehend one instance in one context as depicted in Fig 3.1

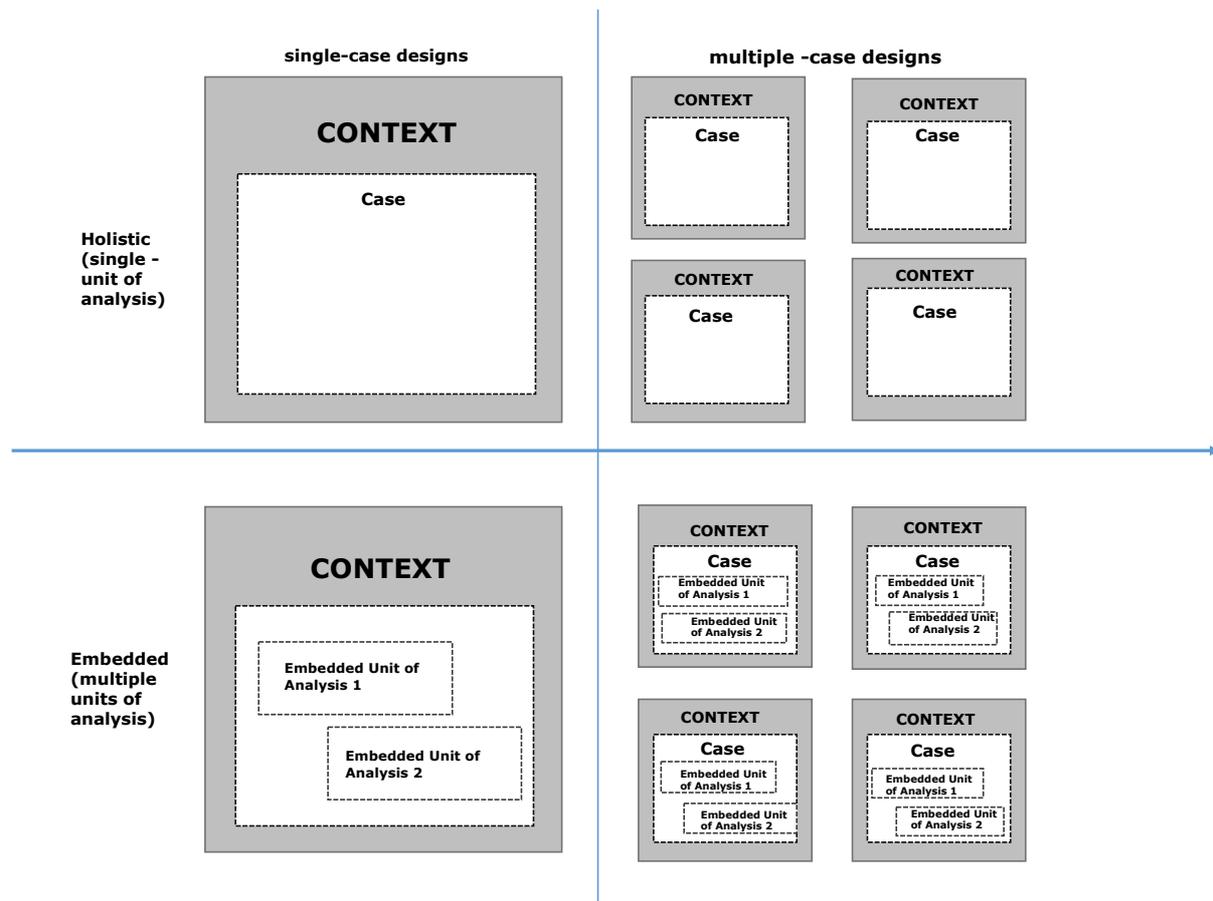


Figure 3.1: Basic types of designs of case studies (Yin, 2018)

Source: (Yin, 2018, p. 48)

The current study has adopted an embedded single-case design, as it seeks to understand the phenomenon in the same context but with different subunits at more than one level of analysis. The study was conducted in Malawi and the aim is to understand the dynamics in value co-creation in a mobile money ecosystem. The holistic unit is the mobile money ecosystem as shown in fig 3.2 and the embedded subunits include: service providers, end-users, digital platform, government and complementors. The different perspectives of the subunits such as end-users, complementors, regulators, providers were investigated to provide rich data on value co-creation in the mobile money ecosystem. These different sub-units will allow for data to be analysed within, across and between the sub-units, in order to obtain better insights on interactions, relationships and interdependencies in the ecosystem. The context has a differentiated influence on each of the subunits and thus plays a role in the value co-creation process.

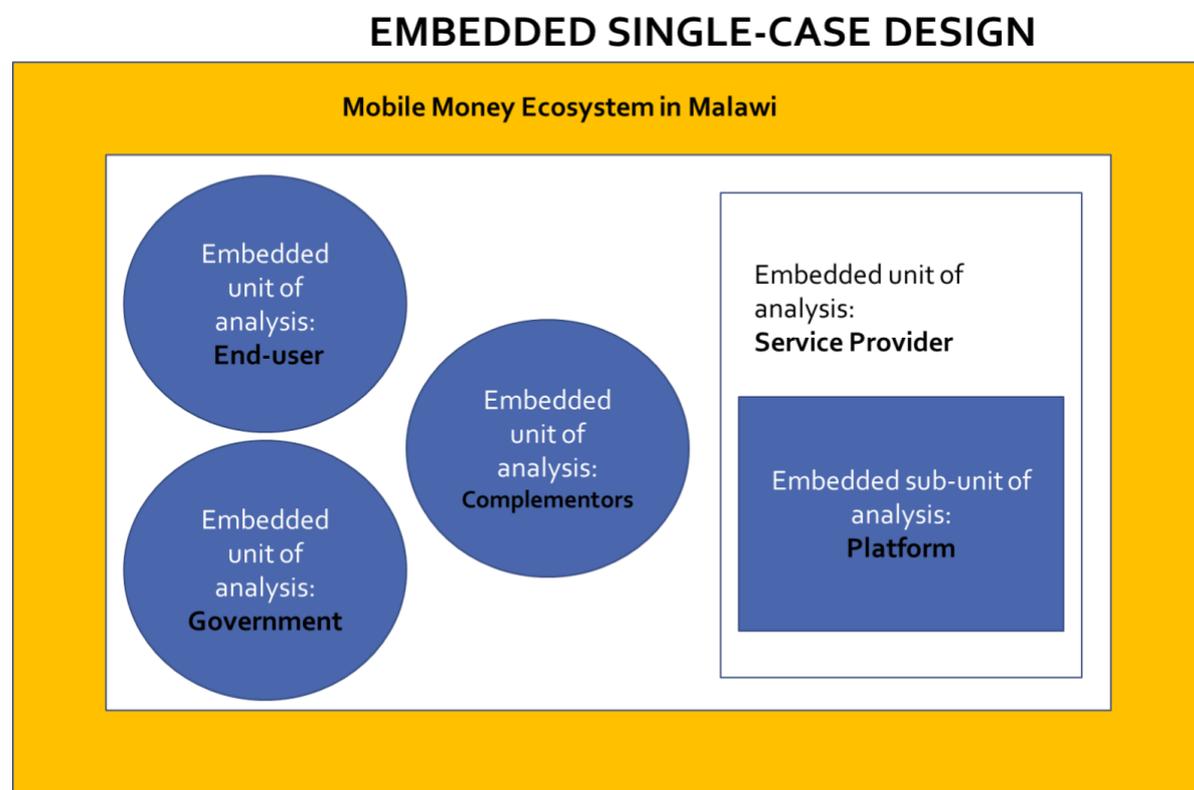


Figure 3.2: Embedded single-case design

Source: Author

Yin (2018) argues that when the same social phenomena are thought to exist in several contexts, the multiple-case study approach can be used; however, the single-case study approach is used when the phenomenon may exist in multiple contexts but the case chosen is

a representative one that has all the crucial elements. Patton (2002) further states that the fundamental guideline for choosing relevant cases is the preference for those that are information-rich regarding the subject being investigated and the research questions. As a result, the design for this research project is an embedded single-case design based on one of the mobile network operators in Malawi which served as the case for this research. The choice of a single mobile network provider as a component of the ecosystem for the study also took into account the challenges that the researcher encountered in gaining access to the other mobile money operators.

3.2.3.6. Boundaries of the case

In case study research design, Baxter and Jack (2008) highlight the requirement for clarity in exclusions and inclusions on areas for the research study. This is achieved by binding the case around certain boundaries that ensure the case is not open-ended with too many objectives (Stake, 1995; R Yin, 2014b). Various methods have been suggested on how to bind a case, and they include: based on location and period of time (Creswell, 2014); time and activity (Stake, 1995); and by definition and context (Miles & Huberman, 1994). In this case, the binding has been conducted based on time and place, where the focus will be on Malawi as the place, and to study the mobile money phenomenon as the Fintech innovation process from 2010-2021. This binding shall assist in ensuring that the research study remains within scope.

3.2.3.7. Case description

This case is based on the mobile money digital platform in Malawi and its platform ecosystem. Mobile money as a fintech service is enabled by a complex ecosystem of interdependent actors that are characterised by interactions which enable provision of financial services to end-users. The complex ecosystem includes actors traditionally associated with mobile network operators and financial institutions. The actors involved in Malawi's mobile money ecosystem include mobile network operators, banks, financial regulators, development partners, and civil society organisations. Companies involved in digital innovation are also actively contributing to innovation surrounding this mobile money services in Malawi. End-users also play a critical role in the ecosystem as they bring the digital innovations into their daily social lives.

Therefore, this mobile money ecosystem offers opportunities to understand the dynamics of value co-creation in such a complex ecosystem involving interactions between the various

actors. While some of the services offered by the mobile money ecosystem were seeming developed solely by the MNO, a deeper inspection shows that they are realized and developed in collaboration with other third-party actors in the ecosystem. Therefore, Malawi's mobile money service presents a great opportunity to explore and understand the interplay and collaboration that takes place in mobile money platform ecosystem and how it co-creates value. This is due to the fact that there have been mixed results for Malawi in terms of both the adoption of mobile money services as well as the range and impact of innovations developed around the digital platform. This particular platform was therefore selected because it is the frontrunner in the provision of mobile money services in Malawi. Secondly, there are noticeable interactions between the focal firm and other ecosystem actors to indicate that the provider did not act as a supply monopoly of mobile money services. Therefore, the interactivity between the actors offers the opportunity to understand the complex ecosystem phenomenon and value co-creation dynamics within a Global South context in Malawi.

3.3. Research implementation, workarounds and data analysis

3.3.1. Data Collection

This section focuses on the decisions that were made regarding the distinct types of data to be collected and the procedures necessary to achieve this goal. The crucial activities for this stage include identifying eligible research participants, anticipating access-related ethical issues, planning which sites will be used for data collection, and preparing the means for secure information and data storage.

3.3.1.1. Data Collection Approaches

Orlikowski and Baroudi (1991) argue that field studies offer the most appropriate methodologies from an epistemological standpoint for acquiring reliable qualitative and interpretive knowledge since they analyse individuals within their social contexts. There are different methods and approaches that can be employed to gather such knowledge. Studies have shown that using these different data collection approaches is necessary to collect rich and complex data and information from participants. Therefore, in order to provide deeper knowledge that could address the research questions for this study and to ensure the veracity of claims and arguments, a variety of qualitative research approaches were applied in the study. The approaches were aimed at addressing different aspects of the research. The interpretivist epistemology that underpins this study as a philosophical stance entails that the participant's

perceptions and narratives regarding the phenomenon of interest can be understood from the views and interpretations expressed through their narratives. In order to get verbal accounts of the participants' views and perspectives that could help the researcher investigate further interesting points and clarify interpretations, it requires engaging the participants through in-depth interviews or group discussions. The engagement of the participants in their settings also allows the researcher to obtain more context-specific understanding of the phenomenon of interest.

In deciding the type of data to answer the research questions, Ritchie et al. (2013) divide the data used in qualitative research into two categories: (a) generated data through interviews and discussions and; (b) naturally-occurring data that happens through observations, electronic files, text documents, visual or virtual data, and conversation analysis. While generated data is specifically formed through the research process by the interaction between researcher and participant, naturally occurring data is stated to exist irrespective of the research. Ritchie et al. (2014) points out that when considering the type of data required for a particular study one must take into account a number of factors before choosing the data gathering method. One of the important factors to take into account is including the requirement for participants to describe their context, which is only possible from generated data. A second aspect for consideration is the likelihood that a recounting of the research phenomenon will be sufficiently detailed, accurate, or complete if only naturally occurring data, such as archival documents are available. The third factor to take into account is which interpretation of the research phenomena is more significant—the researcher's interpretation as found in naturally occurring records or the participant's interpretation in interviews, where they offer a verbal narrative to express their perspective.

Several qualitative research approaches have been adopted for this study as part of the triangulation process and to provide a more comprehensive grasp of the research data. These methods target both generated data and naturally occurring data. Semi-structured interviews and focus group discussions were the techniques adopted for generated data whilst analysis of documents was used as the approach to obtain naturally occurring data. Studies have shown that each of these research techniques, such as focus group discussions, semi-structured interviews, and access to documents, has a distinct function to play in a study. The three data collection techniques adopted for this study namely semi-structured interview, focus group

discussion and documents are explained in more detail in the next section, along with the rationale for each option.

3.3.1.2. Rationale for focus group discussions

Focus groups represent a data collection method where the researcher seeks to gain more understanding, beliefs and values of the participants (Ritchie et al., 2014). The focus group discussion, makes use of the interactions between the discussants to enable the researcher to stimulate a conversation on the subject of interest and to encourage the participants to express their unique understanding and beliefs in a group context. The ultimate goal is to have a general understanding of how people perceive a certain phenomenon in groups. In this particular case, the citizens or end-users are a big element of the ecosystem as they are the ultimate users of the digital innovation, and therefore, the group discussion aims to capture their views and perceptions of the phenomenon. Data collection from the citizens in groups is expected to help in giving the researcher an opportunity to understand their interpretation of the value they derive from the service but also their role in the value co-creation process. Thomas (2017) argues that focus group discussions enable the group to take the lead and set the direction of the discussion with the researcher playing the role of the catalyst for the discussion. The setting also enables the researcher to hear the varying perspectives and views of the individual discussants and then compare these perspectives with other participants. This assists the researcher to obtain diverse views and perceptions of the phenomenon under investigation. Creswell and Poth (2018) suggest that focus groups are beneficial when the interaction amongst the participants achieves the best results with relevant information to the research subjects that are known to and cooperative with each other. Another scenario in which the focus group discussion is appropriate is when time for data collection is limited and informants might not open up if individual interviews are conducted.

3.3.1.3. Sampling procedure for focus group participants

A study's sampling technique is a crucial element of the research design since it will influence the value of the data obtained (Saunders et al., 2019). The sampling procedure also has an impact on the analysis that can be done, and the extent to which there are chances to draw broader inferences. Participants for the focus group discussion were selected by contacting potential participants within the towns of Lilongwe and Blantyre. The population's diversity in economic levels, accessibility, and simplicity of access were taken into consideration when

choosing the two places. The focus group discussion targeted only end-users of the mobile money service therefore identifying such informants was not a difficult task. However, it was also important to have some participants that were not using the service so as to get their perspectives as well. Due to their configuration, the towns are also surrounded by rural villages in the vicinity which made it easier to have focus groups with people from the rural areas as well. Bryman (2016) emphasizes the need to consider the composition of the focus group both in terms of size and also to ensure both heterogeneity, in terms of having people from different backgrounds, and also homogeneity, to represent similar characteristics between participants. Therefore the researcher took into account the need to have this diversity in the composition of these focus group discussions. After completing the first focus groups, subsequent group participants were recruited using snowball sampling. Saunders et al. (2019) defines snowball sampling as “a procedure in which subsequent respondents are obtained from information provided by initial respondents” (p.817). The participants were encouraged to consider members beyond their immediate family and gender so as to ensure diversity in the subsequent groups however, it was notable that men dominated the focus group meetings. Each focus group discussion had about 6 participants. Bryman (2016) highlights that a number of between 4-10 informants represents a good composition of a focus group meeting. In total 6 focus group meetings were conducted during the first round of the data collection with each group comprising between 5-6 people. However, no additional focus group discussions took place thereafter due to the Covid pandemic and instead in-depth interviews were used for the some of the targeted participants for the focus group meetings.

3.3.1.4. Rationale for conducting in-depth interviews

The main feature that makes semi-structured and in-depth interviews suitable methods for this study is that they allow the researchers to gather rich and extensive data by combining the structure of topics to be addressed with the ability to pursue points as appropriate (Ritchie et al., 2014; Saunders et al., 2019). This approach enables the informants to provide both their personal views and interpretations as well as contextual aspects in relation to the phenomenon of interest.

Walsham (1995) argues that interviews provide an essential means for collecting data in an interpretive study, as they afford the researcher a chance to gain first hand views and interpretations of the studied phenomenon. At least three subtypes of interview methods exist:

unstructured, structured and semi-structured. The human interaction between the researcher and the participant, as well as the capacity to watch and listen for subtleties in the participant's behaviour, are some of the characteristics shared by these three different types of interviews. Saunders et al. (2019) highlights that structured interviews essentially consist of a set of questions that are already prepared for the participants; among their main advantages are that they are simpler to conduct and that the data collected from respondents can be quickly coded. However, one weakness associated with the structured interview's major is that it does not provide much advantage to the researcher to ask a wide array of questions, which subsequently makes it difficult to be interpretive, as it becomes similar to a survey questionnaire, due to this inflexibility. The second method of undertaking interviews that Thomas (2016) highlights is the unstructured interview, which has no predetermined set of questions furnished to the participant, and therefore, no set restrictions on questions. Consequently, the direction of the interview will go with the flow and as issues emerge. Thomas (2016) further recommends this method as appropriate for interpretive study, as it enables open discussions and participants are able to set the agenda and describe the phenomena from their perspective. However, its challenges include the requirement for the interviewer to have skills that can somehow prompt the respondent if the conversation veers off-track without influencing the actual story that they are telling.

The third interview type and one that is a widely adopted method of data collection in qualitative studies is semi-structured interviews through which the researcher can cover some main themes during the interview, and is then at liberty to follow up on points where necessary. As earlier stated, the main advantage is that it allows the researcher to collect rich data. Its drawback is that it can occasionally feel constrictive, particularly when it's necessary to provide participants the freedom to talk about any additional themes that they notice arising in the phenomenon under study. In-depth semi-structured interviews will be conducted with the various actors who will be selected as participants in this research study.

3.3.1.5. Sampling procedure for semi-structured interviews

Depending on the group of participants, the study used either snowball sampling or a purposive approach to choose participants for semi-structured interviews. According to Saunders et al. (2019), purposeful sampling is a non-probability sampling strategy in which the researcher uses their judgement to select the people who will make up the sample. The main driver for the

selection of this technique for this study is to ensure that participants are picked who have specific knowledge that may offer more insights into understanding the dynamics of value co-creation in the mobile money ecosystem. According to Myers (2013), an interview is a discussion between the researcher and the participants who potentially have knowledge on the phenomenon of interest with the goal of understanding their viewpoint. In order to find informants who are regarded knowledgeable agents to provide full narratives from their viewpoints, the researcher considered purposive sampling to be the recommended technique. The researcher relied on his personal knowledge and social contacts to recruit first group of participants for the semi-structured interviews.

However, another strategy was adopted to make up for the researcher's insufficient knowledge of all participants who might possess relevant knowledge relevant for the study. Therefore, the researcher employed snowball sampling when it was necessary for individuals to recommend other possible study participants. The researcher initially approached a small number of participants who qualified to the criteria of participation based on researcher's knowledge, and these people in turn helped the researcher recruit more participants relevant to the study. This was very typical when identifying fintech startups or software companies that were innovating on the mobile money platform but there lacked much knowledge in the open about these firms. As a result, using the snowball approach, the researcher was able to recruit hard to reach participants that were suggested by the first set of interviewees. For instance, the mobile money platform owner suggested most of the technology providers as ecosystem actors that were relevant participants for the study; and government officials suggested names of participants from development partners.

Between February 2020 and November 2021, 39 informants participated in a total of 48 interviews. Senior and middle managers as well as third party actors with a variety of roles within the mobile money ecosystem served as the participants. The selection of the participants was reliant on both their current and previous roles in the mobile money ecosystem. There were scenarios where certain individuals had changed roles but were very instrumental in the emergence and development of mobile money in Malawi, such people were also contacted to be informants for this study.

The initial interviews were done through face-to-face interviews, but the onset of the Covid pandemic and ensuing restrictions on travel and meeting in groups affected subsequent

meetings. Therefore, the study adopted virtual meetings through Skype or WhatsApp with most of the participants during the study. The questions were around understanding the dynamics of value co-creation in mobile money ecosystems and the contextual issues around the phenomenon. About 8 participants were interviewed more than once for various reasons. These included confirming certain aspects that were not clear, providing clarity on historical or emerging events and also responding to issues that seemed in conflict with new data that had been acquired. On average, the interviews lasted from 30 to 70 minutes. Because the interviewees were allowed to use either their native language or English during the interviews, it entailed that the researcher had to translate all transcripts into English where applicable. All the interviews were recorded and transcribed verbatim. The researcher also managed to obtain some additional documentary evidence although these were mostly regarded as confidential material and therefore could not be cited in the final report. However, they provided contextual insights in understanding the evolution of the phenomenon of interest. The detailed information about the research participants can be found in Table 3.3.

Table 3.3: List of semi-structured interviews that were conducted (both face-to-face and virtual)

No.	Description of Organisation	Role /Position	Interview method (Face-to-face or Skype)	Informant ID (Anonymised)
1	Service Provider	Senior Manager	Face-to-face and Skype	1-Res1-MMO*
2	Service Provider	Country Manager	Face-to-face	2-Res2-MMO
3	Service Provider	Senior Technology Manager	Face-to-face and Skype	3-Res3-MMO*
4	Service Provider	Senior Product Manager	Skype	4-Res4-MMO
5	Government - Regulator	Director	Face-to-face and Skype	5-Res5-MMO

No.	Description of Organisation	Role /Position	Interview method (Face-to-face or Skype)	Informant ID (Anonymised)
6	Government - Regulator	Senior Manager	Face-to-face and Skype	6-Res6-MMO*
7	Government - Regulator	Senior Manager	Face-to-face and Skype	7-Res7-CB
8	Government - Policy	Senior Government official	Face-to-face and Skype	8-Res8-MOF*
9	Technology Provider	Director	Face-to-face and Skype	9-Res9-SU*
10	Technology Provider	Head of Technical services	Face-to-face and Skype	10-Res10-SU*
11	Development Partner	Programmes Manager	Face-to-face and Skype	11-Res11-DP*
12	End-users	Farmer/agent	Skype	12-Res12-MF
13	End-users	Farmer/agent	Skype	13-Res13-MF
14	End-users	Farmer	Skype	14-Res14-MF
15	End-users	Farmer	Skype	15-Res15-MF
16	Technology Entrepreneur	Founder and Director	Skype	25-Res25-SWP-F
17	Technology Provider	Head of Software Development	Skype	26-Res26-SWP-I
18	Technology Provider	Technology Manager	Skype	27-Res27-SWP-I
19	Technology Provider	Lead Innovator	Skype	28-Res28-SWP-F

No.	Description of Organisation	Role /Position	Interview method (Face-to-face or Skype)	Informant ID (Anonymised)
20	Technology Provider	Head of Software Development	Skype	29-Res29-SWP-I
21	Technology Provider	Founder and Software Developer	Skype	30-Res30-SWP-F
22	Technology Provider	Software Development Lead	Skype	31-Res31-SWP-F
23	Technology Provider	Software Development Lead	Skype	32-Res32-SWP-F
24	Technology Provider	Software Development Lead	Skype	33-Res33-SWP-I
25	Commercial Bank	Bank Manager	Face-to-face and Skype	34-Res34-BN
26	Commercial Bank2	Bank Manager	Skype	35-Res35-BN
27	Technology Provider	Value Added Service Manager	Skype	36-Res36 – IM*
28	Development Partner	Country Lead	Skype	37-Res37 -DP
29	Technology Provider	Country Head	Skype	38-Res38-VAS
30	Industry Association	President	Skype	39-Res39-ICT
31	Technology Provider	Director	Skype	40-Res40-NS

No.	Description of Organisation	Role /Position	Interview method (Face-to-face or Skype)	Informant ID (Anonymised)
32	Government - Regulator	Government official	Skype	42-Res42-GO
33	Government - Regulator	Senior Manager	Skype	43-Res43-GO
34	Digital Financial Services Expert	Country Lead	Skype	44-Res44 – EP*
35	Development partner	Senior official	Skype	47-Res47-DP
36	Digital Financial Services Expert	Expert	Skype	48-Res48-EP
37	Technology Provider	Manager	Skype	52-Res52-IPN
38	Tech Provider	Manager	Skype	53-Res53-SWP
39	Tech Provider	Manager	Skype	54-Res54-SWP

* Participants with whom more than one interview was conducted

3.3.1.6. Rationale for documents

In addition to interviews, documents were also collected and analysed in this study to collect historical and contextual data relating to the phenomenon of interest. Yin (2014) argues that documentary evidence is relevant in most case studies as it provides stable, original textual sources which are specific and cover broad areas; however, it also has its weaknesses, which may include the likelihood of bias in selection as well as reporting bias (by authors of the reports) compounded by challenges to both retrieve and access these reports. Some of the documents requested under this method included written policies, reports and regulations from various entities that could help provide insights on the evolution of the ecosystem.

3.3.1.7. Data Collection process

This section will provide an overview of the data collection process, including how interviews with different participants were sequenced, how focus groups and interviews were set up, and how documents were obtained and used for the study. The interviews were conducted in the order depicted in Figure 3.4, which also details the specific data collection technique applied to each group of participants.

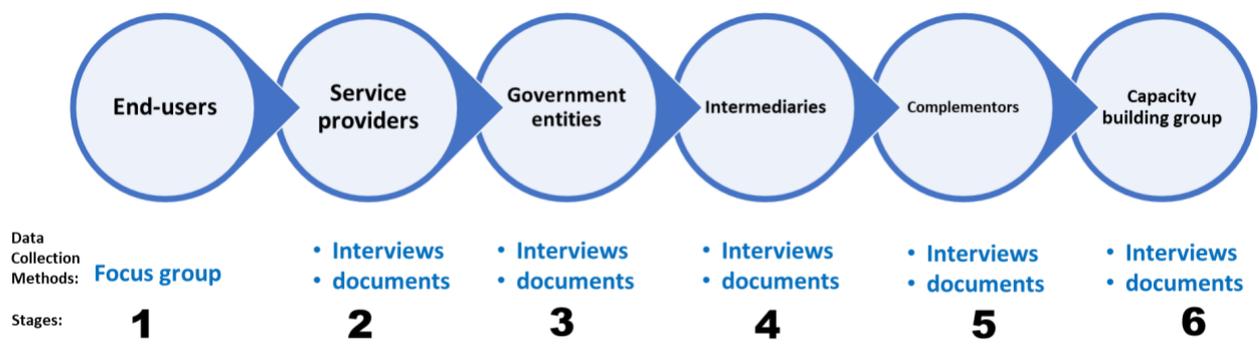


Figure 3.4: Stages of data collection

Source: Author

The objective was to obtain a variety of views from different actors regarding the meanings, perspectives, and interpretations they attach to the phenomena of interest to this study. The first set of informants for the study were end-users since they represent an important constituent of the mobile money ecosystem. The next set of participants were drawn from the service provider (focal firm). Thereafter, the study engaged government officials that are involved in regulation and policymaking. Intermediaries included such entities like service agents and banks and were the next set of participants. Then some technology firms acting as complementors in the ecosystem were also selected as participants of the study. The final group includes organisations primarily engaged in expanding the mobile money ecosystem's capability, including civil society, mobile money experts, and development partners, to name a few. These organisations were primarily used to carry out social activities.

Considering the aim of the study, which is to understand the dynamics of value co-creation in a mobile money ecosystem in a Global South context, end-users of the service are crucial to

the genesis of the ecosystem. As demonstrated in earlier chapters, ecosystems emerge and develop to co-create value and serve as a source of innovation ideas as they attempt to meet end-user needs. Therefore, the end-user perspective of the service was very crucial in the understanding of how they perceived value of the mobile money ecosystem. The end-users expressed their experiences and understanding as well as the meaning that they attached to the service in their daily lives. This included understanding some of the challenges and opportunities, which they considered to come from their use of the service.

Then in the second group of participants, the study shifted to the service provider, as the focal firm in the ecosystem. The data was then gathered at the focal firm, from where informants with a wide range of roles were selected. The main data collection methods were semi-structured, in-depth interviews and documentary evidence. These participants were asked to contribute their insights and knowledge on the dynamics of value co-creation processes with respect to the emergence, evolution, and context around the mobile money ecosystem. Focal actor has a significant role in the ecosystem including owning the digital platform and therefore facilitating interactions for value co-creation. As depicted in Fig 3.4, the third group of informants comprised government entities in the name of the regulator and policy makers. Again, the two methods used for data collection were semi-structured interviews and documentary evidence. The fourth set of informants were drawn from intermediaries and these incorporated the service agents and banks. The intermediaries interact with end-users and other ecosystem actors and thus are expected to possess rich knowledge of the phenomenon under study as they facilitate the interactions between different entities.

The other set of participants was made up of complementors who are third party technology firms that create innovations for the mobile money ecosystem. Again, the key data collection methods included the use semi-structured interviews and access to documentation. The last stage was the engagement of a set of participants that provide capacity building in the mobile money ecosystem with a goal to provide social activity to the ecosystem.

3.3.1.8. Focus group guide

A focus group guide was prepared by the researcher merely to facilitate the discussions within the groups and is available in Appendix I. This guide was formulated to support the discussion in the group and not to be the prescribed format of the meeting. According to Saunders et al. (2019), the researcher's function in a focus group discussion is to facilitate the conversation

among the participants rather than taking the lead because the topic for discussion is planned and well stated. The guide also helped to ensure that everyone was encouraged to actively engage in the conversation, as each participant was asked to introduce themselves at the outset.

3.3.1.9. Interview guides

The researcher prepared as interview guides that were developed for the study to guide the conduct of interviews for the different types of participants and are available Appendix II to Appendix VI. According to Saunders et al. (2019), an interview guide is a semi-structured interviewing plan that includes opening statements, discussion topics, and closing remarks. The guide for this study was developed in a way that considered the research aim and the literature review. Studies point out a variety of elements on which the study guide should be developed, including the literature review, theories deemed pertinent for the study, the researcher's prior knowledge of the subject, and common sense (Creswell & Poth, 2018; Saunders et al., 2019). Saunders et al. (2019), argue that the interview guide not only aids in participant preparation but also offers the interview some structure, direction, and purpose.

Saunders et al. (2019) contend that interview guides increase the reliability and validity of the information from participants because the informant is aware of the major topics that the researcher is interested in and is thus given the opportunity to prepare for the discussion. Thus, the interview guide for this study allowed the research participants to prepare adequately for the interviews. However, Bryman (2016) also highlights that interviewers still have latitude to diverge greatly from the interview guide when conducting qualitative interviews. They can change the sequence and even the wording of questions, as well as ask fresh inquiries in response to the answers provided by interviewees. This flexibility allowed this study to change both the sequence and specific questions as the research progressed. Additionally, different sets of interview guides were prepared for different participants groups. For instance, the interview guide for the mobile service provider, was different from the interview guide for the government entities.

When creating the interview guide, there are a few fundamental components that should be taken into account, according to Bryman (2016). These include the order of the topic areas, the use of language that is appropriate for participants, creating the interview questions with the research questions in mind, asking for general information such as name, gender, sex just to

contextualise the responses. Saunders et al. (2016) draw attention to the need for open-ended questions that enable informants to narrate an experience or an occurrence while allowing follow-up questions to elicit more information from the responses.

The interview guide was divided into various sections that covered the introduction and general background issues about the informant and the firm that they represented. Then the other sections focused on understanding their perceived role in the ecosystem, including their understanding of value and co-creation processes experienced through interactions with other actors. Then the different meanings and experiences that were attached to the use of the phenomenon of interest were also explored. The final section attempted to solicit their general views including any challenges and opportunities they saw in the ecosystem. In addition to continuously improving the guide, there was constant revision of the questions and the researcher gained more knowledge on the subject area.

3.3.1.10. Collection of documents

Another significant aspect of the data collection process was the obtaining of documents. The research, adopted the collection of relevant documents to support study. Saunders et al. (2019) claim that although archived documents offer a lot of information for research they must be handled with extreme care. One of the challenges with such archived documents includes aspects of being restricted to access or quote official documents due to confidentiality issues.

3.3.1.11. Some challenges faced during data collection and applied workarounds

The study faced some challenges at various points during the research process. The first major challenge was the difficulty in gaining access on time from some of the potential research participants such as the second mobile money operator and some banks. This was largely due to policy issues which required a rigorous request process that did not always yield positive results. Nonetheless, the participants that allowed the researcher to gain access to their data were sufficient as they provided information-rich data with respect to the study. Another challenge was that during the first field trip in 2019, the country was in the middle of a disputed election and therefore, there were a lot of demonstrations and riots taking place that disrupted normal business across various towns. These riots had an impact on a number of the meetings that had been organised as part of the data collection and thus were moved from face-to-face meeting to virtual meetings. This also affected a number of the focus group discussions.

The other major hurdle that this study faced constantly was the issue of Covid to the extent that it affected the research design. So, although the initial design had face-to-face meetings for focus group discussion and in-depth interviews, this had to be changed. So the study only managed to do the focus group meetings for the first round of data collection but subsequent meetings only managed to do in-depth interviews both virtually and face-to-face. The other impact was changing the interviews from face-to-face to using Skype or WhatsApp. The impact was that with the national lockdowns and travel bans, it meant focus group meetings that targeted some rural areas could not take place and instead they were replaced by Skype calls or WhatsApp calls.

Another constant issue that occurred during the data collection process was that a number of participants failed to read the interview guide despite being given to participants ahead of time. Many justifications were given for this, including lack of time and not being able to understand the language. Another noteworthy issue during the research was that the majority of end-users as focus group members were uninterested in reading or comprehending the interview guide. Therefore, attempts were made at the beginning to clarify some important areas of the interview guide.

3.3.2. Data Analysis

The data analysis phase is one of the most important stages in a research study. Stake (1995) states that data analysis has no specific starting point, as it entails making sense of first impressions until the final compilations. Additionally, Miles and Huberman (1994) suggest that decisions made during the design stage of a case study design have an impact on the analysis phase, as they can either constrain or support the analytical process. According to Saunders et al. (2019), data collection and analysis are interdependent and interwoven to the point that it is required to organise these as concurrent interconnected processes of data gathering, analysis, and interpretation.

Due to the nature of how qualitative research generates its data, it typically does so in the form of huge corpus of unstructured textual or visual data that is difficult to analyse and for which, unlike with quantitative data analysis, there no complete set of rules to guide the analytical process (Bryman, 2016; Saunders et al., 2019). Additionally, Saunders et al. (2019) points out

the richness of the contextual detail in qualitative data. Due to the interpretivist philosophy that underpins the data collection in this qualitative research process, the uncertain procedures and contextualised data have an impact on how data analysis is done. As a result, the inductive nature of this study mandates that the data analysis adhere to the flow of the data gathered and accept differences in the perspectives and experiences of the informants (Ritchie et al., 2014; Saunders et al., 2019). The researcher can thus find patterns and their relationships derived from the data, gathered using the inductive approach, which can then be further analysed and presented as study outcomes (Saunders et al., 2019). The process of finding these patterns and their links in what is referred to as thematic analysis was thus adopted to analyse the data for this study. Thematic analysis was used for all the data collected from semi-structured interviews, focus group discussions and archived data in this research. This research adopted reflexive thematic, which is comprised of not just a single method of analysing data but a set of linked approaches and necessitates careful consideration of research design choices analysis (Braun & Clarke, 2022).

Braun and Clarke (2020, p.330) refer to reflexive thematic analysis as an approach that “emphasises the importance of the researcher’s subjectivity as analytic resource, and their reflexive engagement with theory, data and interpretation.” In general terms, thematic analysis refers to an analytical approach that has as its end objective the creation of themes and entails methodical development, analysis, and interpretation of patterns across qualitative datasets (Braun & Clarke, 2022). Reflexivity in this technique entails ongoing, disciplined practise of critical questioning of the researcher's actions, how and why they are done, and how their actions affect the research to avoid biases that the researcher may bring into study (Braun & Clarke, 2022). Reflexivity, according to Harrison et al. (2017), is crucial for giving the entire study process credibility. The thematic analysis applied in this study involved generating themes from the data related to the phenomenon of interest but not imposing a framework of themes to examine the dataset for the study based on some existing theory. The data from the semi-structured interviews, focus group discussions and archived documents provided a set of themes. As a result, a few carefully chosen themes were then investigated in the data to see where they appeared and reappeared in the themes. The purpose of this approach was to analyse the data using the theoretically informed interpretations rather than to test or evaluate the validity of any existing theory (Braun & Clarke, 2022). The meant exploring the linkages in the themes of how value co-creation in the context of mobile money ecosystems from the different perspectives of the ecosystem actors. Since the approach was to capture what our participants

really said rather than go deeper into underlying meanings, the codes created were semantic rather than latent (Braun and Clarke 2006). The focus of the analysis was to capture and explore the participants own perspectives and understandings of the phenomenon of interest. The next sections will present the six phases of reflexive thematic analysis by Braun and Clarke (2006, 2020) that the study adopted for the analysis.

3.3.2.1. Data familiarisation

The researcher began this initial stage by immersing themselves in the data to become acquainted with the depth and breadth of the dataset's content. The primary tasks completed at this stage included reading over the archived documents and transcribing of the focus group discussions and semi-structured interviews. Although transcription is viewed as a tedious, time-consuming, and demanding procedure, it is a useful technique to become familiar with the data. . The process involves reading and re-reading the dataset, as well as listening to the recordings and making some notes for coding that the researcher can go back to during later stages (Braun & Clarke, 2022). Bird (2005) argues that this first step in the analytical process within the interpretative qualitative approach must be viewed as significant and recognised as an interpretative act where meanings are formed. This research also adopted the use of Nvivo software to facilitate the analysis and also offered capabilities of memoing, annotations and mind maps which were all part of the data familiarisation process. The major objective of this stage is that it affords the researcher an opportunity to begin considering what the data means through development of a deep and intimate knowledge of the dataset (Braun & Clarke, 2022). Although the use of Nvivo software was adopted, the analysis also involved engaging with hard copies of the transcripts. The familiarity offers a means of critically interacting with the data. These two objectives both produce early patterns and meanings that the researcher can think about and connect to the research questions.

Because participants were permitted to utilise their native languages during the interviews, more time was needed during transcription to allow for the translation of the interviews into English. This was the case because Nvivo software could not be used to translate the native languages into English. The early interviews took a lot longer as well since the researcher had to get acquainted with the proper interviewing tactics that would allow the participants to be brief in their verbal responses. The image in Figure 3.5 provides an example of the using Nvivo for data familiarisation through memoing and coding strategy adopted for the data analysis.

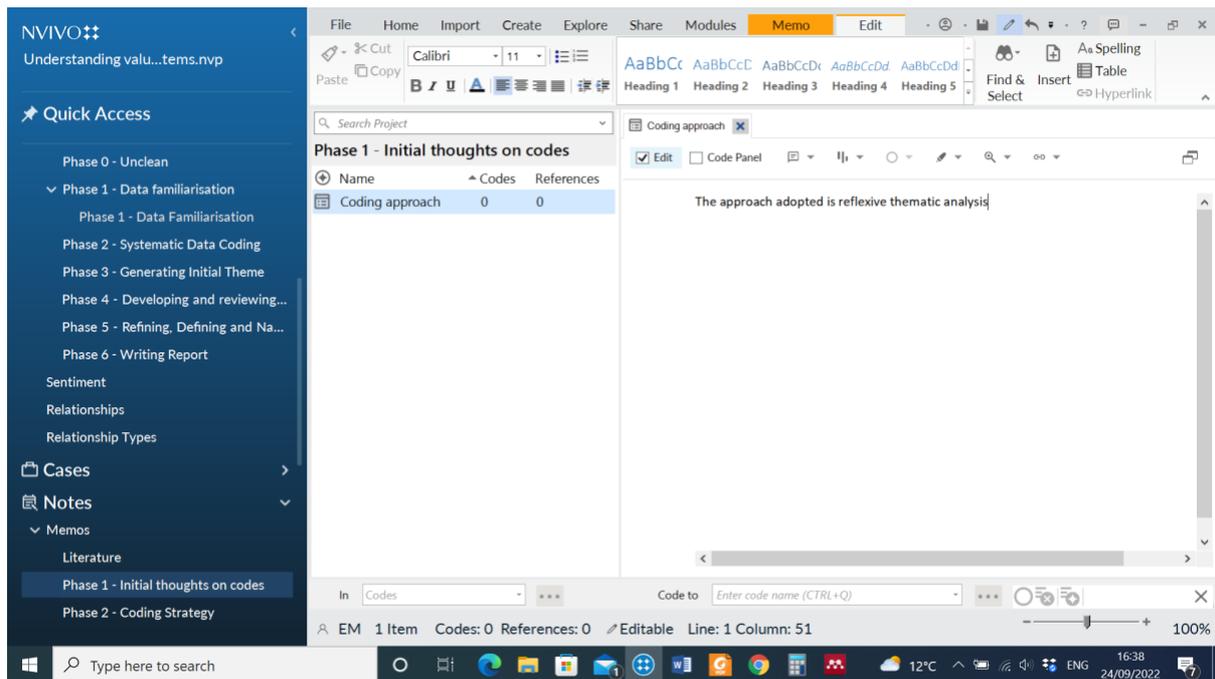


Figure 3.5: An example of memoing in Nvivo to list the codes and provide coding strategy

3.3.2.2. Systematic data coding

After the researcher has become familiar with the data, the second stage of the reflexive thematic analysis is the systematic data coding. Coding, to put it simply, is the process of categorising the data with similar meanings. According to Saunders et al. (2019), coding is the process of examining each unit of data within a dataset and labelling it with a code that embodies that segment's meanings. The smallest unit of analysis from which themes can be created is a code, and can be represented by a single word or phrase. According to Braun and Clarke (2022), coding serves as the foundation of thematic analysis since it has embedded meaning that is pertinent to the research questions as well as an analytical perspective on what is significant. Therefore, coding entails creating the initial codes from the data. Then, using these codes, the researcher can identify a characteristic of the data that seems interesting and potentially connected to your research objectives (Braun & Clarke, 2006, 2020). In the coding process, there are two possible outcomes: either specific data segments are given multiple codes based on the many meanings they represent, or specific data segments are not coded at all because they have no bearing on the research questions. According to Saunders et al. (2019), the researcher must make sure they are maintaining a list of the codes and a functioning definition throughout the procedure to maintain consistency.

A significant part of coding and theme development is how the problem of meaning-making of the data is handled, whether through inductive or deductive approach (Braun & Clarke, 2022). The methodology used will largely influence the amount of data to be coded in qualitative research, with an inductive orientation likely to code all data to ensure that all potential meanings are investigated (Braun & Clarke, 2022). In contrast, research that uses a deductive orientation to begins with a framework of codes developed from earlier conceptual or theoretical work (Braun & Clarke, 2022). With the aim of the study set as understanding the dynamics of the value co-creation process in a mobile money ecosystem, the study was identified as an inductive case study, with focus on all potential themes in the study. So all data with potential to be used in the study coded. Therefore, with the inductive orientation, in the analysis, the focus was capturing the semantic meanings of the participants interviews. The analysis also offered the researcher to capture the complexity of the value co-creation phenomenon in the ecosystem as different actors interacted. Bryman (2016) highlights a number of challenges with thematic analysis and two are provided. The first one says that one of the most frequently voiced critiques of reflexive thematic is that this coding can obscure the context of what was said. Secondly, coding is also said to fragment the data, which breaks up the narrative flow of what participants were saying. Figure 3.6 depicts the image of using Nvivo to code is phase two of the reflexive thematic analysis.

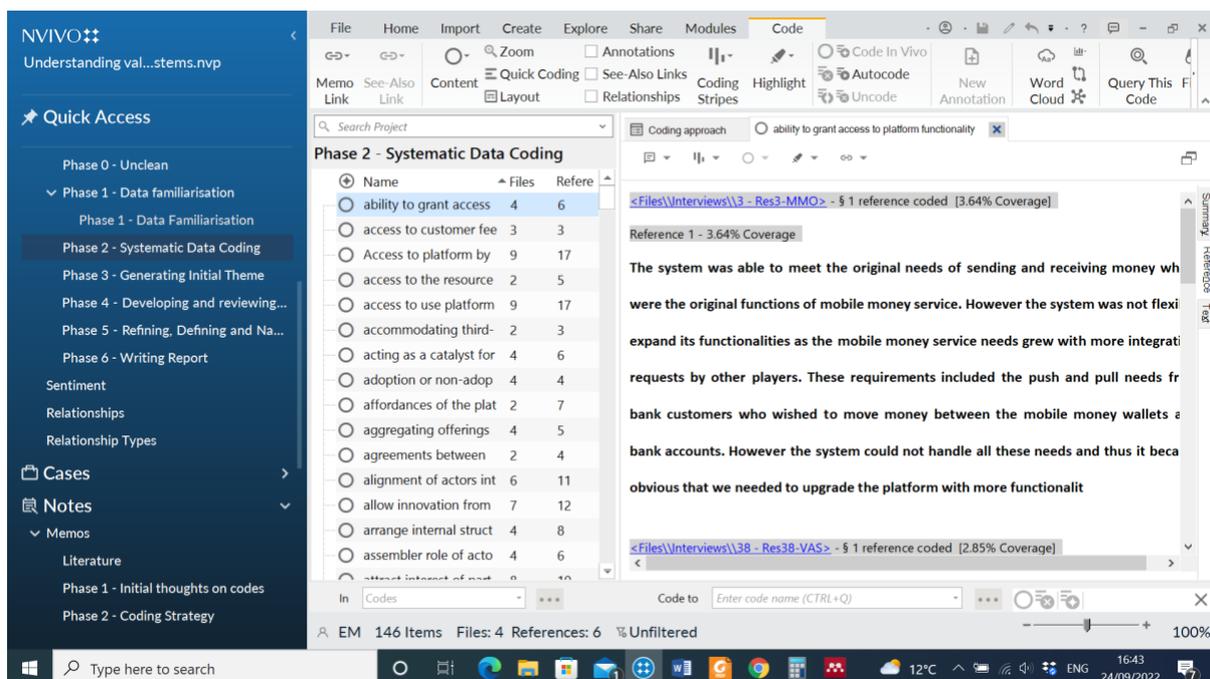


Figure 3.6: An image showing the coding process in Nvivo

3.3.2.3. Generating Initial Themes

The focus during this stage is the generation of initial themes. The basic idea behind the notion of themes is that they represent a pattern of common meaning centred on a key idea (Braun & Clarke, 2022). The process of generating initial themes involves grouping the different codes into potential themes and then combining all the pertinent coded information sets under the particular theme (Braun & Clarke, 2022). The process includes analysing the codes and consideration of combining the different codes into candidate themes. Braun and Clarke (2022) points out the three examination considers each group of activities candidate themes: (a) on its own terms (b) in line with the research questions and; (c) part of the broader research. The focus at this stage is still look at patterned meaning across the dataset. The major output during this stage is a collection of candidate themes or sub-themes and all relevant data extracts.

The analysis for this study drew upon the ecosystem value co-creation literature from three perspectives information systems, strategy and service marketing that allowed us to code and generate initial themes. Figure 3.7 presents the third phase of reflexive thematic analysis that generates the initial themes.

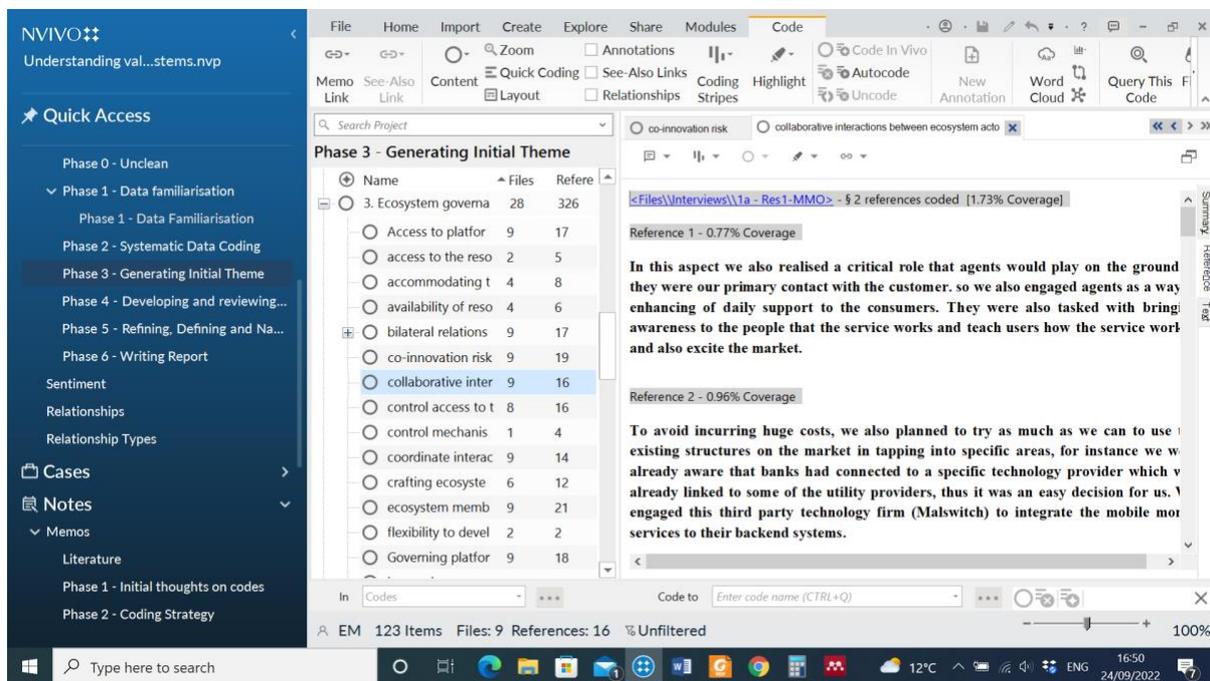


Figure 3.7: An example of generation of the initial themes in Nvivo

3.3.2.4. Developing and Reviewing themes

This stage involves refining the generation of the themes by explore the relationships between them. Two major activities during this stage is checking the viability of the initial groups of the candidate themes and looking into the prospect of refining the patterning development (Braun & Clarke, 2006). The goal of these actions is to make sure that the candidate themes are sound in terms of their level of development, scope, and richness. This phase is considered very recursive and the use of mind map is recommended by many studies (Braun & Clarke, 2022). Some aspects that were checked during this phase of the study is to ensure all candidate themes do qualify as themes including having enough data extracts with them or data being too diverse. Patton's (1990) highlights the criteria for judging categories as internal homo homogeneity and external heterogeneity. According to Braun and Clarke (2006), data within a topic must genuinely cohere together and there must be easily discernible distinctions. Braun and Clarke (2006) argue that data within a theme must cohere together meaningfully and there must exist a clear identifiable distinction between the themes. Figure 3.8 is an example of a stage four of the reflexive thematic analysis showing an explore diagram to show the validity of individual themes in relation to the data set.

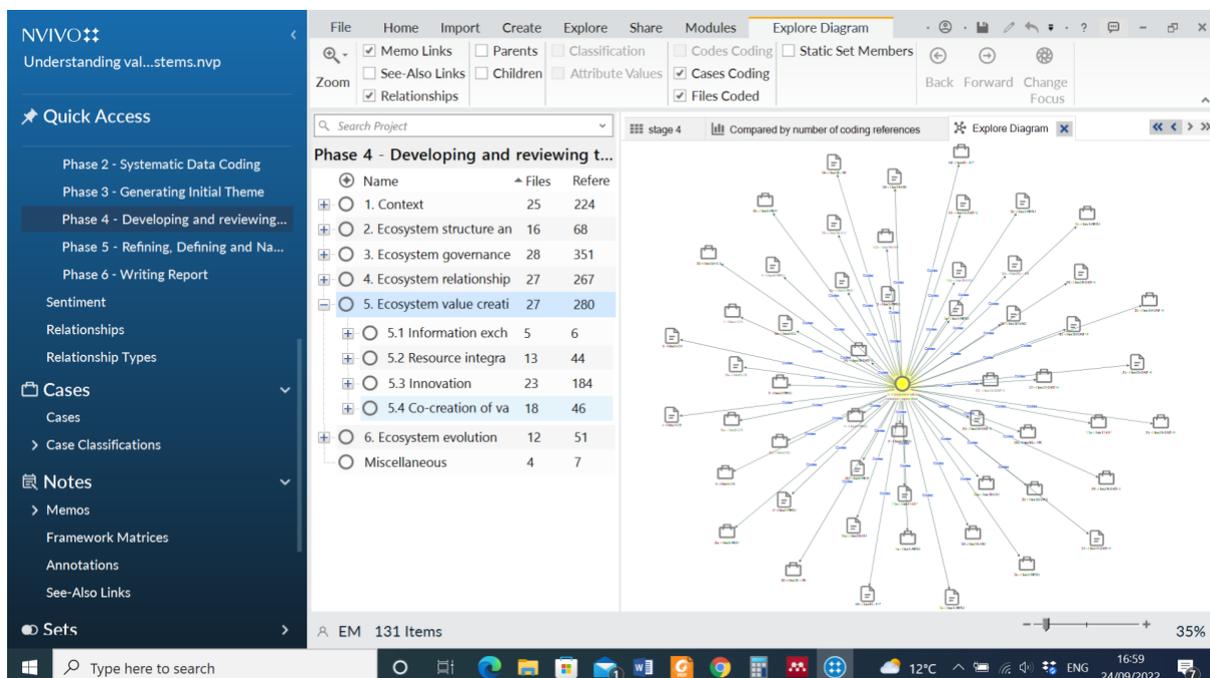


Figure 3.8: An example of an Nvivo diagram showing a level two explore diagram

3.3.2.5. Refining, Defining and Naming Themes

During this stage, the primary objective at this stage is determining the relationships between the candidate themes that have been identified and refining them. According to Saunders et al. (2019), this stage involves making sure that the themes generated must produce a coherent analytical framework to help with carrying out the analysis. Finding out what each theme is about and what aspect of the data each theme captures in accordance with the aim of the study and the original research questions are key aspects of the work done during this phase (Braun & Clarke, 2022). Another important activity during this phase, according to Braun and Clarke (2022), is to come up with a theme definition that elucidates on each theme and provides its implications to the study. This activity ultimately aids in internal theme consistency and helps organise the flow of the overall narrative that the analysis is trying to construct.

Additionally, as part of the refinement, the process involves identifying any sub-themes that may be contained within a theme. Sub-themes aid in giving structure to an especially broad and complicated theme and showing logical order in meaning within the data (Braun & Clarke, 2022). According to Saunders et al. (2019), depending on the results of re-reading the coded data that has been rearranged for each identified theme, this stage may require integrating themes, separating them, or even eliminating themes. At the end of this process, the researcher must be able to clearly define what the themes for the study are by describing both their scope and content in a few sentences. The last step in this process is to name the themes and give them brief, relevant descriptions that give the reader a feel of what the topic is about. Figure 3.9 of developing a thematic framework as part of the refining and defining themes.

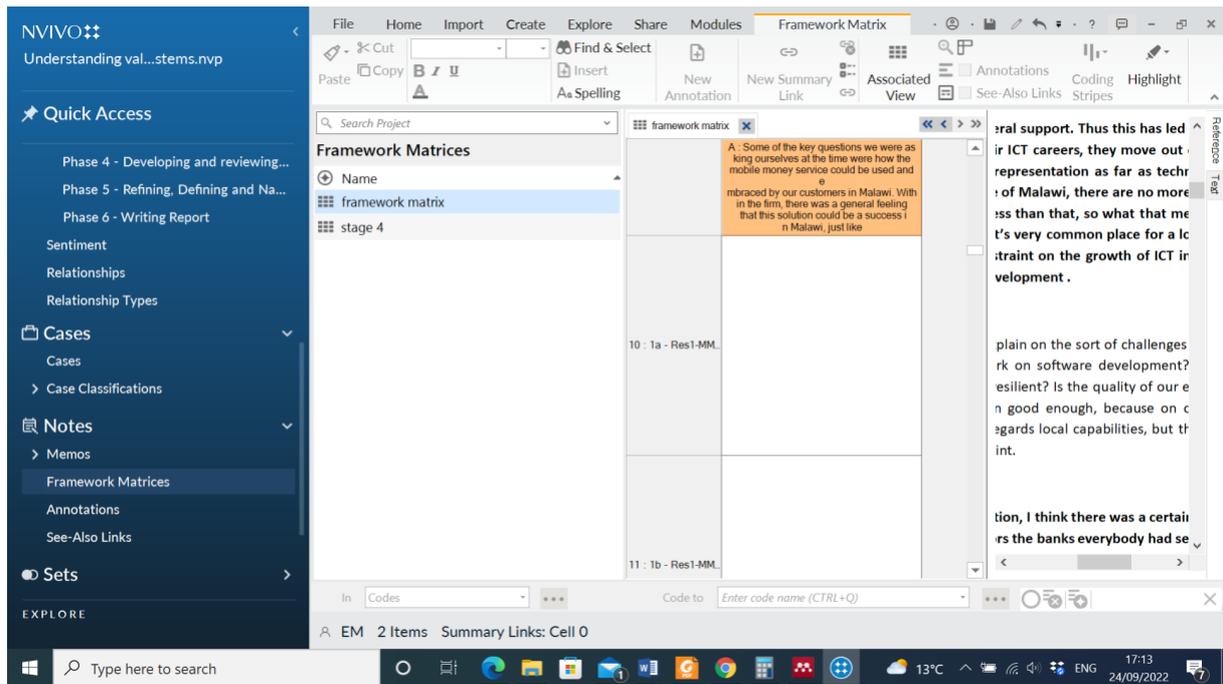


Figure 3.9: An example of thematic framework as part of defining and refining themes

3.4. Reflections on the Research Process

3.4.1. Quality of research design

The capability to assess the quality of the research design using a logical collection of statements is a crucial phase in the research process (Saunders et al., 2019; Robert Yin, 2018). This section, which addresses the topic of quality of research, is divided into four sections: researcher's role, validity, reliability and credibility.

3.4.1.1. Role of the researcher

The researcher in this study recognizes that, as a Malawian who also works in the financial services industry, where the mobile money platform is based, he is an intrinsic part of the environment and is not detached from it. This is consistent with studies that demonstrate how crucial the researcher's role is in both the data collection and the research process in qualitative studies (Corbin & Strauss, 2015). Thus Walsham (1995) contends that it is crucial for researchers to comprehend and reflect upon their own role in the research process. When doing qualitative investigations, researchers are thus advised to be aware of their own biases and assumptions rather than acting as though the subjectivity could be eliminated. According to studies, the creation of knowledge is fundamentally subjective, as such, subjectivity should be

recognized and used as a resource for conducting analysis rather than being viewed as a problem to be managed, controlled, or removed (Braun & Clarke, 2022; Gough & Madill, 2012).

According to Corbin and Strauss (2015), researchers must be self-reflective to understand how their work may impact or be influenced by their research. Braun and Clarke (2022) highlight that subjectivity can be used as a resource for reflexivity to both question and the maximise the usefulness of research orientation. Berger (2015, p. 220) describes reflexivity as “...turning of the researcher lens back onto oneself to recognize and take responsibility for one’s own situatedness within the research and the effect that it may have on the setting and people being studied, questions being asked, data being collected and its interpretation. As such, the idea of reflexivity challenges the view of knowledge production as independent of the researcher producing it and of knowledge as objective”. Reflexivity involves the researcher being aware of how their actions affect the research process, how they interpret their own attitudes and ideas, how they respond to data and findings, how they relate to the phenomenon under study, and how they interact with research participants (Saunders et al., 2019). This is done in order to comprehend how these elements impact the conduct of the study and its findings. Therefore, it is suggested that researchers must disclose their background information and knowledge in relation to a study.

In this study, the researcher had prior knowledge and experience in the area of information and communication technologies supporting the financial sector as he works for a central bank which regulates financial services that includes mobile money services. Writing reflective memos was therefore adopted since it allows the researcher to be objective about the actions and decisions made during the entire study process (Braun & Clarke, 2022). The researcher has participated in a number of financial technology related projects that serve the financial services sector working with some of the research participants. The professional background of the researcher is in information systems specialist and has thus interacted with some of the entrepreneurs working in the digital innovation space in Malawi. Based on the foregoing, implies that the researcher may potentially have some bias, which may shape how he engages with the study and data. Reflexivity emphasizes identifying and contextualizing the researcher's personal agenda, subjectivity, and its implications on the study. The introductory chapter has only offered a statement that equates to the researcher's motivation and experience regarding the topic to be examined. Being a Malawian, working for a regulatory organization

in the financial sector, and being with the financial sector systems gave the researcher an insider's perspective, which provided the three benefits mentioned by Padgett (2008) and Kacen and Chaitin (2006) when researching the familiar; easier access, an advantage in knowledge of the subject under study and comprehension of participants' nuanced responses.

For instance, my background of working for a regulator and having been previously involved with projects in the financial sector made recruiting participants easier, and thus facilitated easier access to research subjects. Berger (2015) argues that when a researcher and participant have similar backgrounds, it increases the subject's trust that their opinions will be heard and their challenges and experiences will be more accurately depicted. Additionally, the researcher's previous knowledge on the research topic enabled certain concerns and challenges about the subject to be addressed more easily due to the prior experience.

As discussed by Berger (2015) sharing previous experience reduces the distance and increases the willingness and capability to explore other research aspects. Thus, the shared experience had an impact on interviewees' disposition as they occasionally stopped mid-sentence in the belief that the researcher would already know what they meant. This observation is discussed by Berger (2015), who states that even though the participant may have shared a similar experience, the researcher is still interested in learning about the research subjects' point of view. Therefore, the researcher had to be on guard at all times and critically evaluate how his presence and personality affected the conversation. This was also done to ensure the participants did not withhold any information on assumption that this was too obvious based on the background of being a regulator. Conversely, reflexivity involved the researcher to consider differences and avoid ignoring some parts of participants' experiences and narratives. Nonetheless, the researcher's background provided broad knowledge base, capacity to comprehend implicit meaning, and a heightened awareness of some data dimensions.

Although the researcher's experiences and background influenced the development of the study's questions, research design, data collection, and other related stages, anyone else could have carried out this research, as discussed by Smith (2013), who argued that anyone is free to conduct research on any topic they choose and with any community. However, there are variations between an insider and an outsider researcher due to their unique relationships with participants and different experiences and knowledge of the context, which may alter the study in ways that have advantages and risks for the study (Berger, 2015; Braun & Clarke, 2022).

3.4.1.2. Validity

In qualitative research, the concept of validity refers to the elements of internal and external validity. Internal validity is invoked when the researcher is undertaking explanatory or causal studies where the study involves seeking to establish causal relationships (Robert Yin, 2018). Whereas external validity considers the generalizability of the findings. This case has an exploratory case design, so it does not seek to establish any causal relationships. Therefore, the appropriate approach to quality criteria in this instance is looking at the external validity of the research design. According to Saunders et al. (2019), small sample sizes that constrain the generalizability of the research have made it difficult for qualitative research to have external validity. Other studies, however, have addressed these concerns by emphasizing alternative ways of proving generalisability, such as offering thorough explanations of the research questions, context, design findings, and interpretations (Robert Yin, 2018). This would guarantee that the reader may assess whether the research can be applied to a different situation in which they are interested in conducting research. This study has provided a rich description of the research questions that seek to understand the “how” or “why” of value co-creation in mobile money ecosystems within a Global South context. Therefore, it is possible to arrive at an analytic generalization that would enable external validity. Another area to allow generalizability are the theoretical constructs that underlie this research, which include digital platforms and its related sociotechnical components in the ecosystem as well as value co-creation, and which were then applied to this particular context of the Global south. Therefore understanding the phenomenon in this aspect would allow the researcher to generalize theories which can then be transferred to another context.

3.4.1.3. Reliability

Reliability aims to demonstrate that results and conclusions will be comparable if a different researcher uses the same procedures as those previously described (Robert Yin, 2018). Corbin and Strauss (2014) point out that focusing on methodological activities that highlight consistency in methodology is one of the things that should be done to increase reliability. Yin (2018) contends that a researcher must take steps to resolve research problems dealing with reliability. One such suggestion he gives is to document all the steps taken during a study and coming up with a case study protocol. This study documented all case study procedures and methods were appropriately recorded. Additionally, this case study endeavored to provide the rationale for each case study research design.

3.4.1.4. Credibility

According to Yin (2018), in order to reflect the ideas under study and not the researcher's opinions or assumptions, researchers must use the appropriate operational framework for those concepts being studied. Studies recommend three approaches to increase the credibility of research. The first is to use multiple sources of evidence. This study used a range of data collection methods, including semi-structured interviews, focus group discussions, and documentary evidence, to better understand the phenomenon of interest. This provided data triangulation for the study. Another crucial strategy used in this case was the researcher's multiple interviews with some of the main informants in order to verify with them on any of the responses or provide clarification on any points that were unclear.

3.4.2. Ethical Issues

Ethics are the guiding principles of conduct in regards to what is right and wrong for your research and are likely to be prominently featured throughout the research process (Corbin & Strauss, 2015; Saunders et al., 2019). Some of the major stages when ethical issues need particular attention include the time of formulating the research topic, research design, data collection, data storage and analysis and reporting (Bryman, 2016; Saunders et al., 2019). Ethical issues are essential component of any research study, and in particular for a case study given the closeness that may develop between the researcher and the participants during the study. Creswell and Poth (2018) suggest that any researcher embarking on a qualitative research study has to bear in mind the ethical matters which may likely emerge during the entire course of the research. Studies highlight some of the key considerations for ethics that are associated with different case studies include the ethics approval, informed consent, confidentiality and data management (Corbin & Strauss, 2015; Saunders et al., 2019).

Initially, prior to embarking on the research study, it is necessary to seek an ethics approval from the Research and Ethics Committee of the University of Sheffield. Corbin and Straus (2015) point out that a researcher cannot undertake data collection before obtaining an ethical approval. For this study, the research ethics application approval was received in January 2020 (refer to Appendix IX).

Second, every research subject received full disclosure on informed consent and privacy protection. The informed consent made it clear that the participation in the research was on

voluntary basis including for those recruited through the snowball approach. The objectives of the study were explained to all informants. Prior to the interview, the participants received an information sheet (Appendix VIII) in addition to verbal notification from the researcher. The document provided information about the study title, the contact details for the researcher, the organisation, the confidentiality of the information collected, the option to opt out of the study, and the potential future applications of the data that would have been gathered. Participants were availed adequate time to participate or decline, as they wish and they were not forced to sign consent forms. This study made sure that all participants were contacted in a timely manner and that only people who wished to participate did so. The consent form had to be signed by the participants before the interviews could begin.

Saunders et al. (2019) points out on the need of preserving anonymity and confidentiality both during and after the data gathering process. Furthermore, all sensitive and confidential data collected from government departments, private companies and individuals not related to the study has not been reported in the study findings.

3.5. Chapter Summary

The methodology adopted for this study has been presented in this chapter. The chapter has focused on presenting the philosophical assumptions that underpin the study and the methodological approach behind the research design and method adopted for the study. The chapter also delved into the aspects of data collection, analysis and research quality. The last section has provided details on the ethics that have guided the research conduct.

The study has adopted a qualitative research design underpinned by an interpretivist philosophical paradigm using an inductive approach to theory development. The research strategy which is bridging the research philosophy to the methodologies has adopted a single-case study as the methodology for this research. The chapter has presented the rationale for selecting case study as the methodological approach mainly to understand this phenomenon in detail within its context. The case study has been defined as exploratory in nature due to the opportunity such an approach offers to research complex and contextual phenomenon in detail and various units of analysis have also been identified. The case study is based on a mobile money based digital platform ecosystem in Malawi. Various data collection approaches have been selected and include semi-structured in-depth interviews, focus groups and document

analysis. A reflexive thematic analysis has been adopted for the case to give the research process in general and analysis in particular credibility through critical questioning of various researcher actions. The final sections of the chapter presented the quality assurance section focusing on how the research has tackled reliability, validity and credibility. Then the ethical issues were presented as the guiding principles of conduct throughout the research process.

Chapter 4: Findings

4.1. Introduction

In this chapter the data collected during this research is presented and analysed. This exploratory case study adopts a thematic analysis organised as a temporal sequencing to present the results. The study uses a thematic approach within each stage and offers evidence highlighting the dynamic activities and components as themes indicating how the ecosystem value co-creation progressively evolved over time. The temporal sequencing has provided a timeline of the various stages of the reconstructed events outlining the dynamic evolution of the mobile money ecosystem since its inception. The use of thematic approach organised as a chronological sequencing to present the findings of this case study provides a way of connecting various structural elements, activities and events as they unfold in the evolution of the ecosystem. Due to the in-depth nature of this case study, the researcher is able to highlight and explain the significant changes as they occurred during particular phases in the evolution of the mobile money ecosystem.

The chronological events and activities for the case study are grouped into three main stages, namely birth, expansion and leadership. The birth stage commenced in 2009 with preparatory activities although the actual mobile money service launch was in 2012, and the focus of this initial birth stage was on defining the value proposition by the focal actor in the mobile money ecosystem. This initial phase also emphasised the creation of partnerships through institutional coordination between the different potential ecosystem participants and how they collaborated or not to ensure the materialisation of their common goal. The subsequent phase was the expansion stage where activities confirming this phase seem to have occurred from 2016. This phase involved scaling the ecosystem to wider levels through increased numbers of ecosystem participants to enable competition amongst the actors. Lastly, the leadership stage involved the shift of ecosystem structures and control mechanisms from a selected set of partners to opening up the ecosystem to potential partners that passed a set of criteria and adopted a defined governance mechanism.

The thematic dimension presents the findings according to the themes and categories that the data analysis uncovered. The data analysis has identified a number of main themes into which diverse ecosystem elements and activities can be grouped in order to explain the emergence

and growth of the mobile money ecosystem. The findings also highlight the main challenges and barriers that have hampered ecosystem evolution. Table 4.1 below presents a list of the main themes and a description of each theme.

Table 4.1: List of the main themes and their descriptions

	Theme	Description
1	Context	This dimension seeks to identify the primary environmental features that include the ecosystem's primary strategic goals, driving factors and key mission at different stages in the evolution of the ecosystem. Context also includes activities of external entities to the ecosystem that have potential to influence and shape the evolution of the ecosystem such as policies and regulation of government and regulators respectively, people's culture as well as actions of business associations related to the mobile money ecosystem participants.
2	Governance	This theme includes factors that have an impact on the ecosystem governance, with a particular focus on the structure, interaction, relationships and coordination mechanisms.
3	Value creation	This theme expounds on the different three perspectives of ecosystems namely as production systems, consumption systems and digital platforms and explain its role in value co-creation.
4	Change	This dimension denotes changes in the ecosystem lifecycle as it evolves from one configuration pattern to the other due to a paradigm shift or technology change among others e.g. adoption of open innovation.

The overall aim is to gain deep insights into how these themes which are underpinned by the structural elements of the ecosystem influence value co-creation to sustain the innovation process. There are four subsections in this chapter. The first three subsections will discuss each

of the three stages of the chronological sequence and the relevant themes that apply to each phase in the evolution of the ecosystem. Then the last subsection will provide a conclusion for the chapter.

4.2. Birth Stage: the emergence of the mobile money ecosystem (2009-2016)

Malawi's first mobile money service was launched in February 2012, following preliminary regulatory approval and pilot activities that began in 2009. Therefore, this section presents a detailed account of the nascent stages in the birth of the mobile money ecosystem in Malawi. It starts with reporting the context in which the ecosystem emerged and evolved. The context describes the ecosystem establishment's mission, goals, and purpose and defines the value proposition. Other external elements, such as regulation and policy that substantially impact the establishment of the ecosystem are also discussed. This section is followed by the theme on governance system, which includes factors that influence the ecosystem governance with a particular focus on interaction and coordination mechanisms. The next theme tackles aspects of relationships that delves into the connections between ecosystem actors and how their positions are arranged to contribute to the ecosystem's objectives. The fourth theme covers value creation and expounds on its different perspectives and impact on ecosystem value creation. Finally, the theme of change is a dimension that explains how the ecosystem lifecycle shifts from one pattern to the other. Table 4.2 provides the detailed findings in relation to each of the themes in the table below for the birth stage:

Table 4.2: Themes identified for the birth stage

Themes	Sub-themes
Context	Defining the mission and goals
	Defining the value proposition
	Policy and regulation
	Cultural practices
Governance	Creation of the structures
	Coordination
	Bringing partners into positions for collaboration
Value co-creation	Collaborative production system
	Perceived value and role in value creation

4.2.1. Context

This contextual dimension covers environmental factors that are considered as contextual and influenced the dynamics of value co-creation in the mobile money ecosystem. By their nature, contextual factors are dynamic, complex and multi-layered; therefore the section seeks to present the empirical findings highlighting factors and activities identified as contextual factors influencing value co-creation in the mobile money ecosystem during this birth stage.

4.2.1.1. Defining the mission and the goals

The mobile money innovation was premised on the use of mobile telephony to enable the flow of financial and payment services as “digital value” amongst the mobile phone users. The data collected for the research revealed that from the outset, the pioneering mobile network operator (MNO) in Malawi launched mobile money service as a value-added offering in addition to its core services of voice and short message service (SMS) telecommunication business. This was confirmed by a respondent from the MNO:

“Our parent company considered the dwindling revenues from voice services and thus initiated work to explore other avenues of our business portfolio that could bring in more revenues and grow the business.” [1-Res1-MMO]

The goal of growing the revenues coincided with the success story of the flagship M-Pesa mobile money service in Kenya launched in March 2007, which began to spread across the globe. Two executives from the MNO, which became a crucial player in the emergence and growth of the mobile money ecosystem, reflected on the circumstances that shaped its formation as other countries around the world started piloting similar mobile money products and services:

“In Malawi, we were largely influenced by the success story of mobile money services in Kenya and therefore, our parent company urged us to start making plans to roll out a similar service.” [2-Res2-MMO]

“The growth of mobile phone users was another factor that compelled us to consider deploying these services, primarily since this solution provided financial services for hard-to-reach places where banks had not yet covered. We thus considered the mobile

money service as breaking new grounds in providing services to remote areas, and thus we considered it as an area that would give us competitive advantage in this space.”

[4-Res4-MMO]

These Global trends acted as a driver and provided potential opportunities on the supply side of mobile telephony providers to reach out to large numbers of people with mobile money service innovation. Additionally, the prospect provided by the existing mobile phone infrastructure to enable end users to access financial services through their mobile phones was considered as a great opportunity for the demand side. To this end, a concept note was formulated by the MNO, and a project was initiated with the objective of rolling out mobile money services in Malawi modelled around Kenya’s M-pesa service. The interviewees from the MNO confirmed this:

“...some of the key questions we were asking ourselves at the time were how the mobile money service could be used and embraced by our customers in Malawi. Within the firm, there was a general feeling that this solution could be a success in Malawi, just like in Kenya, especially if we focused on addressing the local needs.” [1-Res1-MMO]

“...the concept of mobile money service was new both to our staff and to our potential clients. So just like it was quite challenging during these early days to convince our customers that it’s possible to keep money in their mobile phone as digital value in electronic wallets; it was equally crucial to train our employees on how this technological innovation worked so that they are knowledgeable on its inner workings and how it can be best adapted to suit the local settings.” [2-Res2-MMO]

Additionally, the MNO seemed to be motivated by the desire to create an innovative offering that would give them a competitive advantage over their rivals and, as a result, bring more revenues to the firm. The MNO stated that:

“In fact we considered that the mobile money service would give us an edge over our competitor on the mobile network operations which was the core business of our firm but also hosted this service. So naturally we felt this service gave us a competitive advantage over our rival. However, specifically for the mobile money service, we were

the pioneers of the service and therefore we did not have competitors and enjoyed the first mover advantage.” [1-Res1-MMO]

These statements demonstrate that the MNO's foremost mission in this initiative was profit-oriented, with the goal of gaining a competitive advantage over their rivals through successful innovation, which in turn would create greater value for the firm.

4.2.1.2. Defining the value proposition

As earlier stated, Kenya's M-Pesa mobile money service had a lot of influence on the rollout in Malawi albeit for different reasons although the deployment strategy was very similar. Nonetheless, there was a need to adapt the solution to the Malawian context as stated by participants from the focal firm:

“...the original idea of mobile money came from Nairobi, Kenya, but considering that these are two distinct markets, we needed to undertake some changes to the product to suit the Malawi environment.” [3-Res3-MMO]

“Initially, we were targeting consumers to be able to send money back home to the rural areas in the same manner that M-Pesa in Kenya was rolled out with their slogan of “send money home” although we did not want to overtly use this approach as we were aware of the differences between the two countries...” [2-Res2-MMO]

These statements confirm that the focal actor was aware of the need to define a clear value proposition that was relevant to the Malawian context. Reflecting on the disparities in requirements and contextual differences between Kenya and Malawi, a representative from the development partners expressed similar sentiments, on areas where things may have been done better during inception:

“In coming up with a relevant mobile money solution for Malawi, there were some pertinent questions that needed to be asked at that time. Such as what were the needs or practices of people that mobile money as financial service would address? What were the pain points in the country around financial payments that could use mobile

services? Because, whilst transferring and sending money home was really an important issue elsewhere such as in Kenya, it may not have been such an important issue in Malawi at the time, so it was important to establish an appropriate value proposition relevant to Malawi around mobile money... so it was obvious the uptake would be affected by these differences as we did not expect that the Malawi needs would be similar to those of Kenya... ” [11-Res11-DP]

This view demonstrates some of the considerations that the MNO needed to make while formulating the value proposition for the mobile money service. Thus, to address the dissimilar socio-economic context between Malawi and Kenya, where mobile money had already been deployed, a unique value proposition had to be formulated that would benefit end-users in the Malawian context by addressing their local challenges. According to the interviewees, major issues that the MNO considered in building the value proposition for the mobile money service included the following:

“So the value proposition for the service revolved around providing a convenient mobile payment system and secure money transfers between customers, both provided at an affordable cost.” [3-Res3-MMO]

“The target was to bring mobile money that can be accessed using mobile phones and at the same time easy to use for all manner of clients...we aim to assist even those in the deepest remote areas as long as they have mobile network access.” [1-Res1-MMO]

“...our solution targeted mobile money services for hard to reach areas where banks had not yet covered.” [2-Res2-MMO]

The statements reveal that when mobile money services were first introduced, the value proposition centred on offering money transfers that were affordable, convenient, and secure even in hard-to-reach places. In addition, the MNO conducted market research to determine the end users’ perceptions about the forthcoming value offer as confirmed thus:

“So we used a questionnaire to get an understanding of people’s perceptions on the idea of mobile money service... The aim was to solicit views from potential consumers and measure the level of acceptance of the mobile money services on the market. The

aim was to ascertain that we were investing in a product that was viable and the firm would have a return on its investment.” [1-Res1-MMO]

The purpose of engaging potential customers was to ensure that the MNO received their feedback which could potentially inform the process to further refine the value offer. While the feedback was a crucial process of understanding the needs of the end users, it faced a range of challenges. Thus, despite engaging potential end users at the beginning to solicit their views and perceptions about the upcoming service, the responses were mixed:

“...to the market, the idea of cash being stored in a phone as digital value, was difficult to comprehend and therefore we did not get much feedback from consumers on the usages of the upcoming product...” [3-Res3-MMO]

“...for the majority of people coming from the rural areas, it was not that easy to comprehend how the service worked... we started with some cash-ins and cash-out, top up for mobile airtime with emphasis on recharging with mobile money, because it was the easiest service to sell at that time. We let people test different amounts with the goal to show how convenient it was to use this new approach such that they could even top up credit at night with no requirement to look for the nearest agent or retailer where they could procure a scratch card to top up...” [2-Res2-MMO]

“We undertook market research that lasted for almost two months trying to understand and test the concept of mobile money to gauge people’s perceptions, and see if it would work. In some areas of the country, they chased our teams away stating that these were for satanic rituals based on their literal understanding of “putting money in a mobile phone handset” which to them didn’t make sense at all” [1-Res1-MMO]

These mixed responses emanating from the interactions of the MNO with the potential end users were a testament to their diverse perceptions on the mobile money service. These reactions highlight the limitations of how a focal actor's predefined value proposition can holistically address user needs without regard to the cultural contexts. It can be observed that during this stage, the majority of end-users in some rural areas seem to have struggled to understand the product's purpose and its main aims. Furthermore, others noted that the focal firm's initial marketing strategy for attracting clients emphasised the mobile money service as

a payment function to purchase mobile airtime than a money transfer service. Thus some mobile money experts faulted this approach and stated thus:

“We observed that during the very early days, mobile money was not marketed as a money transfer solution or as a saving platform, or a safe place to save money, or anything else addressing a particular need facing the people, it was not sold as a solution to a particular need but just for buying mobile phone airtime. To the extent that once one registered on the platform, they were rewarded with airtime bonuses. Obviously for the MNO, it saved them money somehow because it reduced the printing costs of scratch cards used to top up mobile airtime; however, overall it had some wider reaching repercussions on how it was perceived.” [44-Res44-EP]

This excerpt indicates that the value proposition was not always apparent in terms of how the solution will benefit the customer by meeting the objectives of what mobile money service sought to achieve in addressing their challenges. Additionally, it was evident that the successful delivery of the service would necessitate collaboration and coordination with a number of other players, all of whom needed to understand the value proposition. As a result, prior to the roll-out of the product the MNO convened meetings with other key stakeholders in the delivery of the value proposition, resulting in a broad set of interpretations, as validated by some respondents:

“Initially when we met the mobile service provider to understand their impending service, our bank’s position was that this product was a threat to our business and thus the MNOs would automatically become our competitor as we would fight over same customers. Therefore, through the bankers association we expressed our views that we were so much against the mobile money service...” [34-Res34-BN]

“When the MNO came to give the central bank a presentation, we were really interested in the product's purpose and goals, we believed it was the ideal solution for rural areas where people didn't have access to banks. As a result, we concluded that the MNO's target market would have minimal impact on traditional banks despite their fears.” [5-Res5-CB]

The extracts show that while MNOs faced opposition from banks in introducing mobile money services, the central bank was supportive of the value proposition since it was seen as a product that would benefit rural unbanked communities. These opposing viewpoints reflect the challenges different stakeholders face during the implementation of disruptive technological innovations such as mobile money. Upon formulation of the value proposition, the focal actor commenced seeking regulatory approval from the central bank.

4.2.1.3. Policy and regulation shaping the environment

Policy and regulatory initiatives significantly contribute to establishing an enabling environment for the emergence and sustainability of an ecosystem for services such as mobile money. This section provides the findings related to a set of activities undertaken as part of setting the regulatory and policy settings. One of the first actions done by the MNO before launching the mobile money service was to seek regulatory approval from the central bank to allow the company to operate the service. Participants from the MNO stated:

“We approached the central bank with our initial proposal on our conceptualisation of mobile money, seeking a license to operate the service.” [4-Res4-MNO]

“The approval process, which at the time included approaching two regulators namely the central bank for financial services and the telecommunication regulator for the mobile network services. Obviously we already owned the mobile network operating license and therefore the one needed was for the mobile money operating license” [1-Res1-MNO]

This license application was premised on the fact that since mobile money was regarded as a financial-related product, it required the financial regulator to approve and grant a license to operate such a service. Additionally, the central bank was required to provide the regulatory framework that would guide the operations of the mobile money service. Several actions were taken by the central bank in order to fulfil its regulatory mandate of guaranteeing financial stability in order to maintain public confidence in new financial systems such as mobile money:

“When the concept of mobile money was first introduced to the central bank by the mobile money operator, it was a fairly new concept to us as a regulator such that we

were not so sure of whether to give them a go ahead or not. Furthermore, we were not sure how best to categorise it whether to consider the service as a deposit or as payment transactions. Unfortunately, we also did not have the legal framework for this type of product so we worked in partnership with the mobile money operator and that partnership also allowed us to learn more about the product because you cannot give a go ahead to a service that you do not understand. We also engaged other central banks in the region who had already approved such services to operate in their markets so that we could learn from them.” [6-Res6-CB]

The statement reaffirms the approach taken by the central bank to test and learn about mobile money in order to understand how the services would work and, after that formulate appropriate regulations for Malawi. In order to do this, the central bank invited the MNO and then approved the provider’s pilot and future operation of the service as long as they would meet certain conditions provided to them. This was despite the fact that there was no defined regulatory framework for mobile money services at the time the MNO submitted its application. Officials from both the central bank and the mobile money operator explained the approach adopted by the two parties:

“Upon careful consideration, we (central bank) gave the operator a “No Objection” but with some conditions that they needed to do a pilot in a controlled environment with very few participants then thereafter that they had to engage competent independent external auditors to assure us of the security of the service... It was quite a new area for us and seemed to be a service with potential to drive the financial deepening agenda in rural areas...” [5-Res5-CB]

“The central bank as a regulator of financial services provided the initial guidance in terms of regulatory role for the mobile money service. Although initially the regulator did not have readily available regulations but were quick to learn from other jurisdictions such as Kenya. Having satisfied their requirements after our presentation, they thus granted us a “No Objection” which enabled us to undertake a pilot study and also get a license to proceed with rolling out the mobile money service. This gesture provided ample time to learn more about the product” [1-Res1-MMO]

These extracts demonstrate that the central bank's willingness to be flexible and allow the mobile money product to be piloted in the country despite the lack of a regulatory framework provided an excellent chance to both parties to learn more about the intricacies of the product. Furthermore, sentiments from central bank officials towards the product showed their conviction that mobile money services had the potential to be used in granting payment services to the unbanked despite the lack of a regulatory framework at the time. In response to the advent of mobile money service in Malawi, the central bank developed and released Guidelines for Mobile Payments Systems in March 2011 and stated its objective thus:

“...to promote a sound financial structure including payment systems, clearing systems and adequate financial services...” [RBM, Guidelines for Mobile payments, 2011, p.6]

This shows that while the regulators initial focus was on achieving economic goals such as financial stability, the document was silent on other social values such as financial inclusion. In contrast, prior to this, the government had already recognised the potential role that financial inclusion could play in enhancing the economic well-being of the underserved and neglected parts of society through its launch of the financial inclusion strategy in 2009. A participant from the government acknowledged the presence of this strategy:

“The first Malawi Government Strategy on Financial Inclusion was formulated and run between the years of 2009-2014 with the main purpose of stimulating participation and commitment of various stakeholders from the private sector, public sector and development partners to support projects that supported financial inclusion. But you have to be mindful that Mobile money had not yet been implemented in Malawi at the time of its launch therefore the strategy did not have any aspects on mobile money...”
[41-Res41-GO]

These comments show that despite the government developing a national strategy on financial inclusion to support its economic development agenda prior to the launch of mobile money service, the regulator did not factor the new service into the mobile money service guidelines.

4.2.1.4. Cultural practices

The findings also show that some cultural practices and traditions were being considered in the development of mobile money services in readiness for its subsequent adoption in Malawi. For example, the MNO realised the criticality of ensuring that mobile money value proposition was formulated in a way that satisfied the needs and challenges specific to the end user in Malawi. This was confirmed in the initial market research that was done by the service provider to understand the views of both corporate and individual end users:

“Our findings revealed that the country was predominantly a cash economy, with the majority of consumers dependent on cash payments. This was exacerbated by the fact that traditional financial actors took a relaxed approach to digitising payment systems, focusing instead on facilitating cash payments. As a result, we saw our mobile money product as having the ability to add value to consumers' daily lives by allowing them to undertake electronic mobile payments...” [1-Res1-MMO]

“We did an analysis of cash currency in circulation in Malawi and how the government paid its employees and other business partners. We came to the conclusion that the government paid the majority of the cash in circulation, thus selling this idea to them and allowing them to use mobile money services may revolutionise the country's payments environment. For example, we noticed that the majority of teachers in rural areas did not have access to formal banking services and had to travel significant distances to do so, often for two or three days merely to check if their salaries had been deposited into their bank accounts.” [1-Res1-MMO]

These excerpts represent some of the practices that were identified as challenges that the MNO planned mobile money service would solve as it became entrenched in people's daily lives in Malawi. Additionally, it was apparent that the success of technological innovations such as mobile money was reliant on how well the service was integrated into the end user's economic and social life as it addressed some of the societal challenges. However, despite this knowledge, data from the product's pilot phase suggests that during this birth stage the MNO seemed more focused on the service's technical usability than its utility in end users' lives as stated by some of the participants:

“So we conducted our pilots in partnership with other firms as long as it allowed us to test different functionalities of the mobile money services such as money transfers. The partners included international aid agencies such as one that was working on an emergency disaster relief project for internally displaced people due to natural disasters. We were able to test all the aspects and functionalities of the product on which the product was working including person-to-person money transfers, cashing out, bulk payments facility. The pilot exercises were designed in a way that they emphasised on testing the technical functionality of the products and services rather than on getting feedback on how a particular product was addressing specific end-user problems” [2-Res2-MMO]

The statement reaffirms the MNOs approach of emphasising on products' technical functionalities as copied from Kenya rather than understanding and embedding end-user practices into the mobile money services pertaining to Malawi. Nonetheless, the MNO approached the government as a potential client as highlighted:

“Therefore as a strategy on the product rollout, we approached the government as a potential stakeholder and consumer of mobile money services. Here we considered the bulk payments amongst such key services that the government could easily adopt for their delivery of payments to the citizenry. Unfortunately, government was not willing to adopt mobile money services at the time” [2-Res2-MMO]

The MNO considered that the government's adoption of the product would drum up interest in other sectors, change practices and influence the product adoption. However, the government's reluctance to break from its established traditions and adopt mobile money for some of its payments demonstrated a lack of cultural receptivity that was required and had potential to trigger widespread adoption of the product.

4.2.2. Governance

The findings in this section will focus on the governance related actions that occurred during the birth stage and include decision-making, designing roles of the various mobile money ecosystem actors, creation of the linkages between the actors and coordinating their interactions. These governance mechanisms, which include providing leadership, control, and

access to the ecosystem, were critical to the ecosystem's functionality and the co-creation of value in the ecosystem.

4.2.2.1. Creation of the structure for production

After identifying a market niche for the mobile money service as indicated in the value proposition, the MNO proceeded to design, identify and create a production structure consisting of multiple actors and elements responsible for ensuring the realisation of the proposed value offer. The MNO had to configure the different sociotechnical elements that would be required to deliver this service. Two senior managers from the MNO explained about the development and provision of the core network infrastructure and system:

“...at the core of everything was the provision of a core telecommunication infrastructure and system on which the mobile money service would operate. In our case, we already had the network infrastructure in place as the parent firm being a mobile network operator; therefore we would leverage this same network infrastructure for our mobile money services...” [1-Res1-MMO]

“A foreign based company was identified to develop and customise the mobile money system for our network in 2010. The system's initial needs included the ability to send and receive mobile money, which were both satisfied at the time...” [3-Res3-MMO]

These excerpts show how the MNO provided the underlying technological and communication infrastructure as a building block for the mobile money service to function. Furthermore, the MNO was informed that because mobile money service was a financial services product, it was necessary for the MNO to obtain a licence for the product before any work on the project could begin:

“As part of setting up the mobile money service, we approached the Reserve Bank of Malawi (RBM), the country's central bank and regulator of mobile money services. ...one of the mandatory requirements from the central bank included the opening of a trust account with a commercial bank for all funds that would have active value on the mobile money platform.” [1-Res1-MMO]

Due to this requirement, the implementation of the mobile money service necessitated collaboration with banks, as the latter was a key player in the service's operation. The opening of the trust account was somewhat of a challenge for the MNO due to the banks' perception of MNOs as possible competitors as confirmed by a senior manager from the MNO:

“Therefore, we approached the first bank with our request that they host the trust account for mobile money service. However, we were taken aback when we discovered that despite communicating with this bank for a long time, little progress had been accomplished and that they were unwilling to open the trust account for us. We eventually approached another bank which was willing to partner us and opened a trust account for us.” [1-Res1-MMO]

“In many forums where we met banks, we met stiff resistance from them as they openly expressed their reservations on mobile money services being allowed in the country. All the twelve banks at the time were against mobile money services, and we were thought to be encroaching on their financial services territory, therefore we encountered fierce opposition at meetings...” [4-Res4-MMO]

Despite mobile money services facing this initial pushback from some banks, the MNO recognised the significance of involving banks as a key player in the service's delivery as confirmed by one of its senior managers:

“We visited various banks as part of the sensitization process, describing our product offering to them in order for them to have a better grasp of the product and the role they would play in its growth.” [1-Res1-MMO]

Furthermore, the MNO admitted that in addition to keeping the trust account as required by regulation, banks would also serve as intermediaries in the supply of the service:

“We were quite aware that over and above operating a trust account, banks were a vital support for the smooth running of a mobile money service which would rely on payment systems already available in the country. Banks were also instrumental in providing liquidity for our agents, which would be used to exchange with e-value. Thus from the onset, banks were an important stakeholder as they would play a crucial

intermediary role in the mobile money ecosystem within the financial services industry.” [4-res4-MMO]

To meet the expectations of the end users, the mobile money service required physical presence in various places. To this end, the MNO leveraged its existing distribution network of agents as intermediaries, as they would provide physical points of presence across the country:

“We relied on the distribution channels that our parent company had already established through the airtime selling agents and retailers to have a wider reach to our customers. The parent mobile network operator was already an established firm with a brand that was well-known countrywide such that it was a well-trusted firm by many people. So agents were crucial as they performed the cash-in and cash out transactions among others...” [1-Res1-MMO]

“...we also realised a critical role that agents would play on the ground as they were already our primary contact with our mobile network customers. So we also engaged agents as a way of enhancing daily support to the consumers. They were also tasked with bringing awareness to the consumers on how the service works and teach users how to transact and also excite the market.” [3-Res3-MMO]

The MNO relied on the network of agents to act as intermediaries, performing tasks such as informal end-user training and brokering, as well as communicating some of the users' needs and expectations back to the MNO. In addition to individual agents, the MNO also engaged retailers for the last mile presence:

“So in our early stage, what we had to do first was to identify the retailers, who would actually take the important role of being agents...” [1-Res1-MMO]

As earlier alluded to, the MNO also approached the government as one of a potential clients. However, at the time, they did not commit to adopting the use of the service. Despite the government's ambivalence towards the adoption of mobile money, several development partners and civil society organisations were eager to use the service in their projects. Additionally, the development partners took on a critical role of supporting the development of Malawi's digital financial services starting included mobile money:

“The MM4P is a programme launched by United Nations Capital Development Fund (UNCDF) in partnership with several civil society organisations... MM4P provides support to digital financial services (DFS) providers in a selected group of least developed countries (LDCs) to demonstrate how the correct mix of financial, technical and policy support can build a robust DFS ecosystem that reaches low-income people in LDC... The MM4P programme launched in Malawi in 2012, it has since played a key role in developing the ecosystem and increasing usage of DFS in the country... These results have been achieved by among other things, supporting the Reserve Bank of Malawi, mobile network operators and various banks in reaching their digital financial goals” [MM4P, Dec 2017]

The findings demonstrate that development partners and civil society organisations were involved in the development of mobile money services in Malawi through various roles. As an example, in 2012 in conjunction with the central bank, they supported the creation of another grouping named the Mobile Money Coordinating Group (MMCG), whose objectives were:

“...to coordinate activities to promote the expansion of mobile money in Malawi. Mobile money presents an opportunity to empower large segments of the population by providing access to finance through open access ecosystems enabled by telecommunications networks.” [RBM, 2012]

This group was made up of various stakeholders involved in mobile money services although, it lacked any legal mandate and one participant commented on its formation thus:

“The bankers association had a representative on this group on behalf of all the banks so they could go back and report to the rest of its members. However, overtime we started getting stories of some members stating that the grouping was more of a talk-show as it had no legal standing. The absence of any legal backing meant that they did not have enforcement capabilities on most issues but could only play a catalytic role in the grouping. Then at a later stage, we also invited other civil society groups as they started considering using mobile money for social programs such as social cash transfers which the development partners were considering to use in the delivery of social programmes.” [47-Res47-DP]

The excerpt illustrates that implementing the mobile money service necessitated tight collaboration with a variety of stakeholders. As previously stated, the MNO also involved end-users in two areas: market research to understand their perceptions of the product and involving them in functionality testing for the product. These roles suggest that the focal actor viewed end-users as passive recipients of firm-created innovation in the structure. Despite the fact that the delivery of the mobile money service would necessitate a wide range of actors, as seen by the earlier extracts, the focal actor seemed to have adopted a command-and-control management approach in the ecosystem. The next section delves into the coordination mechanisms adopted during this early stage of the ecosystem's development.

4.2.2.2. Coordinating internal and external interactions

Coordination mechanisms are vital in promoting interactions among ecosystem actors in order to achieve common objectives and co-create value. The findings reveal that during this birth stage, the focal actor played a critical role in establishing institutionalised coordination by undertaking activities aimed at forming linkages with the other actors in the ecosystem. On the other hand, they also suggest that interaction on the technological infrastructure was limited due to the platform's architecture. The MNO started putting in place internal structures that would support ecosystem development, such as recruitment and equipping staff with necessary skills and training as stated:

“We undertook internal organisational changes to introduce a new structure and also recruited additional people that would be responsible specifically to build and grow the mobile money service...” [1-Res1-MMO]

“...We also engaged some Kenyan experts in this area to train our Malawian team in order to impart knowledge about this novel solution and ensure that the local team had adequate capacity and skills to comprehend the mobile money service's inner workings...” [2-Res2-MMO]

These findings demonstrate the MNO's internal organisational accountability and structures that were adopted as coordination strategies to manage the service. The development of suitable skills and competences was a critical component of creating and enhancing the capability of

the team in charge of mobile money ecosystem coordination. Following the establishment of these internal structures, the focal actor began creating ecosystem relationships with other external actors that were necessary to deliver on its customer value proposition. The focal actor's production structure followed a pattern in which the MNO was the dominating player, relying on bilateral agreements with other actors to support and create these external relationships:

“We garnered a lot of support and trust from other stakeholders on the market after the regulator awarded us a license to operate mobile money service and we managed most of these relationships with external entities on a bilateral basis. It provided the much-needed assurance that since the product was approved and properly regulated, thus most entities started having trust with the service. ” [1-Res1-MMO]

The central bank's approval provided legitimation for the mobile money service and enabled the MNO to create partnerships through institutional coordination. The dyadic pattern of relationship confirmed the transactional approach that was adopted by the MNO to create the early external relationships. The bilateral agreements coordinated the interactions between the parties, in addition to the central bank's regulatory regime that was imposed on mobile money operations:

“We made bilateral agreements or contracts with all actors that we were working with in the ecosystem. For example, agents were also requested to formally register with us for them to conduct business on our behalf as this allowed us to have control over them as they had to abide by our standards and in turn we paid them a commission.” [1-Res1-MMO]

These actions show that the focal actor played a significant role in stimulating bilateral partnerships and bringing partners into the roles and positions that the focal firm's strategy envisioned. The nature of these measures exhibits institutional actions that reaffirm the focal firm's governance authority in coordinating ecosystem interactions. However, whilst the MNO undertook some institutional coordination, the findings reveal that the underlying technical infrastructure presented a closed architecture, which had limited capacity to coordinate platform interactions amongst the actors. Thus, technological activities that underpinned the

functioning of the mobile money service during this birth stage provided a closed architecture, confirmed by one of the respondents thus:

“We outsourced the software development of the platform for the mobile money service, and the solution included basic functionalities such as sending and receiving money and mobile credit top up just as examples. However, the system was not flexible to expand its functionalities as the mobile money service needs grew with more requirements for integration and service requests from other third party players. These additional features included the push and pull services that some actors required to get from the mobile money system.” [3-Res3-MMO]

The closed nature of the service's technological architecture meant that the focal actor controlled all interactions through institutional coordination which affected further value co-creation. Other than the bilateral arrangements between the focal actor and other stakeholders, the MMCG provided a forum for the different stakeholders to interact. One of the digital financial services expert confirmed this:

“The MMCG brought together all of the market's players involved in mobile money and digital finance to share their experiences and roles, since we noticed that everyone was doing their own thing and operating in isolation, resulting in a lack of coordination.... For instance, due to lack of understanding of their role and function, even development partners working on mobile money initiatives were sometimes viewed as rivals by other stakeholders in those early days.” [44-Res44-EP]

This coordinating group provided a forum to share knowledge and undertake coordination activities aimed at creating partnerships that would bring more value to the mobile money services. A participant from a development partner confirmed the reasons why they advocated for the creation of a coordinating forum as a means to create more partnerships and collaboration between the members:

“To give you an example, in most rural areas, the nearest bank is usually far from the trading centre, but you will find the presence of a mobile money agent. This agent will undoubtedly require the services of a bank. That is where the MNO and bank relationship comes into play, because the banks are the holders of liquidity on one

hand, while the agent is required to perform cash-in and cash-out services with the customers, necessitating the need for good collaboration and coordination between the different entities.” [47-Res47-DP]

Despite the MMCG forum facilitating interaction and coordination between the different stakeholders from a variety of sectors, participants also expressed divergent views about its role. For example, a representative from the development partners who stated:

“While the MMCG made it easier for diverse participants in the mobile money ecosystem to interact, it also offered significant challenges due to the mistrust between the perceived competition that seemed to exist between some of the members. For the first time, we had competitors in the form of MNO’s and Banks, regulators, and policymakers together at the same table to discuss the opportunities and challenges that mobile money services presented. This was a problem, since most stakeholders wanted to give the impression that everything was well when, in reality, they were dealing with various issues. Capacity, regulatory, policy, and technical limitations were among the challenges that we were aware of although they were rarely expressed and never explicitly declared...” [44-Res44-EP]

Beyond these points of view, several members began to express reservations regarding the grouping's position:

“Over time, we began to hear from certain members who said that the MMCG was more of a chat show because it had no legal mandate. Due to the lack of any legal structures, they were unable to enforce most issues and could only launch discussions and hope that regulatory or policy organisations would adopt the proposed reforms... This culminated in a proposal in 2014 to look into the prospect of transitioning the organisation from a donor-funded platform to a self-governing entity similar to an industry association...” [44-Res44-EP]

Despite the challenges observed through these extracts, the establishment of the MMCG supported the development of close coordination and relationships among the different stakeholders. It created a forum where there was interaction between the institutions.

4.2.2.3. Bringing partners into positions and creating collaborations

The findings in this section focus on how the MNO established relationships with other ecosystem participants and how risks were addressed. Relationships are critical for co-innovation to occur and to have an impact on the ecosystem value co-creation. In this case, it was accomplished by the focal actor recognising opportunities, bringing partners in positions to create collaboration, mobilising competencies, and forming partnerships. The findings reported in earlier sections suggested that initially, the focal actor anticipated to manage a closed platform with all innovation coming from the MNO itself. However, the MNO soon realised that in order to deliver the value proposition and establish a suitable collaborative network, it needed to forge relationships with other external partners. Research participants from the MNO confirmed:

“...we did not expect much innovation from other market players, so we assumed that we, as the service provider, would be the exclusive source of innovation...” [2-Res2-MMO]

However, the results show that this viewpoint quickly shifted after discussions with various stakeholders:

“after presenting our value proposition to some stakeholders, we realised that for us to deliver successfully our value proposition on the mobile money service, cultivating relationships with other actors was crucial...” [1-Res1-MMO]

This statement demonstrates that the MNO realised the need to collaborate and engage other actors with whom they shared a common strategic goal for the mobile money service. This entailed starting to build collaborative mechanisms that would bring partners into their rightful roles and positions:

“we started engaging external stakeholders who were key in the delivery of the service such as service agents and other players that would be required in the ecosystem...” [2-Res2-MMO]

“So it was at this point that we had to visit several banks, and explain to them our product offering...” [1-Res1-MMO]

The focal firm also engaged other companies with whom it believed collaboration would help to create more value for the platform:

“We approached some utility companies such as the energy utility companies with the goal for collaboration to use mobile money services as one of its payment channels. We developed a very dynamic bill payment product that had customised dynamic menus...”

[3-Res3-MMO]

While institutional collaboration was taking place, the closed nature of the MNO’s platform made technical collaborations difficult. Thus, the MNO needed to hire an outside software development company with the necessary expertise to help with the integration to the utility company system. The closed nature of the platform created technical barriers for the MNO to stimulate complementary innovation:

“Integrations with external firms such as utility companies were a long and costly procedure through a third-party due to the nature of our mobile money system at the time, which was designed as a closed platform. This made it difficult for us to create collaborations with various companies... On the other hand, connecting to energy utility companies, provided us a picture of the business potential of the mobile money service if it were opened up to some third-parties.” [3-Res3-MMO]

This statement shows that to tackle the technological obstacle for collaborative opportunities, the MNO formed an external relationship with a software firm to create a technical capability. The lack of internal competences and technological resources necessitated that it considers outside partners who had complementary knowledge and expertise. This made it achieve both business viability and technical development. Although connecting and creating links with third parties on the platform proved difficult, using a third-party software company nevertheless allowed for a few partnerships with some few companies. This integration also provided an opportunity to consider the potential value that the platform could create if it had the ability to open up to external actors, as demonstrated in the extract. During this stage, the orientation of the productive system was leaning towards a linear supply chain with a command-and-control management model for the relationships.

4.2.3. Value co-creation

The findings in this section focus on the three perspectives of ecosystem value co-creation namely as a production system that is institutionally coordinated, consumption system that considers the role of end-users role and as a technical platform that provides a functionality.

4.2.3.1. Value co-creation in a collaborative production system

The findings reveal that the MNO co-created value through the provision of a collaborative production system formed from an ecosystem of actors and an underpinning technical infrastructure for mobile money products and services. A senior manager from the MNO explained how the focal actor in collaboration with other actors implemented a system to fulfil the objectives of providing a production system for the mobile money service:

“We began implementing a system for the mobile money service after acquiring a licence that allowed us to operate the service. Our system was used for storing customer’s cash equivalent electronic value in digital format, settling mobile money transactions, and processing any information and clearing transactions with any other external financial systems. Beyond the technology, we were in charge of all coordination with agents, shops, banks, and any other entities that would be required in the smooth delivery of the service.” [3-Res3-MMO]

The approval by the central bank gave legitimacy to the service and enabled the creation of partnerships with other firms. The production and delivery of the mobile money service were also made possible by the supply of a technical infrastructure and a production network of contributors, such as banks and agents. Banks operated as partners to the focal actor as they provided liquidity to mobile money agents and were responsible for hosting trust accounts as required by the central bank. The delivery of the service to end-users was reliant on the downstream ecosystem partners such as agents and retailers. At this initial stage, the MNO mainly maintained a transactional approach of bilateral relationship with all actors in the production system.

“The registration papers that each agent signed, as well as the individual contract agreements that we (MNO) signed with the other actors, were crucial in ensuring that

everyone knew their obligations of being part of the mobile money service. ...” [1-Res1-MMO]

The goal of these contract agreements was to ensure effective partnership development as well as overcoming co-creation risks among the involved actors as they co-created value. While the data supports the existence of institutional linkages with other businesses that resulted in a collaborative network for co-creation of value, the same cannot be said of the technical infrastructure in support external relationships:

“Prior to upgrading our mobile money platform in 2015, our system's architecture was closed, preventing us from integrating with external platforms. ...” [3-Res3-MMO]

Because of the platform's restricted architecture, it was unable to facilitate technical linkage with other actors, thus impeding integration of resources between diverse potential complementors. Two start-ups, in the early stages of the mobile money system, narrated their experience, pointing out how they had requested their systems to be integrated to the mobile money platform:

“We approached the MNO in 2014 or so, requesting connection to the platform for our village banking application, which was aimed at the unbanked. We were told outright that the platform did not have the functionality to integrate with external companies...” [10-Res10-SU]

“When we went to the MNO with a solution that required to be integrated with the mobile money system, the response was that the mobile platform was undergoing some improvements to allow integration with external parties. As a result, we had to wait until 2015/2016 for this upgrade, after which we were finally able to integrate with the mobile money platform...” [33 - Res33-SWP-I]

The closed platform created barriers for third parties to use platform functionalities and co-create innovations with the platform owner.

4.2.3.2. End User's perception of value and their role in value creation

This section focuses on the findings pertaining to the end user's perceived value derived from the mobile money service, as well as their role in value co-creation during this birth stage. As earlier results have shown, the idea of mobile money service was largely replicated from Kenya. According to the MNO, the product testing in Malawi focused on the technical workings of the product rather than developing a customised service to address Malawi's special needs and context:

"We adopted the same system that had been used in Kenya, the changes focused on the user interface rather than additional functions such as bringing in other use cases that were specific to Malawi. So, for example, the menu was reorganised, and different features were grouped together for simplicity of use by regular Malawian users..." [2-Res2-MMO]

Although the MNO undertook a market survey with potential end users prior to the launch of the mobile money service, this interaction focused more on the acceptability of the service in Malawi than obtaining knowledge on end user needs. This suggests that the interaction between the end-user and the MNO was not designed to enable the MNO to learn on the unique end user needs or allow them to suggest novel ways on how the service could be designed. One development partner reported on their observations:

"They (the MNO) mirrored what happened in Kenya, where the key use case was sending money home, but that may not have been the case in Malawi. When we went back to check at the usage trends after a while, we noted that people were not utilising mobile money in the way we expected, so the MNO decided to offer a 200 percent credit incentive on signing up as a way to attract new consumers.. I think that was a sign that maybe at the design stage, the consumer was not really involved..." [47-Res47-DP]

These findings reveal that the MNO viewed the end user as a passive recipient of an already constructed product that could fit into their daily lives without being involved in the innovation process. This viewpoint is supported by the sentiments voiced by several early adopters of the mobile money service, who reported varied feelings about the mobile money system during focus group meetings.

“I began utilising the service primarily as a means of safely storing my funds after I had completed my business for the day. However, I recall being dissatisfied with its expensive fees at the time.” [18-Res18-7-FGA]

“I was hesitant to join at first, so it took me a while to start using mobile money as I did not see the value. However, when they included the bill payment feature to enable one to pay electricity bills through the service, I immediately joined as I found it very convenient to purchase or pay for electricity” [20-Res20-4-FGA]

“I was persuaded to use the product because of the free airtime they were offering at the time once you join, but I was not an active user because most of my friends were not on the platform, so I didn't have anyone with whom to transact...” [18-Res18-2-FGA]

These perspectives reflect the wide range of views that end-users held about the value they obtained from the mobile money service offering. Furthermore, most of the focus group participants indicated that they had not registered their feedback with the MNO as they were not aware on how to go about undertaking such a task. The data show that the MNO employed a variety of avenues to solicit feedback from customers, but that users were uninterested in providing feedback to the MNO, confirmed thus:

“For input on how users regarded our mobile money services, we mostly relied on three groups of people. The groups comprised the service agents, some representatives selected from some retailers and brand ambassadors who numbered about 500 across the country. Additionally we had a call centre which recorded any issues that consumers had with the system.” [1-Res1-MMO]

“With regard to the agents, they were our main source of input in terms of getting user feedback. We emphasised to our customers that their key contact point was mainly through the agents and we thus periodically undertook workshops with the agents. During these workshops we trained these agents to solicit ideas from the customers on the performance of our products and services and how they can be improved. We thus

met the agents every quarter at district level to discuss common challenges and hear any feedback that they may have received from the consumers.” [1-Res1-MMO]

The statements confirm that the MNO considered learning through getting feedback from the end-users as an important aspect in the ecosystem as it created channels for knowledge exchange and sharing. The use of these different channels by the MNO represented its quest for user engagement and support knowledge exchange for value co-creation.

4.2.4. Change

Several events occurred near the conclusion of this birth stage, according to the findings, which caused structural pattern changes in the mobile money ecosystem. The first issue arose when the focal actor recognised the platform's limitations in supporting interactions amongst other ecosystem actors, as the respondents from the MNO pointed out:

“Initially, the system was able to satisfy our original needs for a mobile money service, which included sending and receiving electronic money. However, we gradually realised that the system was not flexible enough to extend its functionalities to third-parties, and yet the demand for mobile money services and requests from other firms continued to grow, with more integration and development requests, and it became clear that we needed to upgrade our system.” [1-Res1-MO]

“...However, the system was not flexible enough to increase its capabilities as the demand for mobile money services expanded, as did the number of requests for integration from potential complementors. Banks with push and pull needs to allow moving money between mobile money wallets and bank accounts were among these requirements. However, the system was unable to meet all of these requirements, and it became clear that more functionalities were required on the platform... As a result, we hired another firm to modernise the system architecture so that it could be opened up to external integration.” [3-Res3-MO]

These excerpts confirm the challenges the MNO faced as a result of the platform's closed character, which hampered value co-creation with other potential complementors. Because of these flaws, the platform's capabilities needed to be enhanced in order to keep up with the

changing environment and technological growth. Furthermore, as one of the organisation's early members acknowledged, the formation of the coordinating group had generated more opportunities for interaction and partnerships, as well as promoting knowledge sharing:

“The coordinating committee became a focal point for facilitating interactions and collaborations, organising capacity-building workshops, and strengthening stakeholder coordination under the direction of the central bank and development partners. This gradually assisted stakeholders in identifying significant ecosystem problems that had previously gone unnoticed. Following that stakeholders were able to discuss possible corrective actions, which included the need for improved partnerships and various members seeking expertise in policy, regulation, and technical sectors, among other things. In this regard, Malawi's development partners were quite helpful in terms of providing support for capacity building.” [48-Res48-EP]

The coordination group played a critical role in fostering collaborations that supported capacity building and awareness within the mobile money ecosystem, as shown in this excerpt. The working group established a unified platform for raising awareness and exploring partnership opportunities among key stakeholders. As confirmed by one development partner, the training events and workshops provided an opportunity to improve capacity and learn from other countries:

“With our assistance in undertaking capacity-building workshops and improving stakeholder coordination, we gradually helped the stakeholders with expertise to identify shortfalls and develop the ecosystem. Following that it was easier for the stakeholders to discuss possible corrective steps, which included the need for better collaborations.” [11-Res11-DP]

This extract suggests that the capacity-building workshops increased the depth of knowledge for the different stakeholders and assisted in identifying challenges and developing appropriate solutions. Thus, addressing the gaps created opportunities for improved partnerships and a more open platform leading to the next phase in the life-cycle, termed the expansion stage.

4.2.5. Summary of the birth stage findings

The findings reveal that during this birth stage, the primary mission of the focal firm in the mobile money ecosystem was to gain competitive advantage over its rival companies as mobile network operators. Therefore, seeking collaboration to work with other entities was not its major objective. The success of M-pesa, as a mobile money platform in Kenya prompted the replication of the digital innovation to other countries such as Malawi. The formulation of the initial value proposition for the mobile money scheme in Malawi was thus influenced by how the service was launched in Kenya, and not the local context. However, dissimilar socio-economic and cultural contexts between Kenya and Malawi posed challenges in the initial uptake of the mobile money services. Additionally, the findings also reveal other contextual issues such the lack of a clear government policy and regulatory framework for mobile money as a financial product at the time of piloting. The findings show that the regulator permitted the potential mobile money provider to pilot the service and later approved its rollout in an effort to promote mutual learning about the service.

The study results also show that due to its nature and because mobile money as a digital innovation required a reconfiguration of various sociotechnical components in order to be delivered as a financial service, the focal actor focused on developing the mobile money ecosystem's structures. The findings reveal that the focal actor emphasised on developing the functionality of the platform, and also engaged in governance related activities such as designing roles of other actors and forging relationships with other actors such as service agents and banks. These enabled the mobile network operator to undertake institutional coordination for interactions to take place and facilitate transactional relationships with these actors to enable the ecosystem deliver the service. Despite the fact that the external relationships created some links that enabled actors to collaborate on value co-creation, the platform retained a closed architecture due to limitations of the technical platform that prevented collaboration and thus affected value co-creation with third party actors in the ecosystem. As a result, innovation in the ecosystem primarily remained the domain of the focal firm, and it followed a command-and-control approach to value co-creation with other actors. However, this closed design of the platform also prompted structural changes as the MNO became aware of the restrictions on actor interaction that it had built, depriving the ecosystem of potential opportunities to co-create value with other actors. These restrictions created opportunities to transition into the expansion

stage as the focal actor enhanced its platform and changed its governance approach to the mobile money ecosystem.

4.3. Expansion Stage

This section describes the findings relating to the expansion stage of the mobile money ecosystem in Malawi. The findings show that during this expansion stage, the regulatory environment became stable with the introduction of clear regulation for mobile money services. They also reveal that despite the governance challenges, collaboration and coordination increased among ecosystem members owing to the enhanced platform that allowed actors to co-create value and reach a larger number of end users during this expansion stage. Table 4.3 presents themes identified for the expansion stage, and expounded in the following sections:

Table 4.3: Themes identified for the expansion stage

Theme	Sub-themes
Context	Changes in mission and goals
	Redefining the value proposition
	Enhanced regulation and policy
Governance	Changes in the structures
	Resourcing the platform to enhance innovation
	Control mechanism to support platform innovation
Value co-creation	Collaborative production system
	Enhanced platform ecosystem capabilities
	Ecosystem as system for value consumption

4.3.1. Context

4.3.1.1. Changes in mission and goals

The data show that the expansion stage commenced in 2015, when the focal actor's mission evolved from simply linking end users to internally created products, such as mobile money transfers, to collaboratively creating products, such as loan services or utility bill payments, in partnership with third-party actors. Signs of the beginning of the expansion stage were visible from 2016, when the central bank's reports show a steady increase in end user numbers, which

increased from 2.2 million subscribers in December 2015 to 3.4 million in December 2016 (RBM, 2015, 2016). This increase can be attributed to several causes, including the MNO's change in strategy. A respondent from the development partners highlighted the growth in end users of mobile money during this period:

So, in terms of major expansion indicators, our reports show that there were roughly a thousand active users on the platform in 2012, a figure that steadily increased over time and is supported by data from annual central bank reports on mobile money. By 2015, there had been a significant improvement, with data indicating that the number of active adults using the service had risen to around 750,000, and by 2016, it had doubled to over 1.8 million, which was quite a significant increase. As a result of this tremendous rise, the Mobile Money for the Poor (MM4P) report claims that 2016 marked the start of the growth phase. (11-Res11-DP)

A senior MNO executive corroborated the increase in end users from 2016 and expounded on the strategy shift:

As we gained more experience and knowledge about mobile money services, we realised that in addition to involving external parties, such as agents and banks, in the delivery of our services, partnering with other third parties, such as utility companies, to use mobile money functionality enabled us to gain more customers on the platform. This significant increase in customers, which occurred around 2015 when we connected with utility companies, was an eye-opener about the impact of partnerships on consumers' growth and the need for further integrations to be allowed on the platform. (2-Res2-MMO)

This statement reflects a transition from the MNO's initial mission, which had presumed that the focal actor would be the only source of innovations, to one that encouraged collaboration with external parties. The extract further shows that one of the drivers of this new strategy was exploiting the potential that the additional mobile money functionalities would have for the growth in usage of the service. Earlier findings from the birth stage revealed an increased demand from third parties for integration with the mobile money platform. These were some of the driving forces that prompted the MNO to consider changing its strategy and integrate external actors, as explained by one of the officials from the MNO:

Initially, the system was able to satisfy our original needs for a mobile money service, which included sending and receiving electronic money. However, we gradually realised that the system was not flexible enough to extend its functionalities to third parties, and yet the demand for mobile money services and requests from other firms continued to grow, with more integration and development requests, and it became clear that we needed to upgrade our system. (1-Res1-MMO)

These new requirements represented a shift in needs, necessitating a change in strategy, which included equipping the platform with appropriate resources to enable integration and collaboration with other ecosystem participants.

The coming of new technological solutions, such as application programming interface (API), was also a driving force in overcoming some of the barriers that existed during the platform's birth stage and prevented collaboration and integration with other ecosystem participants:

The original platform had challenges as it was not flexible enough until the changes that took place around 2015 that brought in a platform with an enterprise service gateway, which allowed us to integrate with other external systems and also expand the services and products that we could offer to third parties. It enabled us to have the banks and other external parties integrated directly [with] the mobile money platform. (3-Res3-MMO)

The findings show that upgrading the platform to enable API integration for selected external parties was a game changer, acting as a technological driver in opening up the platform:

The upgrade allowed our firm to offer API functionalities to some external third-party companies, who were then able to integrate [with] our platform and develop new innovations that attracted more customers. (3-Res3-MMO)

The extract illustrates that the MNO's mission was to attract and serve more end users as the platform's capabilities grew due to third-party integration.

Another main driver that prompted the expansion stage was the work carried out by some development partners:

Development partners provided support and expertise to the mobile money operators on how to expand the reach of mobile money services across the country. Various approaches were used to achieve this and included providing experts to the service providers, facilitating formation of forums that supported dialogue amongst the ecosystem actors, such as the Digital Financial Services Coordinating Group (DFSCG), and providing training to government entities that ensured the country formulated appropriate policies and regulation to support mobile money services. (11-Res11-DP)

These actions underline the development partners' roles in supporting the ecosystem's mission during the expansion stage, which included facilitating interaction and collaboration among ecosystem participants.

4.3.1.2. Redefining the value proposition

As the mobile money service transitioned into the expansion stage, the focal actor changed its strategy to incorporate selected external entities into the platform, employing strict selection criteria. According to the MNO, one of the criteria was to examine the value proposition of the third party:

When it came to third-party innovators being allowed on our platform, some of the areas we considered included checking the security features of the product and their business model; if we weren't satisfied with their value proposition or the sustainability of the suggested innovations, we would [be] unlikely to allow them on the platform. (1-Res1-MMO)

This remark demonstrates that the MNO would assess the third party's value proposition to ensure that it was consistent with the MNO's strategy. This extract also suggests that a blueprint was followed, and anything that deviated from this blueprint was rejected. One research informant from a start-up company explained the acceptance criteria as follows:

[It is] a rigorous assessment of the business case in line with [the] platform owner's

strategy whereby they decline the services if they are not sure of [their] viability or [if it is] not in tune with their overall strategy. Fortunately, we were allowed to integrate [with] the platform. (26-Res26-SWP-I)

Another company explained how the mobile money platform turned down its request to access the API due to issues with its value proposition not being aligned with the MNO's strategy:

After various attempts [to request] access to the API, our application was rejected because the service we intended to offer was not in line with the MNO's overall strategy. Therefore, they could not integrate us into the platform. (25-Res25-SWP-F)

The extract shows that the focal actor had complete discretion over whether a company could integrate with the platform if the third party's value proposition did not align with the MNO's strategy. Nonetheless, this approach was still a strategic shift from the initial approach during the platform's birth stage, when the value proposition was based solely on the MNO's innovation.

4.3.1.3. Enhanced regulation and policy

As documented in prior findings from the platform's birth stage, the mobile money service operated in an environment without proper regulation, but it relied on the Mobile Money Guidelines, issued by the central bank in 2011, which served as the de facto regulation. In 2017, during the platform's expansion stage, the government passed laws that offered clear regulations for mobile money services. A respondent from the central bank explained the background of this law and its significance for Malawi:

The Mobile Money Guidelines (MMG) [have been] the primary oversight instrument for steering the mobile money operations since [their] inception in 2012. Prior to that, the regulator lacked any regulatory and legal tools to oversee the mobile money service. However, these guidelines lacked clarity and provided insufficient regulatory and legal mandate to the central bank with regard to mobile money services. Therefore, to overcome these challenges, [the] government passed two legal instruments, namely the Payments Systems Act of 2016 and the Electronic Transactions Act of 2017 that now supported all the electronic payments transactions, including mobile money. These

instruments offered clarity and certainty of the law around electronic payment systems and electronic transactions. Additionally, the central bank issued the Electronic Money Regulation and a directive on Interoperability of Retail Payment Systems in 2017. (5-Res5-CB)

The findings show that the new instruments introduced during this expansion stage strengthened the central bank's legal and regulatory framework, giving it a clear mandate to achieve its objectives of ensuring financial stability as it governed the mobile money system. However, the study also found that the directive on interoperability, while effective in supporting collaboration among the ecosystem actors, was more focused on the established licensed market players than on opening up the platforms to new entrants that could bring other innovations. Respondents from the regulator acknowledged this:

The objectives of the interoperability directive included establishing minimum mandatory requirements for all retail payment systems offered by payment service providers. Interoperability would thus be attained through connection to the National Switch. Yet being granted a licence as a payment service provider required regulatory approval from the central bank. The capital requirement for a firm to become a payment service provider was set at K50 million, which made it prohibitive for small businesses or start-ups to join and connect to the National Switch and innovate on the platform. Due to these circumstances, over time, it became apparent that some of the requirements needed to be reconsidered. One approach was to base the capital requirement amount on the risk that the potential enterprise poses as in its current form, [it] may stifle innovation. (7-Res7-CB)

While the introduction of the new legal and regulatory framework played a crucial role in ensuring certainty in the payments landscape for service providers, its design presented barriers to participating and innovating in the ecosystem for start-ups. These barriers were caused by the lack of defined laws and guidelines in the legal regulatory framework to facilitate and encourage innovation with third-party firms working in the ecosystem. Furthermore, the nature of these governance instruments provides evidence that the legal and regulatory environment during this stage was designed to place particular emphasis on the economic goals of ensuring financial stability in the system. Although the findings show some engagement between the regulatory institutions and the end users of the mobile money systems, no clear evidence exists

of deliberate policies and regulations to support the development of end user demand to address specific contextual needs. A participant from the central bank described the regulatory approval process for innovations:

In terms of approval for new products and services by the service providers, as the regulator, we only grant them approval to roll out the product once we are satisfied that the product meets the regulatory requirements. The actual process starts with granting them a go-ahead to undertake a pilot test. Thereafter, among other things, they are required to submit a report at the end of the pilot describing the entire pilot process. We also require that they engage an independent external auditor to undertake an audit of the system. Our final decision is based on these two reports ... The rationale for this approach is to ensure the regulator does not get involved in the actual pilot process and we can maintain and play our oversight role without being part of the process. (5-Res5-CB)

Another member from the central bank reflected on the regulatory approval process:

For market development and [the] introduction of products, this is left in the hands of the market players as the innovators. For us, we are merely regulators and the guardian of public interests. Once the product is rolled out [in] the market, what we focus on is just the consumer to ensure their rights are protected. So if the product is affecting consumers' rights, and we get such reports and establish that consumer rights were indeed violated, then there are penalties that we mete out to the service providers. (6-Res6-CB)

Commenting on the role of the regulation in ensuring the relevancy and usefulness of innovations, a senior manager from the central bank stated:

Sometimes fintech innovations may not be even appropriate for a particular context unless customised to suit that particular environment. In some instances, maybe particular innovations may not even be needed in Malawi. So we have dealt with that issue from different perspectives. In such circumstances, we engage consumers through their associations to understand their views on specific areas that require their input. This association is also part of an inter-organisation body comprising various

stakeholders, such as financial service providers, MNOs, regulatory bodies, etc., that normally undertakes financial literacy workshops to empower the consumers with appropriate information on usage of fintech products and services. (7-Res7-CB)

Overall, these extracts confirm that the decision-making regarding innovations to be introduced to the market was largely left in the hands of the service providers, who were expected to design and pilot the products and services. The statements demonstrate that the regulator placed significant emphasis on end user protection but less on market development through the promotion of specific innovations. The extracts further imply that the regulator did not participate in proactive dialogue with both incumbent providers and potential market entrants, such as start-ups, regarding new products and services as a way of nurturing innovation. A respondent from the MNO stated:

The regulator merely provides [a] legal and regulatory framework pertaining to the law and regulations that guide the financial services industry, whilst the decisions on which innovations to introduce [to] the market as well as which firms can be allowed to connect to our platform are an in-house activity. (1-Res1-MMO)

This comment exemplifies the problem of the MNO's authority, which it wielded with minimal accountability, in regard to building new products and services for the mobile money ecosystem. The results provide little evidence to indicate that the regulator was involved in understanding the needs of end users to encourage or facilitate the development of specific products through policy and regulation. Although there was new regulation during this stage, which led to end user growth, more focus was given to the service providers and their innovation, with less done to build end user value through the formulation of appropriate policies and regulations to support value co-creation.

4.3.2. Governance

The findings in this section are primarily concerned with the theme of governance, specifically activities that occurred throughout the ecosystem's expansion stage. The theme explores and analyses the significant decisions made by the ecosystem leader and other participants, including the shifting role of the focal actor and the structural changes that took place, such as the introduction of new technological and infrastructural changes. The aim of this section is to

determine the impact of these shifts and changes and to understand how they led interactions and the creation of coordination and collaboration mechanisms.

4.3.2.1. Changes in structure

The introduction of an improved platform architecture with API integration functionality to link external actors was one of the important strategic decisions made regarding the infrastructure to support the expansion stage of the ecosystem evolution, as illustrated in the previous sections. The prior platform's limitations precluded the focal firm from constructing a structure with a technical foundation that would allow third parties to co-create value on the platform. An official from the MNO explained the rationale behind the upgrade:

Despite the absence of the API prior to the upgrade, we devised some workarounds, providing access [to] some functionalities to a few firms on a bilateral basis. We noted that whilst regionally most neighbouring countries' customer growth was at 40% month-on-month, ours was growing at a slower rate, hovering at 15–10%. However, events took a huge turn, and we experienced big growth owing to the introduction of the bill payment service as our numbers almost doubled. This gave us the impetus to design and build a proper platform that would support integration work from other external parties ... Therefore, we upgraded the platform in 2015, which gave us an opportunity to integrate and innovate with other firms in the ecosystem. (1-Res1-MMO)

The extract reaffirms the strategy change by the focal actor and how it contributed to the emergence of a service that supported more interaction functions, enabling resources to be shared between the MNO and other ecosystem participants to co-create value. The quote also demonstrates that the MNO recognised its changing role as a focal actor and the need to partially open up the platform and nurture innovation, potentially drawing more end users to the platform and creating more value for the ecosystem participants.

A respondent from a software development firm reflected on the platform's evolution and changing role due to the new functionalities that allowed for external integration:

We had been knocking on the MNO's doors, demanding integration into the platform, but due to the platform's technological constraints, we had always received a negative

response. However, in 2015, we were informed that work was being done to modernise the platform and enable integration with third parties. We were told that selected third parties would be permitted to integrate with the mobile money platform upon a successful upgrade process. This was a great moment for us, and we also realised that the MNO had a significant opportunity to extend its role and increase products for its customers as there could be more usages of mobile money service in Malawi. (26-Res26-SWP-I)

The statement suggests that the expansion of the platform's technological capabilities had significant implications for the MNO's and the production of services related to mobile money. Extending the ecosystem to other participants entailed offering opportunities to new actors and granting them novel roles in ecosystem value co-creation. The extract also implies that the upgrade had a significant influence on the participation of different actors in the ecosystem.

Development partners also assisted in the construction of the structure of the mobile money ecosystem. According to the evidence presented in the earlier section covering the birth stage, the establishment of a coordinating group, known as the Mobile Money Coordinating Group (MMCG), was recognised as one of the major structures that permitted interaction among ecosystem actors. The reports show that the coordinating group was formed with the support of development partners and the endorsement of the central bank. Various reports reveal that with its wider membership, the group acted as a driver of change in constructing a structure for interaction to support and foster collaboration in the ecosystem. Its successor grouping was renamed the Digital Financial Services Coordinating Group (DFSCG) in 2015 and played a significant role during the expansion phase:

MMCG had since evolved to DFSCG and held a wider membership base that included commercial banks and other relevant stakeholders, shifting the group to accommodate a wider stakeholder group, rather than limiting it to mobile money providers. (USAID Feed The Future Report on Malawi, 2015, p.6)

The DFSCG provided a platform for collaboration and to speak with one voice, share experiences and best practices, and explore new partnership opportunities despite the competition that existed between some of the members [The] UNCDF [has] actively participated in the group since its inception in 2012, contributing to some crucial

activities, such as conducting workshops and conferences on the development of ecosystem, publication of whitepapers, as well as sharing and exchange of knowledge among different stakeholders working in the ecosystem. (MM4P Report, 2017)

These reports show that development partners took a leading role by providing financing and technical assistance to spearhead activities for this grouping. As evident from the MM4P extract, development partners facilitated dialogue among the actors through the role undertaken by DFSCG and supported the engagement of ecosystem participants and coordination of processes for undertaking collective action. Furthermore, evidence from archived reports shows the important role played by development partners through the DFSCG in entrenching relationships and building neutral coordination, which was crucial for building ecosystem-wide capacity:

As a result, there was limited trust among private sector members, and they were unwilling to allow competitors with comparable interests to take a leadership role in DFSCG, resulting in the UNCDF keeping the leadership role for a long period after its term had already expired. The business sector also thought these development partners and governmental institutions were more trustworthy and better suited to lead the coordinating body because of their neutral attitude, according to the report. (USAID Feed The Future Report on Malawi, 2015, p.17)

These reports were corroborated by both interviews and extracts from the MM4P reports:

The central bank and development partners working in the DFSCG were considered to have a fair attitude in the coordination efforts, working in the best interests of all players and not favouring certain interests in the execution of their work. (5-Res5-CB)

The UNCDF-MM4P has provided us with great support that has demonstrated how a correct mix of strategies can help build a robust ecosystem that can reach out to low-income people across the country. (MM4P Report, 2017)

[The] UNCDF has been instrumental in the development of digital financial services in Malawi through various initiatives... It has also been at the core of the formation of

DFSCG, where key industry players involved in DFS meet, brainstorm, and strategize on how to increase the uptake of DFS in Malawi. (MM4P Report, 2017)

The findings demonstrate the role of development partners in facilitating neutral ecosystem orchestration, developing confidence among ecosystem participants and encouraging ecosystem members to collaborate. These roles played a significant role in the ecosystem's growth during its expansion stage.

4.3.2.2. Resourcing the platform to enhance innovation

During this expansion stage, the upgraded platform, which was resourced with the capacity to support integration with third parties, changed the interaction pattern and the innovation approach of the ecosystem. As shown earlier, the birth stage lacked a technical-centric coordination mechanism through which to open up access to the platform and support resource integration between ecosystem participants to create innovations. The results reveal that the upgraded platform enabled the focal actor to engage third-party firms to co-create value, as explained by a senior business manager from the MNO:

Initially, the system was able to accommodate the original requirements of sending and receiving electronic money, which were the original needs of the mobile money service. However, gradually, we realised that the system was not flexible enough to extend its functionalities to third parties, and yet the mobile money service needs kept growing with more integration and development requests coming from other firms ... and thus it became obvious that we needed to upgrade our system. (1-Res1-MMO)

Several research participants confirmed these newfound digital platform capabilities:

The API allowed us to integrate with various firms, such as banks, as they used the platform as one of their service delivery channels; innovators that came up with services that operate exclusively on mobile money platforms; and software developers that offered mobile money integration services to other firms. (3-Res3-MMO).

Our firm provides microloans targeting the unbanked based on their phone usage, and the presence of the API enabled us to integrate with the platform and provide the service to any eligible phone user. (29-Res29-SWP-I)

The ability to integrate seamlessly with third-party entities through the API enabled complementors, such as a microloan firm, to provide new services to a wider group of end users by harnessing the potentially transformative capabilities of the platform. Indeed, the results show that third-party actors in the platform ecosystem developed various services:

So the microloan product was developed by combining our specialised knowledge and development resources with some core data from the platform owner and other capabilities of the digital platform to come up with a credit rating score for mobile phone users. Then the service ran an algorithm that determined the loan thresholds for various users. We also partnered [with] a bank [that] provided the resources for these loans. (29-Res29-SWP-I)

We developed a mobile payment product in collaboration with the mobile money platform owner, with whom we partnered to come up with a solution. So [we used] their platform capabilities and our own expertise to come up with an innovation that enabled farmers [to] use cashless payments to procure agricultural seeds; at the same time, the platform provided market access to the seed company. (27-Res27-SWP-I)

The availability of the API was noted to enable technical integration among the ecosystem actors. An interviewee from the MNO highlighted the importance of the API as a tool to achieve integration:

The coming in of the API proved to be a game-changer as soon we started getting so many requests from different firms including banks that required to integrate to our platform. The banks adopted the mobile money service as one of their service delivery channels; whilst we also got requests from technology companies, that needed to provide services exclusively on the mobile money platform....there were also other firms that were just dedicated to offering technology expertise to firms that required to integrate on the mobile money platform (4-Res4-MMO)

A senior manager from a bank corroborated this:

In the absence of the API from the MNO, our firm would not have been able to use mobile money as a service delivery channel for our products. (27-Res27-SWP-I)

After approving third parties to integrate with the platform, the MNO provided the external actors with standardised interfaces to facilitate the development of additional services on the mobile platform. Describing this stage further, one of the participants commented:

We started the integration work by being provided [with] the documentation of the API and being informed of the other processes and technical tasks that we needed to undertake to achieve the integration. It was clear in terms of what we were allowed or not allowed to do from accessing the API itself and the documentation that was provided. (29-Res29-SWP-I)

However, there were also divergent views among the third-party firms already integrated with the platform as to how the platform owner supported ecosystem value co-creation, as evidenced by these two participants:

At some point, we experienced challenges with the standard API as presented on the platform to integrate with our banking application as it could not meet some of our needs. Therefore, we had to put in a request to the service provider, who accepted our request and went ahead [with making] the necessary changes, which worked to our satisfaction. (33-Res33-SWP-I)

We have had challenges to have one of our requests with the integration [met] since we went live over a year ago, and we needed changes on the API, but to date, nothing has materialised (26-Res26-SWP-I)

The results illustrate that the platform owner lacked consistency in addressing issues from the third-party firms integrated with the platform. Furthermore, the extract demonstrates that there was a lack of attention in addressing the challenges reported by some external actors. Despite the presence of the API, there seemed to be a deliberate approach to limit communication on the availability of the API to all stakeholders:

We have not yet openly published the API on our website. (3-Res3-MMO)

I am surprised to hear that the MNO has an API that can enable small firms like ours to bring innovations to the platform. I approached them some few years back, and they indicated that they don't have an API for third parties, and [I] haven't tried again since that time. (28-Res28-SWP-F)

Although the platform owner confirmed the availability of the API, they also acknowledged that the API was not fully open to the public. Therefore, some firms were impacted by this inadequate communication regarding the API, with a number of firms being unaware of its existence. The platform owner explained various reasons why the platform did not provide an open API:

Our firm is still very hesitant to have fully open APIs on the platform due to security and business concerns. On the business side, we have noted that most of the smaller third-party firms that approach us do not have fully developed ideas that have been tested and can generate sufficient revenue. So we do not allow our platform to be used as a testbed but rather [open it to] already tested innovations that can be deployed into business with just some minor tweaking. Secondly, we do not wish to openly publish the API for security reasons as we need assurance that these complementors are bringing solutions that are secure enough and will not compromise our wider systems. (1-Res1-MMO)

This statement confirms that despite the presence of API functionality, the platform operated in a semi-closed manner, and thus third parties had restricted access to the platform unless explicitly allowed to integrate and test their products by the platform owner.

As part of extending the platform's diversity and providing a bridge to start-up firms that face challenges to meet platform owner's conditions, an internationally funded firm installed a hub solution that served as a single entry point to the platform for some third-party actors:

We were approached by an international organisation requesting to be allowed to install a hub solution that would serve as an entry point to the mobile platform for

smaller firms. The organisation is targeting small entrepreneurs who provide critical utilities, such as water and power, to off-grid populations that pay small amounts and may thus require [using a] mobile money service for such payments. (3-Res3-MMO)

The hub solution was intended to enable smaller firms to participate in the MNO's platform ecosystem and bring their innovations to a wider audience. The target group was entrepreneurs who did not have the resources required by the platform owner.

4.3.2.3. Control mechanisms to support platform ecosystem innovation

During the expansion stage, the focal actor demonstrated a distinct governance approach as part of developing controls to manage access to the platform and to allow interactions between the platform ecosystem participants. The focal actor implemented various processes to manage access and integration with the platform. One participant from the MNO reported:

When we commenced granting access to our platform through the API, we defined a set of rules that would be used as conditions for membership to the platform and included a description of the obligations [that] the third parties had to abide by to maintain their membership. This process formed part of the business assessment [that] third parties underwent to enable us [to] evaluate their product and understand if it is in line with our overall strategy. (1-Res1-MMO)

This quotation provides a view of the gatekeeping controls implemented to govern the MNO's innovation approach. The control measures also signify conditions that were used as the access criteria for ecosystem membership. The platform owner retained all the decision-making rights and used tools such as contract agreements and platform rules to provide regulation-based governance, in addition to its technology-based controls. Several interviewees confirmed this arrangement:

The responsibility to accept or reject a third [party] to integrate [with] the platform rests with us as the platform owner and is based on several factors. (3-Res3-MMO)

Upon being accepted to integrate [with] the mobile money platform, we were requested to sign a contract agreement with the platform owner. (26-Res26-SWP-I)

The decision-making process and regulatory tools enabled the platform owner to use non-technical governance tools to manage innovation on the platform. To ensure controls in accessing the platform, the owner also evaluated the business viability before any third-party actors were granted access to the platform. One research informant from a software development firm explained the process as follows:

We were advised to go to the MNOs office and requested to make a presentation on our product value proposition. The presentation included our strategic objectives, business model and they assessed the viability of our product as well as to see if it was in line with their (MNO's) strategy. (32-Res32-SWP-F)

The informant stated that these measures by the platform owner were intended to control access by ensuring that the quality of the services developed for the platform aligned with the owner's overall strategy. However, the experiences of some third parties seem to point to a lack of fairness and transparent conditions in the process, exemplified by the limited communication to most stakeholders regarding the availability of the API. This inadequate communication with external parties led to a number of firms being unaware of the API's existence. Some of these respondents had been rejected from developing services on the platform:

After developing our innovation on a digital platform, we needed to integrate it with a payment service, such as mobile money. Therefore, we approached the mobile MNO. However, they advised us that they had provided a similar service to a small start-up, but [it] had been idle for too long, and as such, they were hesitant to allow a similar service to us. They advised us that we could go back to them with our application once we showed proof that we had managed to get between 1000 and 2000 customers. (25-Res25-SWP-F)

The MNO declined to grant us access to integrate [with] the mobile platform in a manner that lacked a clear and consistent approach. However, we are now just trying to find alternative ways of enabling payment functionalities for our service, [for] which we know the mobile money platform could have provided the best solution. This development has also hampered our plans to consider developing products around mobile money. This frustration is shared amongst many software developers, as I have

noted similar comments on various software developer forums regarding how they are struggling to get access to the API. (30-Res30-SWP-F)

We approached the platform owner on several occasions to integrate our transportation application, which we wanted to integrate with the mobile money platform. However, the MNO informed us that their API is not open to us, despite [us] being aware of its usage on some banking websites. We are now pursuing other means to achieve the same goal. (28-Res28-SWP-F)

As these statements show, third-party companies had mixed feelings regarding the API. Despite the fact that certain companies were aware of the API's existence and attempted to gain access, they were still denied access for unknown reasons. Furthermore, these testimonies reaffirm that the MNO had implemented an opaque vetting procedure with unclear criteria for third parties, deterring potential third parties from supporting innovation.

Despite the fact that the expansion stage provided the capability to extend platform functionality to other ecosystem participants, some of the controls created barriers for certain entities to gain access to the platform. Due to these challenges, the MNO acknowledged that it had been approached by an international organisation working with development partners to provide a solution. Its goal was to address the hurdles that some smaller firms faced while attempting to integrate with the mobile money platform to address some local issues:

We were approached by an international organisation requesting to be allowed to install a hub solution that would serve as an entry point to the mobile platform for smaller firms. The organisation is targeting small entrepreneurs who provide critical utilities, such as water and power, to off-grid populations that pay small amounts and may thus require [using a] mobile money service for such payments. (3-Res3-MMO)

The hub solution was developed to extend the platform's diversity and provide a bridge to start-up firms that faced challenges in meeting platform owner's conditions to access the mobile money platform functionalities. Therefore, the hub solution served as a single entry point to the platform for some third-party actors. The hub's objectives were articulated by a respondent from the hub:

The Instant Payment Notification (IPN) hub came about to assist off-grid service providers in various utilities, such as water, electricity, sanitation and transportation – to provide them with an easy way of [integrating with] the mobile money platform and serv[ing] customers more efficiently. The service would achieve its goals by facilitating receiving and validating real-time notifications of payments [made] by the end users. So its primary value would be promoting the integration between pay-as-you-go providers with mobile money payment platforms. In the process, services are provided to those [who are] formally financially excluded but have access to mobile money platforms. (38-Res38-VAS)

The hub solution aimed to help smaller firms integrate with the mobile money platform and to bring other services and innovations to a wider audience. The target group was entrepreneurs who struggled to obtain adequate resources to meet the stringent conditions set by the platform owner. The solution enabled external firms to circumvent the impediments they faced in accessing the mobile money platform and leveraging its functionalities. One interviewee commented on these challenges:

Due to the numerous technical and business requirements imposed on us by the mobile money platform owner just to integrate us [with] their service, we failed to leverage mobile money functionalities. However, the coming in of the IPN hub has provided us [with] an opportunity to still easily integrate and utilise the functionalities of the mobile money platform. (52-Res52-IPN)

The extract demonstrates that this solution was ideal in this situation as it not only allowed small firms to integrate with the platform, which would have been difficult otherwise, but it also enabled previously excluded end user to access vital services. The data also revealed that the hub providers targeted people in rural communities, where there was a high prevalence of unbanked customers:

Our solar service mostly caters [to] people in rural communities [who] do not mostly have any formal bank accounts that can enable them [to] easily subscribe to such a service. However, with our firm being integrated [with] the IPN hub, such people are able to pay for such services in small instalments by using mobile money to access the solar services. The arrangement is that the solar service is connected once we receive

a notification from the mobile money provider that [a] payment has been [made]. (48-Res48-IPN)

The hub mechanism created an opportunity to overcome some of the controls on the platform that prevented small firms from co-creating value. It opened up access for platform integration and thus potentially addressed some of the contextual challenges.

4.3.3. Value co-creation

The data presented in this section focus on understanding the impact of the changes that occurred during this expansion stage as the ecosystem enhanced its value co-creation ability.

4.3.3.1. Ecosystem as collaborative production system

The increased interaction among ecosystem members contributed to the ecosystem's growth during this expansion stage. The presence of forums such as DFSCG as a coordinating group provided an orchestration mechanism to stimulate interaction and knowledge sharing between the ecosystem participants, as exemplified by the following quotes:

As years passed, the DFSCG played a crucial role in opening up communication channels between ecosystem participants, and this was initially missing. There was also an improvement in the information sharing between the ecosystem participants. (48-Res48-EP)

The MM4P programme enhanced dialogue and coordination among the Digital Financial Service (DFS) providers and other stakeholders through its support to the DFS Coordinating Group. (MM4P, 2017)

The development partners provided resources through the DFSCG to support the mobile money ecosystem development. The grouping enhanced information and knowledge exchange among the ecosystem members and supported their joint innovation ventures. The DFSCG was also considered an impartial actor and was therefore particularly trusted among the ecosystem participants, as suggested in one of the reports:

...due to limited trust among the private sector institutions, they are not yet ready to allow their likeminded institutions to take the secretariat role of the grouping. The lessons further show that NGOs and public institutions may be more trusted and better placed to lead the secretariat due to their neutral status. (Feed the Future Malawi Mobile Money Report, 2017, p.17)

This extract suggests that the coordinating group was considered a neutral orchestration mechanism during the expansion stage in the absence of a universally accepted platform to aid in coordinating linkages and supporting the co-creation of value through partnerships.

4.3.3.2. Digital platforms as platform ecosystems

During this expansion stage, the adoption of an enhanced platform, which the MNO implemented at the end of the birth phase, reinforced the capabilities for ecosystem value co-creation. The upgraded platform provided a technical premise on which market ecosystem participants could collaborate, allowing them to co-create new products and services using the platform's newfound capabilities. One interviewee commented on their experience of utilising the capabilities of the upgraded mobile money platform:

In view of the challenges that we had been experiencing previously, it was a huge relief when we were informed that the MMO had upgraded its platform to allow seamless integration into their platform. This opened up opportunities for us to connect and utilise the mobile money functionalities in our services and also jointly create other products with the platform owner. We were one of the first firms to integrate [with] the platform upon the upgrade being completed. (29-Res29-SWP-I)

This extract suggests that the enhanced technical capabilities of the platform were crucial in providing building blocks to jointly create services and products in the ecosystem. In addition to its technical capability, the upgraded platform created an opportunity to build synergies and coalitions among the ecosystem participants. One example of leveraging the mobile money platform capabilities was the development of an agricultural information-sharing platform that resulted from partnership work between the focal actor and other stakeholders. The partnership involved the MMO, development partners, technology firms, government and content aggregators. Interviewees from the focal firm described the product as follows:

Basically, it was our idea where we felt farmers were left out in the adoption of the mobile money services and products. However, although this new farming information service was not a transactional product, we used it as an entry or penetration strategy into the farming space, with rural farmers as our target group. So, on this project, we convinced and worked with the Malawi government, development partners and technological firms to develop a product where using a short code, customers were able to access farming content in the form of pre-recorded voice notes or text messages in the vernacular languages on various farming tips and instructions. (2-Res2-MMO)

The project involved collaborating with different partners to come up with a solution for the farmers where they could access accurate farming information and mobile money services through interactive voice recording (IVR) and SMSs. We adopted a human-centric design in the rollout of the product, so farmers were also heavily involved throughout the project implementation. (4-Res4-MMO)

The data illustrate how the platform's functionalities were used to co-create value with the participation of a group of diverse actors, including the end user community of farmers. The goal was to integrate and embed the product with other functions of the mobile money service. To achieve this goal, it was resolved that embedding the customers' behaviour into the product would be part of the innovation and learning process:

So the plan was to introduce mobile money in the rural areas, but with a use case that took into account key activities in the daily life and culture of a farmer. Obviously, we could not tell them about sending money to others as a key value proposition as they may not send [it] anywhere, but we needed to find a way to reach out to them by giving them a product that resonates with the farmer's life. This approach gave birth to this farming information product, which we felt could help them [obtain] critical information for agriculture. (2-Res2-MMO)

The original idea was to deliver the product through SMSs. However, the feedback we received during the product design research and various product iterations indicated that farmers would prefer interactive voice recordings (IVR). Therefore, we developed a product on both methods but noted that it was the IVR that gained wide usage. The

*adoption of IVR was largely due to the feedback we received from farmers. (4-Res4-
MMO)*

The extract demonstrates that the innovation process included engaging end users to understand their experiences of the product capabilities and to learn from their suggestions on how to improve the usability of the product.

4.3.3.3. Ecosystem as systems of value consumption

The findings also documented how end users, as part of the consumption system, perceived value during the expansion stage. This section also covers how value co-creation experiences occurred. In relation to the farming product, the MNO reported:

*Feedback on the uses of the product was received in various ways at various stages of the project, such as during the pilot phase, when we undertook product iteration workshops to review feedback from the users. Some of the methods of getting feedback included the rapid feedback surveys received through [a] call centre and the business intelligence analysis reports of user behaviour on our call log system. Most importantly, we also did undertake numerous field visits where a sample of users were engaged to [allow us to] understand better their needs and how they felt the product could be improved to address the shortfalls they had identified. (4-Res4-
MMO)*

This quote highlights the significant role that end user experiences played in improving product innovation. It also confirms that the focal actor and its partners established linkages with end users to acquire knowledge about the deficiencies and potentialities of the product. Some interviewees from the partner firms described how learning from the end users contributed to product innovation:

*There were so many ideas that emerged from the end users. We received so much feedback on usages, and that triggered product changes on our side ... The approach we used assisted [in engaging] the users throughout the project implementation period and ensured we [got] adequate feedback on the appropriateness of the product. (36-
Res36-IM)*

The more reason we kept going back and forth to the end users so that we get more details. We met the farmers; we made sure the end users listen to the messages, if they tell us this doesn't work, it's too hard for us, or maybe the technology is just too hard for us. We had to go back to the drawing board to simplify it. (42-Res42-GO)

These interactions with end users provided an opportunity to understand the various meanings the users attached to the product and how they developed its usages. They also demonstrate that the interactions assisted the focal firm and its partners in ensuring that the content was relevant for the end users. Some end users confirmed this:

The products enabled me to learn new farming practices and gain more knowledge on climate change and using financial services ... I was engaged during the pilot and early days of project implementation of the service. The service has assisted me in my farming practice and also improving my financial management skills ... However, my worry now is that since going live, there are no proper channels of providing our feedback to the MNO as we did in the early days of developing the product. (15-Res15-MF]

I am happy with the input that I provided during the rollout of the product. We had several meetings with the team that introduced us to the product as we explained how we felt they could improve the product. (14-Res14-MF)

These statements emphasise the role that end users' experiences and feedback contributed to value co-creation in the development and adoption of a useable product and service that met their needs. However, the comments also suggest that while end user feedback was prioritised in the early days after deployment of the product, gradually fewer opportunities were created for end users to provide such feedback.

In summary, the end users' engagement in ecosystem value co-creation was shown to have a substantial influence on nurturing innovation and resource integration to develop products and services that address user needs. Granting end users access to the platform provided opportunities for co-learning and embedding their behaviour into the products.

4.3.4. Summary of the expansion stage findings

The expansion stage represented a new era for cooperation through the implementation of an enhanced architecture that opened up the platform for collaboration. This enabled the MNO to expand its scope of services and widen the platform's capabilities. During this stage, the focal firm established linkages with end users to acquire knowledge about usages and deficiencies of the services as these experiences and feedback contribute towards value co-creation. While the birth stage concentrated on connecting end users to internally created services, such as money transfers, the expansion stage shifted towards jointly formed services, such as mobile lending and credit rating checks, which were built in collaboration with third-party actors. The expansion stage demonstrated how the focal firm transitioned from its initial mission, which presumed that it would be the only source of innovation, to one that facilitated value co-creation through collaboration with other actors. The structural changes enabled by the API functionality partially opened up the platform to selected third parties and thus created more services for scaling the mobile money platform. The findings also show that the MNO followed strict criteria to ensure that the third parties with whom it collaborated had value propositions that were in line with its own strategy.

However, despite the presence of APIs as tools to enhance interaction and collaboration with external actors, the MNO lacked transparency as communication was not consistent with all external parties. This led to limited access to the platform, causing particular challenges for small third-party firms which needed to jointly innovate on the platform. To overcome some of these challenges, a hub solution, provided through an intermediary targeting small third-party firms, offered a bridge to access platform capabilities through a common gateway. Another common challenge was that the MNO tended to be more open to collaboration with firms with whom it shared a common vision and were well established; in contrast, small start-ups faced numerous challenges in gaining access to the platform. A related observation was that the seeming lack of fairness and transparency hindered some third-party firms from co-creating value on the platform and discouraged others from remaining on the platform, thus impacting ecosystem innovation.

4.4. Leadership Stage

This section details findings on the early indicators of the ecosystem’s evolution towards the leadership stage. During the research study, as the ecosystem was consolidating its expansion stage, a portion of time was devoted to understanding the ecosystem’s strategy as it advanced to the leadership stage of the lifecycle. The findings reveal that while the ecosystem was still in its expansion stage for most of the data collection period, some elements that define an ecosystem’s leadership stage began to emerge. These include the development of a more stable and open structure for joint innovation that supported ecosystem participants in developing new services and business models. Table 4.4 provides the list of themes identified for the leadership stage:

Table 4.4: Themes identified for the leadership stage

Theme	Sub-themes
Context	Shift in mission and goals
	Open to multiple value proposition
	Regulation and policy for open APIs
Governance	Changes in the structures
	Resourcing the platform to enhance innovation
	Control mechanisms to support platform ecosystem innovation
Value co-creation	Collaborative production system
	Enhanced platform ecosystem capabilities
	Ecosystem as systems for value consumption

4.4.1. Context

4.4.1.1. Shift in mission and goals

During the interviews, the MNO acknowledged that it had set out to create a more open and stable platform that would serve as the foundation for other ecosystem constituents to innovate through an open API approach. These activities characterise the early signs of the leadership stage in the ecosystem lifecycle, which, according to the research findings, appeared in 2021. The new platform capabilities were expected to create opportunities to expand novel business

models and develop new products and services for the market. Some interviewees from the focal firm highlighted the mission of this stage:

The intention of the open API architecture that we launched in late 2021 was to provide a platform that would stimulate other firms to develop products and services as well as new business models as mobile money becomes an enabler of new services in other sectors, such as agriculture, health and energy, just to mention a few. (1-Res1-MMO)

The deployment of the open API has created an opportunity for firms to move beyond using the mobile money platform for mere technology integration with mobile payments to create new business models and solutions for the consumers. We aim to partner with businesses from large firms to start-ups so that we can innovate together. (3-Res3-MMO)

These goals signify a shift in mission by the focal firm as it adopted an open API approach for its platform, representing the emergence of the leadership stage. These newfound platform capabilities aimed to change the MNO's goals from merely facilitating integration, as observed during the expansion stage, to the formation of new business models and markets serving additional sectors. As part of this transition to the leadership stage, the MNO also established a testbed that was published as a developer portal to allow third-party innovators to test and share their ideas for future product and service development, as confirmed by the interviewees:

We have published a developer portal that provides all the documentation for the open API that is exposed on our website and open to any firm that is interested in innovating with us. We allow entities to register and develop and test their products on our testbed. Once they are satisfied with their tests, then they can engage us to move into the production system; however, this is the part where we do a sign-off once all the commercials are agreed. (3-Res3-MMO)

Providing a developmental portal with open API and relevant documentation creates a context that builds opportunity spaces for other ecosystem constituents to innovate and create value. Correspondingly, the findings also reveal that around the same time that the MNO was opening up its platform, development partners had commenced shifting their agendas and supporting

mobile money services as a means to achieve various developmental goals, as stated in one of the vision papers for UNCDF, a key partner in Malawi:

Digital finance (such as mobile money) is the primary route to financial inclusion ... not an end in itself but as a means to multiple ends ... A wider set of services are provided via digital platforms (in agriculture, energy, health and education). These new services are built on the rails of digital financial services. (UNCDF, 2020, p.5)

The statement demonstrates that development partners were also changing their approach from considering digital platforms such as mobile money for financial services only to wishing to develop beyond finance as enablers of innovation for other markets. This is in line with the open API approach that the MNO embarked on in Malawi as it transitioned to the leadership stage of its ecosystem development.

4.4.1.2. Open to multiple value propositions

As the MNO transitioned to the leadership stage, there was also a shift in strategy as the open API architecture enabled the focal firm to accept an unbounded range of potential value propositions from other ecosystem constituents. Accepting novel business models from ecosystem participants was a departure from the MNO's earlier approach, exhibited in the expansion stage, when alignment with its strategy was an essential requirement for access to the platform. A respondent from the MNO described this change as follows:

We had strict acceptance criteria for firms to be allowed to integrate into the mobile money platform before the availability of the open API architecture on the platform, which included verifying that the value proposition for third-party firms [was] consistent with our strategy. However, since the launch of the open API, we've become more lenient in terms of the products we accept on the platform, and rejections are usually based on the fact that the product requires regulatory approval or that the commercials haven't been agreed upon. (1-Res1-MMO)

The excerpt indicates a significant shift by the focal actor in using the value proposition as the platform's acceptance criteria because the MNO has not imposed severe limitations on the types of products and services allowed on the platform. However, the MNO is still keen to

ensure that the value proposition addresses and enables it to create economic value, which remains its focus. Furthermore, the quote demonstrates that the MNO's approach to opening up the platform and allowing third-party firms to create a wide range of applications and formulate new business models to meet different value propositions is crucial as it represents the transition into the leadership stage. The acceptance of a wide range of value propositions is a testament to the MNO's agreement that it would, in some instances, merely play a value facilitation role in addressing end user needs. The findings also reveal that the development partners advocated the creation of value propositions that were user-centric. For example, the UNCDF vision approach adopted for Malawi stated:

They seek to ensure interventions with market players create value for each target segment, including youth, women, and migrants and foster inclusion (UNCDF, 2020, p. 4).

This quote exemplifies the social value that development partners advocated when addressing the use of mobile money platforms in their vision. These findings also reflect the multiple value propositions that various ecosystem constituents wished the mobile money platform could fulfil.

4.4.1.3. Regulating and policy for open APIs

While some changes were being initiated by the focal actor with regard to opening up the platform and changing its governance practices as it advanced into the leadership stage, the MNO wielded an authority with little accountability in how they controlled access to the platform. The interviewee from the regulator acknowledged the regulator's arm's-length approach to platform openness:

We have always considered innovations to be the purview of the private sector, and we do not regulate who is allowed to have access to their digital platforms or not ... However, we are also still learning. In our next vision and strategy, we intend to include areas where the regulation should cover how the regulation can catalyse payment market innovation. (7-Res7-CB)

This excerpt demonstrates the central bank's lack of proactive engagement with the different ecosystem actors to create regulatory certainty for innovation while encouraging openness and collaboration. Despite the fact that the MNO appears to have shifted its strategy as it transitioned into the leadership stage, the regulation still falls short in terms of supporting market participants' in implementing open innovation. Furthermore, there remains no clear policy on APIs and the role that the regulator can play in promoting market innovation as confirmed by a participant from the regulator:

We [have] yet to develop an open API strategy to promote innovation partnerships, and we are still learning about this new technology. Additionally, we have not yet launched regulatory sandboxes, which allow innovators to test their innovations while remaining compliant with regulations. We currently take a case-by-case approach to dealing with various requests. However, to encourage innovation, we occasionally waive the rules to allow for products and services that are thought to have the potential to excite the market. In certain cases, we may be able to waive licence fees payments for small start-ups. (7-Res7-CB)

These comments signify that the regulatory environment does not promote the sharing of APIs between ecosystem actors as there is no clear policy and strategy to support its adoption. This implies a lack of regulatory oversight regarding how platform owners offer other ecosystem actors access to their platform. Therefore, while some observable evidence confirmed the emergence of the leadership stage, the regulatory framework created barriers that hampered the ecosystem's ability to foster inclusive innovation.

4.4.2. Governance

The findings in this section focus on the theme of governance related to activities that show signs of an emerging leadership stage in the evolution of the mobile money ecosystem. The crucial conditions that trigger the onset of the leadership stage in an ecosystem lifecycle include defined ecosystem governance and a stable structure that enables the control of critical elements for value creation.

4.4.2.1. Changes in the structure

The MNO's introduction of an open API architecture for some services on its platform created a shift in strategy that encouraged collaboration. These newfound capabilities enhanced the digital platform's governance system with a structure that opened up opportunities for new participants. One interviewee from one of the new entrant firms highlighted this:

We had struggled to integrate into the mobile money platform and operationalise our business model. However, the process was seamless with the open API approach, and we started testing our products after registration on their portal. After that, once we were satisfied that everything was working accordingly, then we discussed the commercials, and we were able to launch our transportation product. (53-Res53-SWP)

The extract highlights the potential opportunities afforded by an open API architecture to move the coordination mechanism from central firm-driven domination to neutral coordination. The new coordination approach through open API enhanced the integration and interaction with third-party firms as they worked to meet common strategic objectives. While the focal firm's heavy involvement in the expansion phase was required to allow third parties access to the platform via its semi-closed API, the beginnings of the leadership stage show that third-party firms could begin testing their products on the MNO's testbed without the focal actor's close involvement. One interviewee from a firm that had connected to the API highlighted this change:

One significant advantage of the open API approach is that once we register an account on the MNO's portal, some critical testing of the services proceeds without the need for [the] close involvement of the MNO. (54-Res54-SWP)

The implementation of the open API architecture entailed a shift in platform coordination by the focal actor and led to some firms gaining confidence in the ecosystem structure as they no longer relied on the focal actor's mediation for testing. Despite these improvements, which occurred due to the introduction of the open API, some new challenges emerged, as stated below:

We have noted a lack of a common platform where we can share challenges experienced on the platform, such as an association forum. This way, there would be more interactions with other ecosystem actors and, in the process, [opportunities to] build more trust between the ecosystem members. (53-Res53-SWP)

The open API architecture represented a new configuration for linking the MNO with other ecosystem participants.

4.4.2.2. Resourcing the platform to enhance innovation

Another early sign of the emergence of the leadership stage was the launch of the MNO's open API architecture, which enabled the transfer of design capabilities to external entities with specialised knowledge in various areas. The introduction of resourcing tools, such as a developer web portal and open API to facilitate innovation, an official from the MNO confirmed this transition:

We launched a developer web portal that included, among other things, sample code and all API documentation. This page contains instructions on utilising and integrating [with] our mobile money API. (3-Res3-MMO)

The introduction of software tools such as the web portal, open APIs and important documentation for software developers demonstrates the resourcing process that the MNO has undertaken to support third-party innovation. These software tools provide resources that enable third-party firms to easily integrate the MNO's platform functionalities into new business models. Some software developer firms highlighted the impact that the published information and software tools would have:

We have seen the developer portal, and it provides many resources to support integration work into the mobile money platform. In the past, this information required us to physically meet the team from the MNO and convince them to grant us access to such tools, while, currently, this is all publicly available online. It is a huge milestone and opens up the platform to innovations. (10a-Res10-SU)

The portal also includes information and documentation on using the various API calls that the MNO has published and sample codes for various programming languages. This portal is a huge game changer for us developers and creates innovation opportunities. (28-Res28-SWP-F)

The extracts confirm the increased sharing of software and information resources with external parties, which may generate more potential business use cases and markets for mobile money platforms through joint innovation. Despite the increased availability of software and information tools to facilitate innovation, some third-party firms expressed a concern that the focal firm had created minimal opportunities interactions to market and share knowledge with some firms, which could encourage ecosystem participation:

Whilst we laud the MNO for providing a developer portal and ensuring they share details on the API functionality and necessary documentation, we think there is a need for them to engage the software developer community even more through other channels, such as social interactions and innovation contests, to encourage them to innovate on their platforms. (25-Res25-SWP-F)

The statement demonstrates that even though the provision of software and information tools has the potential to facilitate more platform interactions with third-party developers, there is limited use of social tools to support the ecosystem participation of third parties. The MNO interviewee confirmed this:

We launched the developer portal in September 2021, providing the open API architecture and related documentation for the developer community to integrate and innovate on our platform. However, despite a massive expectation from the developer community before the launch, we have seen very few of them coming forward with innovations. Maybe it is still early days, and therefore, we are still monitoring. On our end, we are also yet to market the portal fully or indeed launch innovation challenges or competitions that can encourage external innovation on the mobile money platform. (3-Res3-MMO)

Therefore, to address these challenges, the focal firm needs to create tools to encourage other actors to participate in the ecosystem, beyond providing the software and information tools,

such as open API and documentation. These resources, in the form of social tools, have the potential to create developer interactions and engagement beyond the locus of the platform boundaries and to support joint innovation.

4.4.2.3. Control mechanisms to support platform ecosystem innovation

The findings also show a shift in governance approach as the MNO changed how it secured the platform to maintain its integrity by providing rules and regulations that controlled platform membership and the quality of services developed by third parties. The MNO explained the new process for managing platform access for third parties:

Previously, access to the API was through the virtual private network only, but currently, the new approach has been published openly on the internet. Therefore, anyone can access it online as long as they are registered and provide a verifiable form of identification. Then they proceed to do self-registration and immediately get access to the API. Once this is done, they can do all the development and testing on our test environment from their side, with minimal intervention from us. However, before moving into production, then commercials have to be agreed upon and a contract signed. (3-Res3-MMO)

This approach confirms various changes in access controls to the platform using the open API approach in this leadership stage. All registered members can develop and test on the platform, but the focal firm retains the decision-making authority to reject or accept third parties in its production environment. The main criterion to be moved from the test environment to the production environment concerns whether the commercials have been agreed upon with the MNO, validating the focal firm's strategic economic priorities.

4.4.3. Value co-creation

The emergence of the leadership stage also presented some shifts in the value-creation process as the ecosystem transitioned into this new stage. The findings show that the change from co-creation through technical service integration to the co-creation of new business models across diverse ecosystem actors is a fundamental transformation relevant to this leadership stage.

4.4.3.1. Ecosystem as a collaborative production system

The open API architecture enabled collaboration across a wide array of ecosystem participants to co-create value. The open API approach supported the involvement of more ecosystem partners to foster innovation and make use of the platform's features as they co-create value. The interviewees explained:

With the availability of the open API on our platform, there is potential to create more partnerships across a diverse set of firms. We expect that this will lead to more local start-ups and entrepreneurs creating linkages and, therefore, opportunities for building new services and markets for mobile money. (1-Res1-MMO)

The development partners echoed similar sentiments to support partnerships that enable the building of a collaborative ecosystem:

Our new approach is to encourage a multi-partner approach towards the creation of partnerships that lead to the building of new services with greater sustainability. (37-Res37-DP)

These observations demonstrate the critical role of open interfaces in facilitating innovation during this leadership stage. The open API approach, as a software tool, supports the co-creation of value through the collaborative production system created by the different elements of the platform ecosystem. Despite the software tools' abilities to create interfaces that foster collaboration, the data reveal that the early days of the leadership stage lacked neutral orchestration to encourage ecosystem interaction:

The coordination group has been dormant for some time due to various governance and trust issues among the members, including who should take the lead [in] the grouping. As a solution, there are plans to develop a digital financial services association in place of the DFSCG that will look into various aspects affecting the DFS community. The ultimate goal is to ensure that there is more interaction among the participants. (44-Res44-EP)

The excerpt exemplifies the challenges created by the ecosystem structure in stimulating interactions between ecosystem participants through neutral orchestration. This interaction is crucial for creating potential opportunities for co-creating value through a production system.

4.4.3.2. Enhanced platform ecosystem capabilities

Implementing the open API as software tool to open up the mobile money platform presented early signs of transitioning the ecosystem into the leadership stage. This new architecture enhanced the platform functionalities and supported the creation of complementors that had the potential to contribute to the MNO's platform through value co-creation. One interviewee from a start-up narrated the challenges that they had faced before the implementation of the open API architecture:

We had been struggling to launch our service up until the MNO published the open API through their web portal and allowed us to integrate and innovate through their platform. The platform provided us [with] new functionalities that enabled us to attain new capabilities and develop new services. (55-Res55-SWP-F)

This statement suggests that the enhanced functionality of the digital platform enabled the generation of innovative services through a collaborative approach. The openness also acted as a foundational platform with the potential to create other platforms built on the rails of mobile money services, as confirmed by a participant from technology provider:

It has been observed that the introduction of the open API has resulted in the emergence of new sets of services not just in the payments and financial sectors but also in other sectors, such as health, agriculture and education, to name a few. The APIs have allowed different entities to access the platform and share information and ideas, leading to the development of new services and products. (31-Res31-SWP-F)

These remarks highlight how the capabilities of the mobile money digital platform enable value co-creation through the development of new functionalities. The platform allows different ecosystem constituencies to provide input and other resources that create new functionalities, all coordinated through the platform. The early days of the leadership stage emphasised the

importance of a functional approach to developing new services on the digital platform facilitated by digital capabilities.

4.4.3.3. Ecosystem as systems of value consumption

Because it remains early in the leadership stage, few data were collected to illuminate how the role of end users, as the ultimate determinant of co-creation value experiences through resource integration, changed from the expansion stage to the leadership stage. However, identifying end user needs and explaining value co-creation experiences are critical to developing relevant solutions that address user challenges when using the platform's functionalities.

4.4.4. Summary of the leadership stage

The study's outcomes reveal that as the mobile money ecosystem shifted into the leadership stage, a more stable and defined governance structure for joint innovation began to emerge. Although this stage is in its early days, it seems to have the potential to enable control of critical elements for the value co-creation of new services and business models. The use of software tools, such as open APIs, to encourage innovation across the ecosystem is one visible sign of a shift into this leadership stage. This approach to defined governance structures and software tools will bring new capabilities to the platform that can facilitate value co-creation. The availability of software tools, such as open developer portals, will encourage interaction among actors to support collaboration. The openness of the software tools can also ensure transparency and fairness in the distribution of the software tools with improved governance of the platform. Furthermore, providing a developmental portal with an open API and relevant documentation creates a business environment that builds opportunity spaces for other ecosystem constituents to innovate and create value.

4.5. Chapter summary

This section summarises the significant findings derived from the interviews, documents and focus group meetings. The outcomes of the study highlight how value changed over the three stages of the ecosystem lifecycle. The findings identify opportunities and challenges that impacted value co-creation in mobile money ecosystem as it transitioned through the various stages of its evolution. Furthermore, these findings serve as the foundation for providing data that shape the theoretical framing for this study's analysis and its implications regarding value co-creation in a mobile money ecosystem. In the findings chapter, the results are grouped into

three main stages: the birth, expansion and leadership stages. The birth stage was presented in the first section of the findings chapter, with an emphasis on how the focal actor developed the value proposition and supported the establishment of ecosystem structures and governance. The second segment, dubbed the expansion stage, focused on the ecosystem's scaling as a result of additional capabilities and a larger number of ecosystem members supporting value co-creation. Finally, the leadership stage, though still in its early phases, signalled the beginning of the consolidation phase, which includes structural and formalised governance mechanism changes to open up the platform ecosystem to external developers. Cross-cutting themes emerge from the three stages of the ecosystem lifecycle. The next chapter discusses the following main themes identified in the findings: context, governance and value co-creation.

Chapter 5: Discussion

5.1. Introduction

This chapter presents a thematically organised discussion of the research to establish the meaning and relevance of the findings and the potential implications for current knowledge. The discussion presents a synthesis and integration of the findings. The primary themes that were developed from the data, which revealed how value changed over the three stages of the ecosystem lifecycle, are used to frame this chapter. In addition, the discussion will assess the extent to which the study results extend or diverge from existing assumptions and knowledge.

The aim of this research is *to understand the dynamics of value co-creation in a mobile money ecosystem in a Global South context*. To meet this aim, the study explored how various economic and social elements and actors influence the dynamics of value co-creation in the mobile money ecosystem in Malawi. The discussion involves understanding the evolution of value in the mobile money ecosystem over the three complex and interrelated life cycle stages identified in the study: birth, expansion and leadership.

The discussion chapter is driven by the conceptual framework presented at the end of the literature review and reproduced here as Figure 5.1. The conceptual framework is premised on three key theories. The first is ecosystem-as-structure, which explores ecosystem value production by focusing on structures and governance mechanisms (Adner, 2017; Jacobides et al., 2018). The second dimension explores the different actors' roles in co-creating value during resource integration interactions (Lusch & Nambisan, 2015). The last dimension considers ecosystems as platforms that facilitate value co-creation (Yoo et al., 2012; Zittrain, 2006). Additionally, the boundary resource framework theory (Eaton et al., 2015; Ghazawneh & Henfridsson, 2013) and social learning in technological innovation theory (Williams et al., 2005) assist in illuminating the complex interactions that support how value is co-created at both micro and macro levels in the ecosystem. The literature review played a significant role in shaping the theoretical framework for this study, which focuses on understanding how the diverse mobile money ecosystem elements and actors influence the dynamics of ecosystem value co-creation in mobile money ecosystems. The framework is guided by a sociotechnical theoretical and analytical view of mobile money platforms and their related ecosystems and contexts. Three main themes have been generated from the findings and labelled as shown in

Figure 5.1, which represents the framework. These themes are 1) context, 2) governing value co-creation and 3) ecosystem value co-creation.

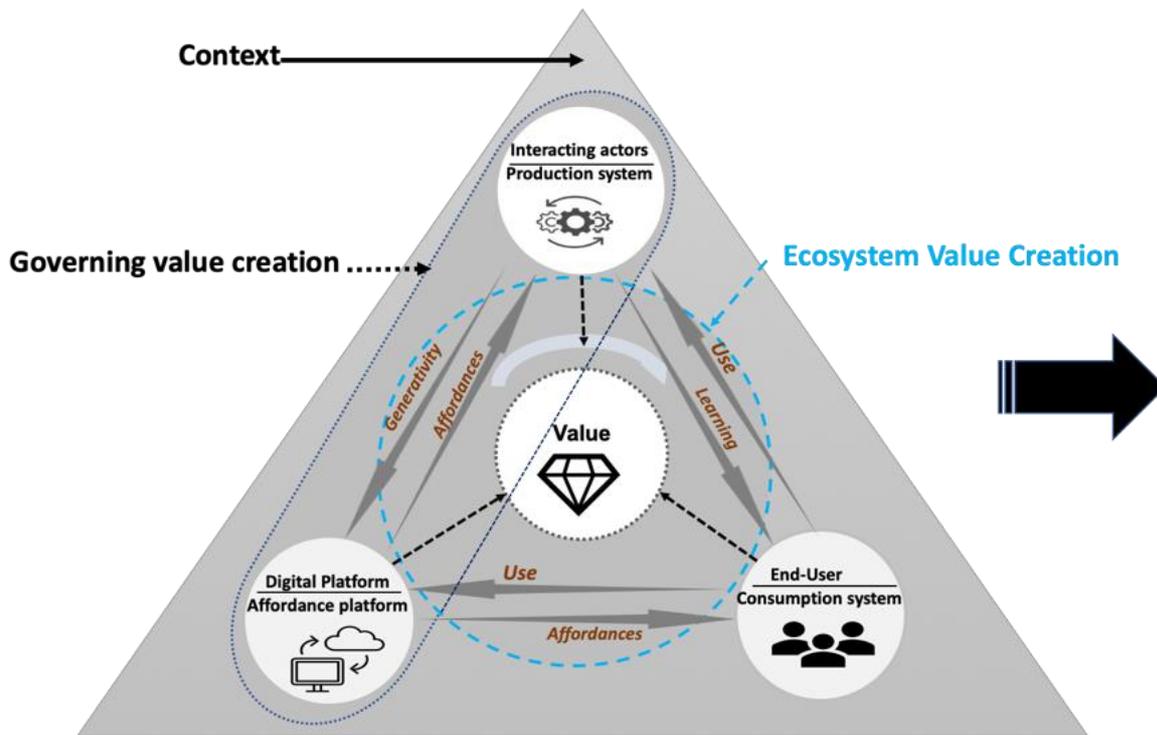


Figure 5.1: Conceptual framework for value co-creation in mobile money ecosystems

Source: Author

This chapter is organised into six sections. Section 5.2 presents the context as a significant theme identified in the study that covers the elements and factors that influence value co-creation in the mobile money ecosystem. Section 5.3 tackles the governance of value creation during the ecosystem’s lifecycle to understand the platform owner’s decisions and actions and how the ecosystem dynamics influence the evolution of value co-creation. Section 5.4 explains the ecosystem value co-creation activities, focusing on how different actors, elements, people and artefacts interact to co-create value. Section 5.5 proposes an integrative framework that helps in the theorisation of value co-creation in mobile money ecosystems. Finally, Section 5.6 presents a summary of the chapter.

5.2. Context

In this study, the contextual dimension is conceptualised in Section 2.6.1 of the literature review as a set of institutional mechanisms, regulation, market conditions and activities relating to the actors and elements in the ecosystem that impact the value co-creation process. In this discussion, we identify four contextual elements that seem relevant to the study and influence the dynamics of value co-creation in the ecosystem. These elements comprise 1) institutional elements, such as strategic goals of the focal actor, 2) the prevailing conditions in the market, 3) regulation and policy and 4) cultural practices. Strategic goals are institutional factors that expound on the critical mission and driving forces that influence the development and evolution of the ecosystem lifecycle to dynamically shape the ecosystem value co-creation. The market dimension, as part of the context, takes into consideration the financial services landscape and related commercial settings in which the mobile money service was launched and the market areas it intended to address. Regulation and policy activities relate to the regulatory framework and policy interventions that occur as part of a wider context that influences how value is co-created. Lastly, specific social practices, norms and local systems of logic makes up the cultural context and can also influence the value co-creation process as end users integrate the digital innovation into their daily lives. All four contextual factors identified in this study and analysed in this chapter cover the three stages of the ecosystem lifecycle. The findings on relevant contextual elements align with extant debates on the influential role that they play in shaping IS outcomes, especially in the Global South settings (Avgerou, 2019). Furthermore, in our case, the explicit identification of relevant contextual factors underscores the need to consider the intricacies of a specific context on which the validity of research significantly depends (Davison & Martinsons, 2016).

5.2.1. Institutional factors

The study outcomes show that the strategic goals of the focal firm in rolling out mobile money influenced the dynamics of ecosystem value creation and its related innovation process over the three stages. During each stage of the ecosystem lifecycle, the focal actor had changing goals and objectives to fulfil. The findings indicate that the focal actor was primarily motivated to create an innovative end user offering that would give them additional revenue sources. This motivation followed the success story of the flagship mobile money service in Kenya, M-Pesa (Evans & Pirchio, 2015; Hughes & Lonie, 2007), which the mobile network operator (MNO) wished to imitate. The growing number of mobile phone users in Malawi also provided the

driving force for venturing into a mass-market service in a novel terrain covering financial services. Thus, these strategic goals significantly influenced the nature of the value co-creation process and related activities.

Similar findings were observed in Kenya's M-Pesa initiative, where the focal actor's strategic goals evolved early in the project and impacted the ecosystem value creation (Hayes & Westrup, 2012). The goals of the focal firm for M-Pesa shifted from an experiment for loan payments via mobile phones in micro-credit schemes to a payment service, a means to diversify sources of revenue and a way to improve client retention (Aron, 2018; Hayes & Westrup, 2012). The strategic goals of Safaricom in Kenya as a focal actor on M-Pesa also had an influence on its decision to collaborate with multiple partners as it pursued its strategic goals to co-create more value with other actors (Mwiti, 2015). However, in Nigeria, the MNOs had a diminished role in the emergence of mobile money ecosystems. This was due to regulatory constraints that explicitly excluded MNOs from taking the focal actor role in developing the mobile money ecosystem (CBN, 2009; Lepoutre & Oguntoye, 2018). In Nigeria in the early days of implementation, this approach resulted in the MNO's strategic goals having little influence on the dynamics of ecosystem value co-creation as the regulatory framework dictated the ecosystem structures and governance mechanisms. Consequently, the contextual disparities between Kenya and Nigeria had the unintended consequence of causing differences in the mobile money ecosystems' growth trajectory as the strategic goals of focal actors played varied roles in shaping ecosystem value co-creation (Lepoutre & Oguntoye, 2018). Malawi's experience was comparable to Kenya's in that the strategic objectives of the focal actor had a significant impact on how the ecosystem evolved and how value was co-created in the ecosystem. These variations show that the focal actor's strategic objectives are vital in determining how the ecosystem is shaped because their strategy becomes the dominant ecosystem strategy when other contextual factors, such as the regulation of mobile money, allow it.

Our findings further show that the primary mission of the MNO in building a mobile money service was to gain a competitive advantage over its business rivals and exploit the opportunities that would open up for the firm. In pursuing this commercial objective, other related motivations for the focal firm included the company's need to grow its revenue base due to dwindling incomes from its core voice services. The study findings from these early stages suggest that to pursue this mission of building competitive advantage, the MNO intended

to adopt a strategy of building this mobile money innovation exclusively from inside the firm. However, evidence from the study also demonstrates that the MNO recognised early on in the project that for the mobile money service to be successfully delivered, diverse actors needed to interact and coordinate for value to be collaboratively created in the ecosystem. Thus, the exclusive strategy would make it more difficult for the MNO to accomplish its strategic goals and would restrict the expansion of the service. Therefore, the MNO needed to engage a network of organisations and individuals who would undertake cooperative activities and roles for mobile money services to develop and proliferate.

The M-Pesa scenario in Kenya provides similar outcomes, where the focal firm created partnerships with several other firms and collaborated with a network of service agents that were already part of the MNOs and a crucial component of delivering the mobile money service (Hughes & Lonie, 2007; Sadoulet & Furdelle, 2015). However, the mobile money ecosystem development for Nigeria presented a contrasting approach as MNOs were excluded from taking a leading role in the ecosystem. Instead, the central bank's regulatory framework shaped the ecosystem strategy by undertaking the role of ecosystem orchestrator and determining which actors would perform which activities and hold which positions, as well as how the links between actors would be organised in the ecosystem (Lepoutre & Oguntoye, 2018). The contrasting roles of the MNOs' approach in pursuing their ecosystem strategies in Kenya and Nigeria provide a glimpse of the contextual influence of the strategic goals of the focal actor in shaping ecosystem value creation. These results align with studies showing that ecosystem strategy is dictated by the dominant actor, who assumes the leadership role of the ecosystem and whose strategic objectives the rest of the ecosystem members aim to achieve (Adner, 2017).

For instance, in Kenya, Safaricom, the MNO that introduced M-Pesa, was given the freedom to establish itself as a focal actor in the mobile money ecosystem. Hence, Safaricom was allowed to develop the functionality of the ecosystem and establish connections with other actors, including service agents, that were necessary to achieve its strategic goals (Hughes & Lonie, 2007). In contrast, in Nigeria, the regulation initially specifically barred MNOs from the actors who might apply for a mobile money licence, decreasing their influence and impact on determining the functioning and interactions of the ecosystem for value co-creation (CBN, 2009; Lepoutre & Oguntoye, 2018). The Nigerian scenario created an ecosystem that was denied the chance to have a focal actor who already had network agents all over the nation, as

is typical of MNOs. A fast scale-up of mobile money services occurred in Kenya, while Nigeria, in comparison, experienced a slow uptake; these different trajectories could be attributed to the influential impact on the ecosystem of the institutional challenges that the focal actor faced. In Malawi, the MNOs were allowed to take a leading role in the ecosystem formation and thus significantly influenced the creation of ecosystem functionality and partnerships between different actors. The findings demonstrate that the strategic goals of the focal firm have a considerable impact on how the focal actor aligns partners for collaboration and participation to develop ecosystem functionality that can support the co-creation of value. Therefore, the focal actor in Malawi pursued its strategic goals by engaging other ecosystem partners, such as banks, service agents and the regulator, to ensure that its value proposition would materialise. These findings may imply that the strategic objectives of the dominant actor in the ecosystem also influence the success of mobile money schemes and their related innovations.

In the Malawi case, the focal actor's ability to align its partners with different roles and positions was crucial in value co-creation as it enabled the MNO to create different ecosystem configurations through which it could realise its strategic goals. The ecosystem strategy of working with external partners was adopted when the MNO recognised its shortfalls that created gaps in the structure and required engagement with external actors to deliver on the value proposition. These gaps included the role of banks and service agents during the birth stage in the mobile money ecosystem lifecycle. This finding aligns with previous studies on the significance of ecosystem partner alignment, which enables the focal actor to assess and recognise gaps in the structure that hinder the realisation of its vision (Adner, 2017; Cennamo, 2018; Jacobides et al., 2018). Adner (2017) argues that for a focal actor to attract other actors not directly connected to an innovation and convince them to partake in its realisation, an understanding of the components and boundaries of dependency and independence is essential when developing the ecosystem strategy. Thus, in the studied case, the actors engaged by the focal firm, which included banks, mobile money agents, retailers, regulators and end users, played varied roles and took different positions in the ecosystem. Similarly, regarding the M-Pesa case in Kenya, the focal actor, Safaricom, engaged different actors to align them in various roles and positions to ensure that it achieved its strategic goals (Hughes & Lonie, 2007). In contrast, during the early days of mobile money ecosystem development in Ghana and Nigeria, as stated earlier, the MNOs were relegated to membership roles in the ecosystem configuration and not positioned as focal actors (Lepoutre & Oguntoye, 2018; McKay & Zetterli, 2013).

Therefore, key roles in the formation of the mobile money ecosystem, such as being responsible for engaging and supporting service agents, holding mobile money trust accounts and engaging end users, remained the purview of other actors. These differences in the architectural setup and focal actor role of the mobile money ecosystem had mixed results on the dynamics of value co-creation in mobile money ecosystems in developing country contexts, such as Nigeria.

While previous studies show that most MNO-led mobile money deployments performed significantly better and exhibited high adoption rates (Ahmad et al., 2020) than bank-led deployments, there is inadequate evidence regarding the influence of the other factors and to what extent they influenced ecosystem value creation. Therefore, while the MNO-led M-Pesa mobile money ecosystem exhibited fast growth in Kenya during its early days, the same cannot be said for a similar MNO-led deployment in Malawi during its birth stage. One key difference may be that the focal actor in Malawi pursued a strategy that did not fully engage with other ecosystem actors to facilitate ecosystem interaction and enable value co-creation. That is, had the focal actor pursued a strategy of aligning different actors to leverage a collective advantage of co-creating value, the ecosystem would have produced more value. Moreover, the results suggest that during its birth stage, in Malawi the MNO's strategic goal was to capture value through the delivery of the innovation, with little focus on developing partnerships that could create more value for the demand side. Thus, the emphasis was less on value co-creation and more on the exclusive pursuit of innovation in a closed approach. These results imply that although being an MNO-led ecosystem gave the focal firm an opportunity to pursue its strategic goals, the MNO did not leverage the ecosystem capabilities, such as bringing the different actors into various roles and positions that could shape the ecosystem value co-creation to attain the ecosystem strategy it envisioned.

As the ecosystem transitioned into the expansion stage with an enhanced platform, the focal firm's strategic goals evolved, and the MNO adopted a strategy that embraced an ecosystem approach to develop the mobile money service further through ecosystem value co-creation. While the ecosystem approach adopted in the Malawi case study is similar to the Kenyan scenario, M-Pesa embraced the ecosystem strategy from its inception (Mwiti, 2015). From the beginning, the M-Pesa innovation was defined by collaboration and interaction among various actors, including end users, whose usage insights were gathered throughout the pilot stage and used for value co-creation activities (Mwiti, 2015; Omwansa & Sullivan, 2012). Various groups of actors, including banks, technology providers, microfinance institutions, regulators

and airtime agents, were involved in the dynamics of ecosystem value co-creation on M-Pesa (Mwiti, 2015). In Kenya, in line with the focal actor's strategic goals, other actors, including service complementors, retailers, technology developers, platform integrators and other financial institutions, joined as partners and collaborators to co-create value (Kendall, Maurer, et al., 2011). The results suggest that in Malawi, however, it took time for the focal actor to realise the significance of engaging other actors and co-creating more value for the network. This may indicate that while the MNO's initial strategic aims were centred on gaining economic value, achieving those goals required collaboration with multiple partners in the value co-creation process.

The findings further show that during the expansion stage, the MNO's strategic goals shifted. They changed from connecting end users only to internally developed services, such as mobile money transfers, to building new services, such as micro-loans, developed in collaboration with other ecosystem players. The change in strategic approach ushered in a new era, during which various types of value were derived from the ecosystem. Related findings from previous studies have been noted in the deployment of mobile money services in Kenya, where, from inception, the mobile money ecosystem created multiple-faceted value at a significantly fast rate (Mas & Morawczynski, 2009; Mwiti, 2015). In the case of Malawi, the changes that triggered increased collaboration in ecosystem value co-creation began to emerge only during the expansion stage. This observation aligns with previous studies on the role of contextual factors, such as institutional goals, in shaping the dynamics of ecosystem value co-creation (Avgerou, 2019; Hayes & Westrup, 2012). As the organisational goals of the focal firm evolve between stages, their influence on value co-creation also changed. The results suggest that the focus of the focal firm during the birth stage was inward-looking as it positioned itself as a standalone value-creating institution that used a few other actors to support it in realising its objectives to attain a competitive advantage over its rivals. This observation is somewhat different from the M-Pesa case in Kenya, where the MNO embraced collaboration and partnerships from the onset (Hughes & Lonie, 2007). The difference between our results and those observed in previous studies could be caused by the nature of the MNOs' strategic goals as revenue generation and competitive advantage seemed to be the dominant driving forces in Malawi based on innovation from elsewhere. In contrast, the development of the M-Pesa mobile money innovation in Kenya evolved from a microfinance product for potential loan repayment to assist in financial inclusion agenda to a fully-fledged payment platform, which created the potential for value co-creation with many other ecosystem partners. However, transitioning to the

expansion stage seems to indicate how the MNO in Malawi switched its goals to active opportunity creation by collaborating with other ecosystem partners to create more value.

The findings demonstrate that despite deploying a similar innovation to Kenya's M-Pesa, Malawi's wholesale embrace of outside ideas and approaches from Kenya's mobile money implementation resulted in different outcomes due to some contextual differences among other factors. The results show that during the early stages, Malawi did not fully consider integrating ideas from the end users or embracing knowledge from local intermediaries in the innovation process to address contextual issue. This may have contributed to the slow uptake of the innovation in Malawi as the solution ignored the local unique challenges. On the contrary, according to Hughes and Lonie (2007), Kenya's innovation process of M-Pesa right from the onset fully embraced externally generated ideas into the value co-creation process which included sharing and exchange of knowledge with external entities to address local needs. Studies further show that Safaricom, established institutional structures to motivate external actors to provide new ideas and also integrate externally generated ideas from end users in the innovation of M-Pesa (Aron, 2018; D. Evans & Pirchio, 2015; Hughes & Lonie, 2007). Consequently, the imposition of external approaches to innovations that ignore the local context and cultural disparities has potential to affect the innovation process. Previous studies have pointed out that global North premised approaches to innovation that are based on thriving markets and developed institutions may fail to address the local needs if they do not take into account the contextual disparities, resource constraints, power dynamics and sustainability challenges present in the global South (Chataway et al., 2014; Cozzens & Sutz, 2014; Papaioannou, 2012).

The study's findings also demonstrated that as the mobile money platform evolved and opened up for value co-creation with other third parties and engaged end users with products like Mchikumbe that incorporated local knowledge and collaborations, the emerging challenges included sustainability issues. M-Pesa was quickly adopted in Kenya right from the onset, in part because the technology was treated as an extension of an already-existing social structure and catered to a particular social need and market sector largely shaped by the end users (Ngugi, Pelowski, & Ogembo, 2010). In contrast, in Malawi sustainability challenges that were faced by the Mchikumbe product suggest that the possible reasons could be the power dynamics around the origin of the innovation whether it's the North or South. Innovations originating from the global North that may have included theories and approaches from the North, which

is typically considered as the dominant knowledge producer and the global South as the recipient, typically reinforce the power dynamics between the North and South (Christopher Foster, 2021; Jimenez et al., 2022). Thus, the application of the global North concepts may contribute to sustainability challenges and realities by preventing local end users and communities from owning and controlling the innovation process and outcomes. These insights demonstrate the importance of taking into account cultural and contextual variations, resource limitations, power dynamics, and sustainability issues when implementing innovation theories and approaches from the global North in the global South. The global South may also benefit from sustainable innovation initiatives if it adopted collaborative and adaptive approaches that involve local communities and institutions.

5.2.2. Regulation and policy

The results of this study demonstrate that as the mobile money ecosystem evolved throughout its lifecycle, the regulatory context underwent numerous transformations, with distinct regulatory and policy activities carried out by key ecosystem actors. During different phases of the ecosystem's lifecycle, various actions, which were mostly taken by the government and its agencies, had different impacts on the dynamics of value co-creation. For instance, in the early stages, despite the lack of a defined regulatory framework for this kind of financial service, the central bank gave the MNO approval to pilot and launch the mobile money service. The literature shows that contrasting regulatory approaches have been adopted in various jurisdictions concerning mobile money services (Evans & Pirchio, 2015). Kenya, for example, as one of the forerunners of mobile money in the Global South, adopted a test-and-learn strategy similar to the one Malawi later pursued (Afi, 2010). With this approach, MNO-led models were adopted and allowed to pilot and deploy a mobile money service even before the country had a fully-fledged regulatory framework. Ahmad et al. (2020) highlight Kenya's liberal regulatory regime as one of the factors that contributed to its mobile money services taking off at a fast pace. M-Pesa grew at an exponential rate, gaining one million active users within the first nine months and 10 million users in under three years (Rea & Nelms, 2017). In contrast, in Nigeria, which had a strict regulatory framework, and MNO-led consortiums were not allowed to deploy mobile money services when mobile money was first launched in the country (CBN, 2009). Similar to Nigeria, Malawi experienced a slow start during most of the early years of the rollout of its mobile money scheme, despite its flexible regulatory regime. The regulation in Malawi started with a light regulation approach, adopting simple mobile

money guidelines as an initial instrument for regulation. The crafting of the regulation suggests that the focus was on safeguarding the financial stability of the country as the objectives placed significant emphasis on economic value. Moreover, the findings show that the mobile money regulations did not specify the role of mobile money in supporting financial inclusion in Malawi, despite it being touted as supporting financial inclusion by most parties.

The MNO was granted approval to pilot and roll out mobile money services in Malawi after submitting an application to the central bank as the regulator of financial services. The regulator's action to grant a "No Objection" for mobile money served as a form of legitimisation that contributed to the development of the mobile money ecosystem. The findings align with ecosystem literature regarding the critical role that regulations play in influencing the emergence of ecosystems (Thomas & Autio, 2013). The regulatory oversight role over ecosystem activities not only legitimised the operations of the ecosystem but also rendered the market more favourable for growth. When the MNO received approval to deploy a mobile money service, confidence increased among other actors who wished to work with the MNO. However, the findings also demonstrate that scepticism and mistrust remained with other actors, such as commercial banks, who considered the MNOs venturing into mobile money a threat to their business. At the same time, the MNO considered venturing into mobile money services a way to gain a competitive edge over its rivals and believed that it would create value on its own, without the need for partnerships with other market actors. This premise formed a key difference from M-Pesa in Kenya, which was characterised by interactions between different actors from inception (Kendall, Maurer, et al., 2011).

For Malawi, several explanations can be offered regarding the role of regulation in collaboration. One view could be that although the regulation was flexible, allowing the focal actor to roll out a mobile money service, it did not focus significantly on the potential subsequent partnerships that the MNO could create with services to support financial inclusion. Value creation interactions with third-party collaborators were not considered in the regulation and only emphasised the focal actor's role in the ecosystem. This observation suggests that while the mobile money ecosystem had value-creating potential during its birth stage, the regulatory framework did not provide deliberate imperatives to activate such generativity, and the MNO had a dominant influence over any relationships it created with third parties. This also implies that in the absence of regulatory requirements, collaboration and complementary services occurred only at the MNO's request and under its conditions. These gaps in regulation

may have contributed to certain challenges in the formation of partnerships for value co-creation and to imbalances in the evolution of ties between ecosystem participants. Although Kenya had similar regulatory challenges with regard to facilitating joint value co-creation, the market forces that benefited various actors forced Safaricom to collaborate with other ecosystem partners from the beginning (Kendall, Maurer, et al., 2011; Suri, 2021).

The onset of the expansion phase ushered in a new set of regulatory and legal instruments for the regulator as the country passed new laws on electronic transactions in general and mobile money services in particular. The laws gave the central bank a clear mandate to meet its objectives of maintaining financial stability and supporting interoperability among the established financial players. The findings also show that although the guidelines on interoperability enhanced collaboration among licensed market players, they created barriers for smaller start-ups to jointly innovate in the ecosystem. While the findings on collaborations are consistent with earlier research on regulators' creation of favourable regulatory contexts for incumbents in ecosystem formation and evolution, they also indicate the barriers faced by new potential market entrants, such as start-ups (Dedehayir et al., 2018; Thomas & Autio, 2013). The findings of this study are consistent with those regarding the M-Pesa scheme in Kenya, where third-party complementors encountered similar challenges when attempting to collaborate with the focal actor to co-create value, with these problems attributed to deficiencies in the regulatory framework (Kendall, Maurer, et al., 2011; Omwansa & Sullivan, 2012).

These challenges could also be explained by observations that the Global South presents unique market dynamics that require policy and regulatory intervention to enable local value co-creation to take place (UNCTAD, 2019). This might mean that the regulator becomes involved in proactive dialogue with focal actors or potential market entrants and start-ups to support the market with value-creating opportunities that address contextual challenges but do not necessarily impose ecosystem structures. A reasonable way to tackle this issue may be to develop regulation that supports the creation of IS innovations that adhere to open architecture, which would promote more innovations and a competitive market that addresses context-specific issues. An example of such a platform, although in a non-commercial context, is the healthcare information platform District Health Information Software 2 (DHIS2), which uses open-source software to provide an innovation platform in the Global South. Another similar approach from the Global North, in a commercial context, is the open banking strategy

supported by European financial regulatory authorities, which calls for open innovation on digital platforms for financial services to increase transparency and foster innovation (Chesbrough, 2003; Zachariadis & Ozcan, 2017). Some Global technology standard bodies, such as ITU, have made similar recommendations regarding the need for regulators to adopt specific measures that promote open-access architectures to support competitive financial platforms that stimulate value co-creation among different actors (ITU, 2017). This implies that other factors to consider when forming the mobile money ecosystem include developing a regulatory framework that opens up access to third-party innovation that supports value co-creation between different actors.

5.2.3. Market factors

The current study found that the market landscape played an influential role as a contextual force in the deployment and subsequent growth of the mobile money ecosystem in Malawi. Prior to the introduction of mobile money in Malawi, research revealed that only approximately 19% of Malawians were believed to have access to an account with a formal financial institution, with most adoption issues related to affordability and accessibility (Greenacre et al., 2014). Therefore, cash remained the primary payment method, and informal remittances were a significant source of income for most Malawians before mobile money services (Greenacre et al., 2014). These results from previous studies illustrate the market landscape into which the mobile money service was deployed in Malawi in 2012 – a landscape that presented numerous challenges for the poor and opportunities for the MNO. Studies on Kenya and Tanzania show similar market landscapes and statistics just prior to the rollout of mobile money services (Evans & Pirchio, 2015; Jack & Suri, 2014; Omwansa & Sullivan, 2012). With this market context, the results from this study indicate that the initial customer value proposition around mobile money by the MNO aimed to address some of these market gaps caused by end users' limited access to financial services. Although there were similarities in the market gaps between Malawi and Kenya during the launch of mobile money schemes in the respective countries, Malawi experienced slower growth rates in service uptake during the birth stage.

Possible explanations for this difference could include the fact that the MNO did not consider market factors potentially unique to Malawi prior to the launch. For instance, while some of the market gaps between the two countries seemed similar, the MNO may have ignored other

contextual factors socially embedded in the Malawian market context that did not exist in Kenya. For example, domestic remittances sent by urban dwellers to their rural family members are a key factor influencing mobile money use in Kenya (Heyer & Mas, 2011). However, for Malawi, the findings show that despite a market context similar to Kenya, including limited access to financial services, the use of domestic remittances on mobile money was taken up very slowly. These differences could be attributed to different social contexts, such as a lack of trust in the service during the early days and different social practices in Malawi. These contextual social factors may suggest the significance of recognising that value has a unified and relational component (Corvellec & Hultman, 2014; Edvardsson et al., 2011) and that actors' views of value are influenced by numerous contextual aspects, despite similarities in market gaps. These results are in agreement with previous research, which has emphasised the importance of context in value co-creation and has argued that value is always embedded in specific social contexts and determined by social groups with varying perspectives and valuation criteria (Appadurai, 1986; Corvellec & Hultman, 2014; Edvardsson et al., 2011). These observations could explain the low adoption levels of the mobile money service during the birth stage in Malawi since the espoused value proposition, in part, was primarily transferred from different social context thus some pertinent issues relevant to the Malawi market landscape.

5.3. Governing value co-creation

This section focuses on the governance of value co-creation by the focal actor and other participants in the ecosystem during the three stages of the ecosystem lifecycle. As the value changed over the three stages in the ecosystem, the focal actor engaged in various governance-related decisions and activities in relation to value co-creation. Such governance decisions and approaches can impact and influence the way value is co-created in an ecosystem. The following three major dimensions in which governance was used in the Malawi case are addressed in this discussion: (a) the design and development of structures that can support ecosystem functionality, create partnerships and be used to manage the platform; (b) the activities that will resource the platform ecosystem to extend capabilities to third-party actors and (c) the control mechanisms to support collaboration with third-party actors.

5.3.1. Structures for value co-creation

The findings show that during the early stages of ecosystem development, the MNO took significant actions to establish a loose collaborative production structure with some actors and put governance mechanisms (Jacobides et al., 2018) in place to create ecosystem value. The focal actor demonstrated a leadership role in carrying out these actions, which were critical for establishing the ecosystem and creating value. The activities undertaken by the MNO, included coordinating interactions, decision-making, attracting suitable partners and designing roles for other ecosystem participants. The findings demonstrate that the actions taken to develop the structure included the focal actor's role of providing the technological infrastructure that served as the mobile money service's technical platform. The MNO also utilised its network of agents to provide last-mile service access to end users. These observed actions align with studies in innovation ecosystems that emphasise the significance of the leadership role during the genesis of the ecosystem to create structures for value creation (Dedehayir et al., 2018).

These findings also correspond to the situation of M-Pesa in Kenya, where the focal actor, Safaricom, took a similar leadership position, designed roles and forged relationships that ensured the birth of the ecosystem and provided supportive structures for value creation (Hughes & Lonie, 2007). In contrast, at the inception of mobile money schemes in Ghana and Nigeria, MNOs were restricted from assuming leadership roles in the ecosystems, which impacted their participation in and contribution to the creation of ecosystem structures (CBN, 2009; McKay & Zetterli, 2013). The Ghana scenario generated a situation in which the MNOs were not motivated to develop the ecosystem structures, such as by leveraging and sharing their service agents, which they considered would only benefit those leading the consortium (McKay & Zetterli, 2013). These findings suggest that the role granted to the MNO in the ecosystem might be responsible for the differences in the configuration of the mobile money structures for value co-creation. For Malawi, the ecosystem is MNO-led, making the creation of the fundamental structures, design of the different roles and provision of the technical infrastructure the responsibility of the MNO. The results indicate that the MNO took responsibility for implementing all ecosystem structures and coordinating governance mechanisms.

The findings also show that during the birth stage, the MNO engaged some actors, including the financial regulator, commercial banks, merchants, airtime resellers and end users, in

developing the mobile money ecosystem structures. Furthermore, the MNO created distinct roles and established an interdependent structure that was used to bridge gaps that would prevent it from realising its goals. For instance, the MNO leveraged its distribution network of airtime-selling agents and retailers to act as communicators, brokers and intermediaries with end users to attain its value proposition. These actors ensured the physical presence and last-mile availability of mobile money services to end users. The focal actor created these roles and positions to orchestrate distinct activity flows between the ecosystem participants, with exchanges taking place on a transaction basis.

Undertaking this leadership role had its own challenges, including resistance from other players, such as banks, which perceived the mobile money service as a threat to their business. This created challenges and tensions with some established financial institutions that questioned the legitimacy of mobile money service as they tried to understand its identity. The tension between the incumbent banks and the MNO is comparable to those described in research on ecosystems when new enterprises are establishing their legitimacy and striving to create new organisational identities and roles to deliver on the value proposition (Lindgren et al., 2015). Similar challenges occurred in Kenya, where established banks resisted the coming in of M-Pesa, which they considered a direct threat to their business (Sadoulet & Furdelle, 2015). Additionally, in Kenya, the traditional financial institutions, such as banks, argued that the mobile money service was operating similar to a bank but was not subjected to a similarly stringent financial regulatory regime (Ahmad et al., 2020). In the jurisdiction of Nigeria, the central bank formulated a regulation that ensured that MNOs did not take a prominent role in setting up the mobile money ecosystem (CBN, 2009). In Malawi's case, the central bank's decision to sanction the MNO's request for a pilot service and later approval of its rollout of a mobile money service provided a much-needed legitimacy signal. It cemented the MNO's role in the market and compelled other established banks that had previously opposed the IS innovation to accept its existence. This result suggests that the regulators' approval addressed legitimacy and identity challenges, which in turn empowered the focal actor to design new roles and create novel relationships that enabled ecosystem value co-creation.

The evidence further suggests that during the piloting and birth stages of the mobile money service, end users were primarily engaged to test the technical functionalities and transact on the platform. Beyond this transactional role, there is little evidence to suggest that the MNO considered end users anything more than passive recipients of the IS innovation. In contrast,

the literature on M-Pesa shows how during its inception, the focal actor and its partners learned significantly from how customers used the service and then included those usages in the innovation (Hughes & Lonie, 2007). The insights that Safaricom gleaned by monitoring the flow of activities between actors enabled the development of a wide number of usages and the rise of novel value propositions on the M-Pesa platform (Hughes & Lonie, 2007). In the M-Pesa situation, the end user appears to have been viewed as an active contributor to the ecosystem structure who could generate and co-create value. In contrast, for Malawi, the end users' passive role during the birth stage implies an under-appreciation of the generativity and resource contribution to value co-creation that the end user interactions can generate in the ecosystem. These findings align with some observations in the strategic management literature on ecosystems that identify the under-appreciation of the end user as an active agent in value co-creation and over-emphasis on formal governance structures that overlook informal interactions that impact ecosystem value co-creation (Autio & Thomas, 2019). Unlike in Kenya, although Malawi adopted ecosystem logic in its rollout of mobile money and the focal firm developed an alignment structure of interdependent actors, the ecosystem did not view end users as sources of generative inputs in the value co-creation process.

The focal actor provided the technological infrastructure that served as the mobile money service's technical underpinning. This platform functioned as the building block on which the mobile money service was developed and implemented. However, the findings show that during the birth stage, the platform adopted a closed architecture, which affected technical collaboration and the creation of external relationships with third-party actors. Previous scholarship has drawn attention to the significance of the functions and capabilities of the technical platform upon which services, goods and technology are built (Evans & Gawer, 2016). The M-Pesa platform was able to establish external relationships with other actors, including banks and software companies and co-create value through collaboration early in the project (Mas & Ng'weno, 2012). As part of its value co-creating structures, the M-Pesa platform provided payment rails, which delivered a wide range of financial services and transactions. This was made possible through Safaricom's approach to opening up the platform to allow other external actors to connect, transact and exchange ideas (Suri, 2021). In contrast, our results show that the design of the mobile money platform in Malawi during the birth stage prevented platform interactions that could stimulate value co-creation among ecosystem participants. The findings imply that the lack of access to the platform due to its closed architecture at the birth stage may have hindered value co-creation through joint innovation

and resource integration with external actors. This may have contributed to Malawi's delayed scale-up of mobile money services as the platform structure was unable to orchestrate complementary innovations that could create more value for end users.

5.3.1.1. Coordinating interactions

The focal actor took a number of steps to coordinate interactions for value co-creation during the birth stage as part of the governance activities in executing its leadership function. The MNO commenced in this role by establishing internal organisational structures inside the firm, hiring new employees and equipping the team with the relevant training and skills. These internal structures and training were a significant component during the genesis of the ecosystem as they enhanced the team's capability in ecosystem coordination. This situation resembles aspects of the early stages of M-Pesa, when Safaricom developed new structures to coordinate with other partners and trained their staff in piloting and implementing the mobile money value proposition (W. E. Bijker, Hughes, & Pinch, 2012). To facilitate interactions, the M-Pesa focal actor also arranged numerous workshops, inviting stakeholders from banks, regulators, telecommunication companies and technology companies to develop the M-Pesa service (Hughes & Lonie, 2007). These findings are consistent with research on the importance of the leadership function in ecosystem governance as it coordinates interactions and brings partners into the roles and positions that the ecosystem strategy envisions (Adner, 2017). The creation of internal organisational accountability and structures that coordinate interactions and manage the service also correlate with previous studies on actions for the successful emergence of ecosystems (Lindgren et al., 2015; L. Thomas & Autio, 2013).

Despite the creation of internal structures to assist in the coordination of interactions and support ecosystem cooperation, a few challenges hindered extensive collaborations. Although regulatory approval legitimised the mobile money service and enabled the MNO to create external relationships through institutional coordination, the underlying technical infrastructure presented a closed platform architecture. This configuration limited the capacity for technical interaction on the platform during this birth stage. While the ecosystem participants interacted at the institutional level, challenges remained in creating external relationships for interaction over the platform. These findings imply that ecosystem value co-creation was impacted by a lack of platform coordination mechanisms and governance systems to support technical interactions. This may indicate that although institutional coordination was supported, the lack

of a technical platform to orchestrate joint innovations and interaction affected the value co-creation process.

The findings also show that outside the institutional coordination that the focal firm championed, a grouping was created for all market players involved in mobile money services. This coordination group included other digital financial services and thus provided a forum in which ecosystem participants could share knowledge and interact with other ecosystem actors. Because development partners and the financial regulator did not compete with the other ecosystem participants for customers in this grouping, they were seen as objective group members, in contrast to most other members from the financial services or telecoms sectors, who saw one another as competitors and therefore as untrustworthy. Despite this lack of trust, the forum aided in the creation of a space for social interaction and building relationships that led to various project initiatives on mobile money services. The creation of this grouping and its features were unique to the context in Malawi and were primarily set up to drive interorganisational coordination and interaction for the ecosystem. This finding aligns with prior studies on ecosystems, which highlight the central role that such dynamic social interaction among ecosystem participants can have on the co-creation of value (L. Thomas & Autio, 2013; Vargo & Lusch, 2008a). The forum helped create a structure for collaboration and exchange of ideas that was important in the formation stages of the ecosystem. Though the presence of such a grouping could not be identified in the M-Pesa setup, in the Malawi case, the grouping clearly played a substantial role in creating a forum for interaction among ecosystem participants. This coordinating group offered a space in which ecosystem actors established relationships, exchanged ideas and exposed relevant ecosystem flaws before taking joint corrective action. The interdependence of ecosystem actors has a significant impact on the effectiveness of coordination mechanisms in ecosystems (Adner, 2017; Kapoor, 2018).

However, the results also show that other stakeholders in the grouping started having reservations about the forum's legitimacy, despite the multiple benefits that the forum offered in terms of fostering ecosystem interactions and enhancing communication among ecosystem members. The group's formation had no legal basis; rather, members with related interests simply came together to form a group that could address challenges with digital finance, especially mobile money ecosystem issues at the time. Due to these developments, some members proposed rectifying the legality issue by changing the grouping into an industry association to address issues on digital finance in the country. The view was that an industry

association would provide a neutral position and address the concerns of various members, such as banks, non-banks, technology firms, development partners and regulators. Previous studies have identified similar governance challenges during the emergence of ecosystems caused by the need to create legitimacy and trust as ecosystem participants develop rules and structures that will govern their interactions for value co-creation (Hannah & Eisenhardt, 2018; Kapoor, 2018; Thomas & Autio, 2013). Relatedly, Dedehayir et al. (2018) argue that innovation ecosystems have not yet fully embraced a platform-oriented strategy that utilises relational governance strategies to promote interorganisational trust rather than formal, transactional types of interactions. Therefore, it appears that in the Malawi case, the coordination group was a good place to start in developing neutral coordination in the ecosystem as it encouraged collaboration-based team trust that could develop into complex interactions.

5.3.2. Resourcing the platform to enable value co-creation

As the focal actor transitioned into the expansion stage, the scope and capabilities of the mobile money platform were enhanced by the introduction of software tools that provided a broad scope of heterogeneous functionality to third parties for potential joint innovation. This marked a significant shift in the focal actor's strategy as the platform had mainly focused on providing a transaction platform through internally produced innovation. With the expansion, the transactional platform changed to a hybrid platform that served as both a transactional and an innovation platform for external actors. The findings show that through this change, the focal firm could grant third-party actors access to the platform, which allowed them to build complementary services as part of value co-creation. This is similar to the collaboration functionalities that the M-Pesa platform provided quite early into its launch when it combined capabilities with some external partners to build complementary services that end-users could consume (Kendall, Maurer, et al., 2011; Suri, 2021). Studies on digital platform ecosystems have demonstrated how opening access to platforms transforms the organising logic of value co-creation and allows third-party developers to collaborate and jointly innovate with platform owners (Benlian, Hilkert, & Hess, 2015; Eisenmann, Parker, & Van Alstyne, 2009). Similarly, the results of this study show that the MNO redesigned the platform with the introduction of software tools and governance mechanisms that partially opened up platform access to third-party actors to collaborate for value co-creation. The findings are also consistent with the literature on the significance of granting platform access to third parties, which stimulates

ecosystem value co-creation and has the potential to help the platform gain critical mass (Benlian et al., 2015; Ondrus, Gannamaneni, & Lyytinen, 2015). Although access to the platform was only partially opened, this development heralded a new era for the platform as it created opportunities for the MNO to collaborate with third-party actors in co-creating value beyond the boundaries of the MNO.

The results show how some third parties utilised various platform capabilities to innovate using different platform functionalities accessed through the software tools. For example, one software firm conceived of a microloan service, which they developed jointly with the MNO and a bank using platform capabilities provided through various APIs, and came up with a credit score that was used for credit rating to determine end users' eligibility for mobile loans. Similarly, in Kenya and Tanzania, M-Pesa partnered and integrated with several firms, such as commercial banks, utility companies and microfinance institutions, to co-create value through the digital platform (Kendall, Maurer, et al., 2011; Suri, 2021). Services offered jointly with other ecosystem actors on the M-Pesa platforms included services for loan applications, banking and utility bill payments. The mobile money platform's recombination capability as a digital platform allowed for the possible diversification of services offered through value co-creation with other ecosystem mobile money participants. These findings are consistent with the literature on digital platforms, which supports ecosystem value co-creation through generativity enabled by interactions between multiple actors with various capabilities (Autio & Thomas, 2019; Nambisan et al., 2017; Zittrain, 2006). These results may imply that there is a need to understand the digital capabilities of the digital platform examined in this study and their role in influencing the ecosystem dynamics of co-creation.

The software tools and resources enabled the platform ecosystem to respond to the external contribution of innovation opportunities and thus offer digital capabilities that extended the scope and diversity of the platform's functionalities. Although the APIs were not public or fully open, they supported collaboration between ecosystem actors. A similar arrangement was observed in the M-Pesa setup where private APIs were available on the application and facilitated collaboration between the platform and selected third-party firms (Kendall, Maurer, et al., 2011; Suri, 2021). The results corroborate the findings on the significance of implementing boundary resources, such as APIs, because they enable ecosystem value co-creation through the transfer of capabilities between the platform owner and other ecosystem participants (Eaton et al., 2015; Ghazawneh & Henfridsson, 2013). They show that the

boundary resource tools facilitated collaboration between the MNO and third parties as the ecosystem evolved, from its birth stage, into digital platform for co-creating value. Although the APIs were the only boundary resources deployed to shape ecosystem access to external actors, they also activated the generative capabilities inherent in the mobile money platforms.

Through the provision of APIs as boundary resource tools for engaging third parties, the MNO was able to develop diverse complementary services by harnessing the capabilities of the platform. Opening up the platform to external developers through boundary resources enabled the recombination of various platform capabilities and specialist expertise from third parties to collaborate and develop solutions to address the various needs of society. Similarities can be drawn with M-Pesa, where, despite the integration challenges, the advent of the mobile money platform led to a mushrooming of integrators and innovators who developed and delivered services around the platform (Kendall et al., 2011). Comparable services were observed in Malawi and included the mobile micro-loan service, farming information application and access to information for farmers. The third parties harnessed the digital capabilities enabled by the properties of the digital infrastructure and used ecosystem generativity to co-create value for end users on the platform. The findings confirm that platform value co-creating mechanisms are dependent on the provision of digital capabilities, which enable new combinations of functionalities and resources between different ecosystem constituents (Nambisan et al., 2017; Yoo et al., 2012). Furthermore, the findings explain how the mobile money platform as a digital platform provided different capabilities through boundary resources and orchestrated generativity, allowing value-creating services to emerge. In turn, these value co-creation instances enhanced the scope and diversity of the mobile money platform.

However, despite some complementors being able to harness the generativity of the platform's capabilities to co-create value, third parties faced certain challenges due to what they perceived as a deliberate lack of visibility of boundary resources and transparency issues in the acceptance criteria. In some instances, third-party actors were either denied access to the platform through a non-transparent process or were not even aware of the availability of boundary resources. These actions curtailed the development of further value co-creating services as third-party actors with potential generative capacities were denied the opportunity to co-create value. In contrast, despite some challenges, M-Pesa developed multiple relationships with different actors with whom it collaborated on various value co-creating projects to address end user needs (Kendall, Maurer, et al., 2011; Sadoulet & Furdelle, 2015).

From its inception, M-Pesa was developed with an approach of collaborating with various partners, so it created numerous relationships for value co-creation (Hughes & Lonie, 2007). However, even in Kenya, a number of digital entrepreneurs have voiced concerns about the M-Pesa API's limited functionality and transparency, which prohibits them from launching digital innovations built on its platform (UNCTAD, 2019). These observations about the Malawi and Kenya cases align with those of several other authors who argue that to successfully build platform-centric innovations and shift design capabilities to external actors, especially where resources for digital platforms are scarce, attention must be paid to technical attributes and human relationships to enhance sociotechnical generativity (Msiska & Nielsen, 2018; Von Hippel & Katz, 2002). This reinforces the point that generativity has a potential passive capability that needs to be activated; otherwise, it may not be useful.

The lack of transparency also seemed to support observations from some third parties that the control mechanisms were applied inconsistently in relation to smaller firms. Tiwana (2013) has identified transparency and fairness as critical elements when designing effective platform access mechanisms. This study's findings suggest that the seeming lack of fairness and transparency in the studied platform might discourage other third-party innovators from joining the platform and others from remaining on the platform, thus impacting generativity. Focusing on the technical aspects of generativity may therefore be inadequate to stimulate ecosystem value co-creation and require governance systems to step in to control ecosystem dynamics.

The findings also highlight trends that show a shift in the mobile money ecosystem from the expansion stage to the leadership stage. The actions signalling this transition include the launch of a web developer portal and a public API published on the MNO's website to facilitate innovation with third-party software developers. The resourcing of the web portal with important software development tools demonstrates a significant milestone in extending the capabilities of complementors to co-create value with the MNO. Similarities can be drawn with M-Pesa, which has a fully-fledged public API and developer portal to support joint innovation on its platform that went live in 2015 (Suri, 2021). Exposing the public API for M-Pesa represented a shift in business strategy to support collaboration and value co-creation with external developers over the internet (Suri, 2021). This transition in the evolutionary process of mobile money platforms to the use of public APIs is consistent with research on digital platform ecosystems, which indicates that the degree of platform openness can, through network effects, result in a thriving platform (Parker & Van Alstyne, 2018). However, the

findings also show that although on paper the MNO introduced a public API, the process of onboarding was not seamless and involved certain controls that affected its adoption. For example, the documents with rules and processes that covered technical scripts and revenue share agreements are not yet standardised and are dealt with on a case-by-case basis. Moreover, for companies to be moved to the production environment, they still need to pitch their business ideas and obtain approval from the MNO. Early indications in the leadership stage reveal a shift towards a fully platform-oriented direction with the implementation of boundary resources that can facilitate orchestration for ecosystem value co-creation. However, the results also demonstrate that some obstacles remain to implementing seamless orchestration with standardised arrangements and processes to support value co-creation on the platform. Thus, it suggests that additional changes need to be made to significantly improve the interaction between platform owners and third-party developers and to increase the platform's openness to supporting value co-creation.

5.3.3. Control mechanisms to support integration and platform quality

During the expansion stage, as the MNO implemented boundary resource tools to enhance the scope and capability of the platform, it also implemented control mechanisms to secure the platform. The findings reveal that the platform owner designed the boundary resource rules, such as contract agreements, platform acceptance criteria and API guidelines, as non-technical governance control mechanisms to exert its authority and decision-making responsibility over the platform. For example, the platform owner's use of a business case assessment as a predefined condition to be allowed into the platform ecosystem denotes that a gatekeeping role is being employed to control to third-party actors' use of the boundary resources. These observations confirm the vital role played by the platform owner in securing the platform by using control mechanisms for heterogeneous actors to enforce rules in line with the platform owner's interests (Constantinides et al., 2018; Ghazawneh & Henfridsson, 2013; Van de Ven, 2005). The use of these various control mechanisms helped the platform owner ensure that third parties developed services that are aligned with its interests and can be integrated with its platform.

The introduction of a new boundary resource tool as a "hub solution" by an international organisation represented the emergence of distributed governance that allowed smaller entrepreneurs to circumvent some controls exerted by the platform owner. This situation hints at some underlying challenges facing start-up firms that needed to be overcome to open up the

platform to a wider set of actors and innovations. The emergence of new boundary resources can be triggered either by the owner's perceived external contribution opportunities or by external third-party use of the boundary resources (Eaton et al., 2015; Ghazawneh & Henfridsson, 2013). These observations also align with research on how digital platform openness supports innovation and value co-creation (Boudreau, 2010; Tiwana, 2013). The findings show that the development of the hub solution seems to have emanated from the need to support marginalised third-party actors who may have challenges connecting directly to the mobile money platform as the hub allows them to gain access to the platform and co-create value. They also highlight the creation of a disintermediating governance actor who becomes a gatekeeper to platform functionality on behalf of the smaller third-party actors who face resource challenges connecting to the platform API.

Previous studies confirm that a platform owner can open access to third-party ecosystem participants through the use of boundary resources or open-source software licenses (Ghazawneh & Henfridsson, 2013). Whilst multi-homing can be used complement providers as a cross-platform boundary resources, where a dedicated software framework facilitates the delivery of the same application functionality across various platforms (Kang et al., 2019), this works differently from hub-solution. The hub solution functioned more similar to an extension of the boundary resource to open up access to a particular group of complementors. The study's findings demonstrate that this strategy is largely supported by organisations working towards social inclusion goals, so it involves facilitating access to platform functionality for marginalised digital entrepreneurs in the Global South. The hub solution is further evidence of how the platform's hybridity was created by not focusing exclusively on whether the platform's purpose was transaction- or innovation-based or on the extent of its openness. Therefore the creation of a hybrid platform included the changes in governing structure as the platform adopted a distributed approach to the governance of ecosystem complementors.

While this positive and cooperative perspective potentially promotes platform growth through value co-creation, it also has the potential to create competitive action that can challenge the services and control of the platform owner. To sustain their business, the provider of the hub solution, for instance, claimed that their target market consisted of digital entrepreneurs who were already directly linked to the mobile money platform. This could lead to conflict with the platform owner, who might regard these entrepreneurs as rivals.

Overall, the underlying assumption in digital platform ecosystems is that generativity drives ecosystem value co-creation (Autio & Thomas, 2019). However, this ecosystem value co-creation is determined by how platform owners overcome the tension between supporting the generative capacity of autonomous individual actors who provide unpredictable innovative inputs, and thus require some control, and the logic of technological flexibility that requires stability (Eaton et al., 2015; Huber et al., 2017; Wareham et al., 2014). Our findings support these assertions on how digital capabilities enable generative value co-creation as well as how governance approaches using control mechanisms attempt to address behavioural complexity but, in the process, constrain generativity. In the case studied in this research, most of these constraints clearly originate from the control mechanisms, and ‘circumventing’ these mechanisms and allowing the platform to create opportunities for further value co-creation by introducing different types of governance approaches, such as the hub solution, have become necessary.

The results also suggest that as a commercially driven platform, the focal actor focused on economic value, cost-benefit trade-offs and producer-centric value co-creation. As a result, due to its governance approach to collaboration consisting of centralised allocation of decision rights authority and control, the platform owner runs the risk of under-appreciating the role of generative platform value co-creation in these contexts. Studies have urged some services offered by digital platforms to be treated similar to utilities and questioned whether it would be reasonable to regulate them to alleviate some existing challenges (Rahman, 2018a, 2018b; UNCTAD, 2019). Such a step, it is argued, would level the playing field, open up the digital platforms to other actors and offer equitable access to the platforms, particularly in the Global South (UNCTAD, 2019). The problems for the Global South are further compounded by the difficulties of deploying innovation platforms, as observed by Bonina et al. (2021); as such, they require intensive and expensive resources to set up and run. Therefore, if digital platforms are to support context-specific challenges in the Global South, the implementation of such governance reforms seems like a viable way forward. This is premised on the fact that commercially driven platforms owned by large businesses, both regionally and Globally, will likely continue to dominate in the Global South.

5.4. Ecosystem Value Co-creation

The discussion in this section focuses on understanding and explicating the dynamics of ecosystem value co-creation from three different perspectives. Taking the first perspective, we consider ecosystems as production systems with structural elements and governance mechanisms that enable collaborative instrumental value and co-creation, entailing joint production with complementors (Adner, 2017; Jacobides et al., 2018). The second perspective considers ecosystems as a platform enabled by the digital capabilities, with value viewed as the digital capability or function and co-creation realised through combinatorial innovation (Henfridsson, Nandhakumar, Scarbrough, & Panourgias, 2018; Yoo et al., 2012). The last perspective considers ecosystems as a consumption system comprising end users whose engagement with the provider creates experiential value in user-provider relationships (Vargo & Lusch, 2004, 2008a).

5.4.1. Ecosystem as production systems of value co-creation

At the birth stage, the focal actor created a production system with an instrumental utility to provide a mobile money service. During inception, the focal firm focused on aligning a multi-lateral set of partners, including the MNO, network agents, banks, regulators and other actors who jointly created an ecosystem structure of value co-creation. Similarities can be found in the development of the M-Pesa mobile money service where, from the start, the innovation ecosystem involved multiple partners, including banks, microfinance institutions, end-users, network agents and the regulator, that formed a production system (Mwiti, 2015; Omwansa & Sullivan, 2012). These observations align with studies in strategic management that consider ecosystems as supply-side value co-creation structures that create instrumental utility for the end user (Adner, 2017; Autio & Thomas, 2019). The findings indicate that the focal firm strategised to identify an attractive product market for the value proposition on mobile money. The MNO also embarked on developing a co-creation process by attracting partners with whom it could profitably address the potential market. During these early stages, the MNO focused on delivering on its value proposition as it designed roles and created relationships, which were governed by formal mechanisms to support the production system.

During the birth stage, the focal firm created bilateral arrangements that relied on a transactional approach to relationships, including the end user-facing arrangements. The findings demonstrate that at this nascent stage, while the focal firm developed its mobile money

service, its emphasis was on the supply-push strategy for value production of the mobile money service. The value created by the mobile money ecosystem was aimed at providing instrumental utility to end users on the assumption that the offering was addressing end users with similar preferences or needs. In contrast, the rollout of M-Pesa engaged end users as active constituents of the ecosystem who contributed knowledge of their preferences and usages of the service, which resulted in mutual modifications to the value proposition (Sadoulet & Furdelle, 2015). These variations suggest that the focal firm for Malawi concentrated on providing a production system that would supply the mobile money service as value co-produced with other ecosystem entities.

This suggests that the MNO downplayed the importance of the end users, viewing them merely as passive end users of the service. This is consistent with the assertion made by Autio and Thomas (2019) that the strategic management tradition primarily approaches ecosystems as supply-side structures whose value as an instrumental utility for users is co-produced by interdependent actors, which overlooks the end user's role in the ecosystem. The MNO's initial architecture, therefore, may have missed the dynamic contribution that end users make because these users were only given a transactional function role, and the value that could be co-created through their interactions with other ecosystem participants was neglected. However, research on value co-creation and inclusive innovation also emphasises the importance of end users in comprehending, interpreting and giving meaning to digital innovations, especially in the Global South, where numerous constraints may exist (Chandler & Vargo, 2011; Christopher Foster & Heeks, 2014; Vargo & Lusch, 2008a). For example, Foster and Heeks (2014) demonstrate how the M-Pesa innovation continued to occur in the end user domain during the implementation and use, which provided an opportunity to learn from unanticipated usages of the innovation. Therefore, the success of digital innovations in the Global South is dependent on several factors beyond the structures set up by the focal firm, and consideration of the context and usages that users attach to the digital innovation must be considered.

Although during the very early days, the focal firm in Malawi considered undertaking innovation exclusively, their approach changed due to several factors, which compelled it to collaborate with other actors. These relationships created partnerships with a few actors from whom the focal firm could garner the required value for ecosystem co-creation to meet its firm-level objectives. For example, it forged partnerships with banks and service agents, who were critical in delivering the mobile money service. Although the production and delivery of the

mobile service were made possible by the focal actor providing a technical infrastructure and production network of contributors, the closed platform architecture created barriers for third parties in using platform functionalities and co-producing innovations with the platform owner. In contrast, during its nascent stages, M-Pesa was characterised by both institutional collaboration and technical relationships on the platform, which enabled the creation of partnerships (Hughes & Lonie, 2007). The strategic management literature on ecosystem governance highlights that having a focal firm define roles and relationships through a blueprint aids in creating the ecosystem (Hannah & Eisenhardt, 2018). However, as Autio and Thomas (2019) contend, this approach may very easily result in a lack of focus on the roles of other actors, such as end users, that stimulate generative innovation in the platform's development and value. Similarly, the findings from the focal firm's birth stage indicate that the platform's potential for generative value co-creation was overlooked because, due to its closed nature, it disregarded the role of external technical relationships in creating value for the ecosystem. The closed nature of the platform stifled innovation and hindered value co-creation interactions.

As the ecosystem transitioned into the expansion stage, the presence of a coordinating group comprising different actors presented an orchestration mechanism that stimulated interaction and knowledge sharing among the ecosystem members. The increased interaction between the ecosystem participants through the digital financial services coordinating group enhanced value co-creation opportunities and supported the varied innovation ventures from the production system. Development partners directly supported the formation of this coordinating grouping, which played a significant role in developing the mobile money ecosystem through social interactions. The coordinating group contributed in crucial ways to opening up communication channels between the ecosystem participants and provided expertise, consultancies and advice for ecosystem development. The results show how the development partners, through the coordinating group, undertook research to uncover deficiencies within the mobile money ecosystem. The group also provided training to various institutions that were crucial to enhancing coordination that supported the ecosystem.

In contrast, within the M-Pesa ecosystem, institutional coordination by Safaricom dominated the creation of external relationships and connections built with other partners (Evans & Pirchio, 2015). These activities align with the literature on ecosystem development that emphasises the importance of indirect roles in value co-creation, which provides peripheral

elements for interaction to gain and share expert knowledge of the production system (Dedehayir et al., 2018; Kapoor & Lee, 2013). The research also supports the theory that actors other than those holding the focal firm role can perform the functions of building connections between ecosystem participants. While the birth stage is dominated by institutional coordination for the production system championed by the focal firm, the expansion stage allows glimpses of neutral orchestration by the coordinating group. However, the results also suggest that this neutral orchestration faced legitimacy challenges due to overreliance on formal governance practices for value co-creation that overlooked the critical role of social interactions within the coordination forum. The interactions within the informal grouping have the potential to forge relationships that create value.

During the expansion stage, the platform's enhanced capabilities also enabled the reconfiguration of the interaction pattern, supporting the emergence of new external relationships and partnerships. Examples of such relationships include the joint innovation of a micro-lending service with a bank and a software development firm. Notably, however, such collaborations were mainly undertaken with firms with whom the focal firm shared a common vision or was considered well established. In contrast, the M-Pesa platform was designed with collaboration in mind; studies show how the M-Pesa innovation was characterised by numerous partnerships with varied actors, including integrators, innovators and application developers (Kendall, Maurer, et al., 2011; Mwiti, 2015; Omwansa & Sullivan, 2012). In the Malawi case, the focal firm's approach to defining and controlling its vision of the ecosystem through static control strategies of the production system presented challenges for the firm due to the high uncertainty that affects nascent ecosystems. This is consistent with studies on innovation ecosystems that advocate dynamic control strategies by the focal firm that can enable an unbounded range of potential value propositions (Dattée et al., 2018; Hannah & Eisenhardt, 2018). The use of static control strategies explains why, in the findings of this study, third-party firms perceived to produce innovations not in line with the focal firm's vision met obstacles in being accepted to co-create value on the mobile money platform. Dynamic control strategies in the ecosystem production system include allowing more business model experimentation (Ansari, Garud, & Kumaraswamy, 2016) and value proposition framing (Snihur, Thomas, & Burgelman, 2018). This approach might entail having experimental sandboxes to test new products with new value propositions, which may help reduce the uncertainty that focal firms face in emerging ecosystems.

5.4.2. Ecosystem as digital platforms for value co-creation

The findings show that the mobile money platform afforded end users the potential to undertake financial transactions on the platform from its inception. These end users had mixed experiences, which they derived from the platform capabilities; some touted the mobile money functions of, for example, being to store, transfer and receive money and make payments. The end users' wide range of views reflected their different perspectives on functionalities from which they derived value among the mobile money platform capabilities. Similarities can be drawn from the M-Pesa project, where the primary focus also included providing basic financial services through different ecosystem elements that interacted and co-created value (Kendall, Maurer, et al., 2011; Rea & Nelms, 2017). Similarly, previous literature shows that by digitally coordinating sociotechnical interactions and components, an IS innovation can support multi-functionality and thus create multiple capabilities for end users (Majchrzak & Markus, 2013; Yoo et al., 2012). These results show that the mobile money digital platform affords end users a variety of functions and capabilities, allowing them to pursue various goals by exploring and harnessing the IS innovation. Mobile money services might, for example, be used to support financial transactions, provide value-added services, such as credit ratings, or provide end users with financial access, all of which have various consequences. As end users acquire and utilise these products and services, they can overcome socioeconomic barriers and use knowledge and resources that were previously difficult to obtain. From a social learning and inclusive innovation approach, the engagement of end users in innovation also provides opportunities for the focal actor to learn about the usages of the digital offering as they co-create value (Christopher Foster & Heeks, 2014).

In the Malawi case, the focal firm came up with the IS innovation as it attempted to address basic financial needs that constituted an identified gap in the market. That is, the mobile money service was developed to address the needs of those with limited access to formal financial needs. The mobile services were intended to circumvent challenges that low-resourced contexts commonly face, such as limited access to bank branches. The findings confirm that the focal firm aimed to provide financial services that would allow end users to conduct financial transactions in a secure, convenient and affordable manner. The results from M-Pesa present significant similarities in the manner that the digital capabilities from the mobile money platform were harnessed by other actors to co-create value (Evans & Pirchio, 2015; Markus & Nan, 2020). The findings in this study align with previous literature on how generic capabilities

in digital innovations like mobile money are applied and used through the collaborative work and knowledge flows between different actors (Nan & Markus, 2019; Strong et al., 2014; Williams et al., 2005). This suggests that the digital capabilities provided by mobile money can meet the need for essential financial services, especially for those who are excluded from accessing formal financial services. These findings may aid in improving our understanding of digital capabilities and how they can facilitate change in collaborative settings.

Although institutional linkages with other ecosystem participants existed and created a production system, the technical platform on which the mobile money functioned had a closed architecture that prevented the creation of external linkages for value co-creation. The findings showed that the focal actor's design and development of the platform focused on the premise that the MNO would deliver and wholly develop the IS innovation. In comparison, in M-Pesa's nascent days, the mobile money platform saw numerous integration activities as well as the creation of new products and services from external parties primarily leveraging the platform (Kendall, Maurer, et al., 2011; Mas & Radcliffe, 2010). The platform design for mobile money in Malawi during its birth stage, therefore, lacked a fundamental characteristic for collaboration because of the closed platform architecture in the ecosystem that hindered external participation from third parties in value co-creation. Likewise, the literature on platform governance highlights the significant role that boundary resources play in enabling value co-creation by transferring the design capabilities and control of digital infrastructure to external third parties (Ghazawneh & Henfridsson, 2013; Wareham et al., 2014). The findings support the idea that to harness the capabilities of platform ecosystems, particular attention must be paid to the governance mechanisms of the platform ecosystem.

In the Malawi case, excessive cash usage was another issue among the end users that affected the market and that the focal actor considered a potential issue that mobile money could address. Cash remained Malawi's dominant method of payment in the market at the time of the platform launch. This was a potential key area for value co-creation among different actors in the ecosystem in addressing challenges regarding access to both formal and informal financial services in the market through digital technologies. During the birth stage, the mobile money service started with a bill payment feature that allowed end users to use mobile money services to pay various utility bills. This enhanced ability to efficiently pay utility bills through mobile money services demonstrated how ecosystem actors could collaborate to co-create different types of value that ultimately closed market gaps by providing financial services.

These new capabilities contributed to the focal firm's shift in strategy as mobile money was being considered a means not only for peer-to-peer money transfers but also to overcome other the high transaction costs associated with other services. Various ecosystem actors were now increasingly considering it a method of exchange to pay for various services and products. In Kenya, M-Pesa took a similar trajectory as different ecosystem stakeholders started to consider mobile money a means of exchange and a resource to enact different life roles as they both created and derived value (Jack et al., 2010; Mwiti, 2015).

However, the key difference between Kenya and Malawi was that the MNO running M-Pesa began working with multiple partners to co-create value much quicker, engaging various third-party collaborators and offering different services on their platform (Kendall, Maurer, et al., 2011). In Malawi, shifts in strategy as the MNO incorporated new value propositions emerged only as the ecosystem transitioned into the expansion stage. This was achieved by partially opening up access to the platform to other ecosystem actors, and their joint innovation started redefining the value proposition. The strategic objective of the focal actor at this stage was to tackle some of the market challenges that mobile money services had the potential capability to address through value co-creation. However, the MNO used strict criteria to select third parties with whom it would co-create value and ensured the third parties' proposed solutions were in line with the MNO's overarching strategy. This generation of multiple types of value through strict assessment from a diverse set of third-party actors is in agreement with the literature that describes regimes of value as institutionalised ways of assessing and communicating value (Appadurai, 1986; Corvellec & Hultman, 2014). For example, during the expansion stage in Malawi, the focal firm engaged farmers as end users to understand the market context and learn how mobile money could be socially embedded in their daily farming activities and practices. While the farming product provided up-to-date farming information to farmers, it created a good business opportunity for the focal firm to derive economic value. Similarly, for the government, it created an effective tool for teaching farmers modern farming techniques as a social inclusion value. The differences in value types and experienced illustrate diverse ways of assessing and communicating value.

As the ecosystem transitioned into the expansion stage, adopting an enhanced mobile money platform with APIs reinforced the ecosystem's capabilities as a digital platform to enable generative value co-creation. The mobile money platform provided the building blocks for other ecosystem actors to create other services and products. In particular, the introduction of

boundary resource tools on the digital platform enabled the connection and interaction of multiple actors through recombinant innovation (Satish Nambisan, Kalle Lyytinen, & Ann Majchrzak, 2017) through the ecosystem. Similarly, in Kenya's M-Pesa during its early days, the platform owner enabled integration and linkages with external actors who took advantage of the platform capabilities available on the mobile money platform (Kendall, Maurer, et al., 2011; Markus & Nan, 2020). The findings indicate that introducing the boundary resources enabled the mobile money digital platform to afford new functions and capabilities to other ecosystem participants, thus supporting the generation of joint innovations. Examples of such platform capabilities include third-party firms using the mobile money service to facilitate cashless financial transactions and offering value-added services, such as loan repayments and access to farming information. These findings imply that the mobile money platform has the capability to foster innovation through integration and embeddedness into platform functionalities.

5.4.3. Ecosystem as systems of value consumption

At the inception of the mobile money service, the focal firm involved the end user mainly for testing the technical functionality of the service rather than obtaining knowledge of end user needs or usages. During the birth stage, the focal firm also engaged service agents as a source of feedback to understand the end user experiences. A slightly different trajectory unfolded at the genesis of M-Pesa: Safaricom, as the focal firm, engaged end users directly and through agents to gain insights into usages of the mobile money service (Hughes & Lonie, 2007). This end user and service provider engagement in the two countries, though contrasting in the role they played in value co-creation, availed opportunities for understanding and assessing value experiences. In Kenya, the focal firm supported social learning activities and processes as it integrated the knowledge and insights it gained from user engagement with the mobile money innovation into its ultimate product. In the Malawi case, during the birth stage, insufficient attention was paid to end users as an active source of knowledge in the innovation process for value co-creation. The literature on service ecosystem considers value creation and consumption a collaborative interaction between the service provider and beneficiary (Vargo & Lusch, 2004, 2008a). It has also been argued that for products and services to address needs for bottom of pyramid (BoP) markets, they must be largely shaped by life experiences and socio-economic barriers, rather than being end user-driven (Viswanathan & Sridharan, 2012). Therefore, this might imply that the overlooked end user role signified under-appreciation of

the user-centric value experiences that could have contributed to the value co-creation process. These observations also align with the concept of sociotechnical generativity (Msiska & Nielsen, 2018), which seeks to highlight the complementary roles of social relationships and experiences among actors as critical success factors in supporting value co-creation in these low-resourced contexts.

Prior to the rollout of the mobile money service, the Malawi MNO undertook a market survey with some potential end users to understand the end users' perceptions of the product. However, as the product was deployed, the results show that the focal actor did not develop adequate mechanisms for obtaining feedback on usage patterns for the mobile money services. In contrast, the Safaricom team extensively monitored usage patterns throughout the M-Pesa service pilot and worked with researchers to explain some patterns of unexpected usage even after rolling out the service (Hughes & Lonie, 2007). This M-Pesa strategy expanded the service into a completely new payments market that the focal actor had not initially anticipated before the product launch (Hughes & Lonie, 2007). These observations resonate with the role of social learning in technological innovation, which takes into account how the end-users understand, interpret and employ the innovation in their daily lives (Williams et al., 2005). This is further supported by the literature on service-dominant logic, which gives end users additional roles, such as educating providers on end user demands, helping create novel service combinations and promoting indirect connections between various resources (Lusch & Nambisan, 2015). These findings suggest that the diminished attention of the end user during the birth stage may have had an impact on the emergence and assessment of valuable experiences of the mobile money service.

During the birth stage, the studied mobile money service as an IS innovation offered varied capabilities and value propositions that could potentially address a wide range of contextual market challenges for end users. However, other actors considered the IS innovation a threat to some incumbent firms and their traditional market practices. For instance, during its inception, the financial regulator, on the one hand, considered the IS innovation a solution to the challenges that the unbanked rural masses faced in accessing formal financial services. On the other hand, commercial banks considered the innovation a threat to their business as they would fight over the same customers. For their part, most end-users seemed unsure of the value that the mobile money service would bring due to being regarded as passive recipients of the IS innovation. These observations align with studies on the plurality of value. The findings

may imply that mobile money leverages the capabilities of digital technologies to reconfigure the value co-creation process and generate various types of value that can potentially address different market gaps, affecting the provision of formal financial services in low-resourced contexts of the Global South. Similarly, studies on M-Pesa show how different types of value emerged as the ecosystem evolved, demonstrating how the value was embedded in the unique Kenyan social context (Mwiti, 2015). The findings of the present study also align with previous studies that have argued that value propositions are not univocal (Corvellec & Hultman, 2014). In other words, value addresses the needs of different evaluators, and the provider offering the value may not be able to align with all the valuations. As a result and due to the nature of the market, value propositions cater to the demands of various stakeholders, reaffirming the pluralistic nature of value and that it is socially constructed and influenced by the market landscape.

As the mobile money service transitioned into the expansion stage, end user feedback became a crucial consumption system to measure value experiences. As the focal actor integrated more services and products into the mobile money platform, end user experiences and feedback played a significant role in service improvement and value co-creation. Moreover, the focal actor started to create some linkages with the end users that enabled it to acquire knowledge of its services' deficiencies and the products' potentialities. As mentioned above, one service that was launched targeted farmers to equip them with farming information but was integrated into mobile money, and a large amount of learning with end users contributed towards the Mchikumbe product (GSMA, 2017a). In contrast, M-Pesa had, from its inception, created collaborative interactions for feedback and learning between focal actors, end users and other ecosystem participants (D. Evans & Pirchio, 2015; Hughes & Lonie, 2007; Mas & Radcliffe, 2010). The learning that took place in the ecosystem is consistent with the previous literature on innovation, which highlights the inno-fusion that occurs during implementation (Fleck, 1988) and the domestication process of integrating the offering into the end users' usages (Schuurman, De Marez, & Berte, 2011; Silverstone & Haddon, 1996). These findings imply that the success of digital innovations in BoP contexts is based not only on the structures set up by the focal firm in the ecosystem but also on the social learning process with end users. This creates a potentially important source of knowledge on the practical uses of digital innovations and an opportunity for provider-beneficiary interaction, which is crucial to value co-creation through knowledge exchanges between ecosystem participants.

Different entrepreneurs were allowed to collaboratively create value with the MNO and develop joint innovations that addressed social challenges, such as access to finances through microloans. Others, however, were declined collaboration opportunities. These findings on market gaps corroborate the findings on M-Pesa showing how the mobile money system used an ecosystem approach to enable value co-creation between multiple partners, although barriers also existed (Kendall, Maurer, et al., 2011). These results of multiple kinds of value generated from interactions between diverse actors to address varied market challenges reaffirm the plurality in the interpretation of value. The same valuation practices used to determine whether a suggested value proposition from a third party was consistent with the MNO's overall strategy were also used to reject collaboration requests from certain actors. These findings suggest that other political and economic interests of the focal firm may also have served as valuation principles for rejecting or accepting different value propositions. Therefore, challenges may exist for ecosystem actors who propose different value propositions as they may not always be aware of the metrics for evaluating their proposed value.

The results also suggest that value propositions created by distinct ecosystem configurations at different times can co-create value that may address specific market challenges within its context. These findings are consistent with previous research on value propositions, which emphasises non-technical trade-offs and choices by expressing institutionalised preferences and evaluations based on entrenched interests and political agendas (Ballantyne, Frow, Varey, & Payne, 2011; Corvellec & Hultman, 2014). Therefore, the results also show that the process of creating different kinds of value in the ecosystem can generate tensions (Corvellec & Hultman, 2014; Stark, 2009). Such tensions in mobile money ecosystems might be both generative and problematic, leading to conflict and competition between actors, inhibiting innovation and producing innovative interactions for value co-creation. Therefore, although the defined value proposition facilitated decision-making regarding allowing other actors onto the mobile money platform, it also set boundaries and barred other actors whose value proposition was not aligned with the MNO's strategy.

5.5. An integrative framework for understanding value co-creation in mobile money ecosystems.

The previous sections of this chapter focused on understanding the dynamics of value co-creation during the three stages of the mobile money ecosystem lifecycle. This discussion has

included examining the interplay and relationships between the various ecosystem components to understand how these interactions influence the co-creation of value. This section will seek to operationalise a proposed integrative framework as an outcome of the research.

The proposed integrative framework aims to abstract the primary research outcomes by focusing on the dynamics and factors that shaped value co-creation in the studied ecosystem in a more general sense. The developed framework builds on the earlier conceptual framework of ecosystem value co-creation presented at the end of the literature review (Section 2.7) as well as the research findings, which took into account the numerous ecosystem elements and interactions discovered throughout the study. This integrative framework summarises key theoretical constructs to demonstrate the relational and structural elements within the ecosystem. The core concepts of the integrative framework portray various instantiations, emphasising the interactions, relationships and interdependencies among the ecosystem's constituents, as well as the overlaps during the value co-creation process.

5.5.1. Synthesis of the theories constituting the framework

The integrative framework is built on three fundamental ecosystem perspectives of value co-creation: structures, digital platforms and end user consumption systems. These perspectives, show the distinct differences in value characterisation in each ecosystem approach and their influence on the overall process of value co-creation. The structural view considers ecosystems as **supplier-led production systems**, comprising multiple actors that coordinate their interactions through appropriate structures and governance mechanisms to provide **instrumental value** (Adner, 2017; Autio & Thomas, 2019; Jacobides et al., 2018). The second dimension views the ecosystem as an **end user consumption system**, which gauges value through the **experiential benefits** derived from the end user's engagement with the provider's resource (Lusch & Nambisan, 2015; Vargo & Lusch, 2004, 2008a). This is supplemented by social learning in technological innovation to understand the end user's role in the innovation process in the user domain (Williams et al., 2005). The third perspective represents the digital platform as an ecosystem, which facilitates value co-creation by enabling interactions between the various entities and value derived through the **functionality and capabilities** provided by the platform (Majchrzak & Markus, 2013; Yoo et al., 2012; Zittrain, 2006). The notion of value as the output of the different ecosystem approaches is the central nexus of the integrative framework symbolising the different **regimes of value** (Appadurai, 1986; Corvellec &

Hultman, 2014) in the ecosystem for different stakeholders. These value regimes demonstrate the dynamics of value co-creation among the actors within the context of the ecosystem phenomenon. The representation of value at the intersection of the integrative framework, as illustrated in Figure 5.1, emphasises the varying types of value that the different ecosystem perspectives offer during the co-creation process.

Each ecosystem perspective contributes to understanding some facet of the value co-creation dynamics in the mobile money ecosystem. However, considering the study's findings as a whole makes clear that using these different ecosystem lenses on their own is insufficient; rather, it is necessary to combine them to understand the value co-creation process comprehensively. For instance, while the structural approach views ecosystems as supplier-led co-creation systems, it pays inadequate attention to the role of the end user as an active constituent of the consumption system for the co-creation of value (Autio & Thomas, 2019). Similarly, while the IS perspective considers the capabilities of the digital platform as an enabler of value co-creation, little emphasis is given to the governance mechanisms found in the structural approach, which can aid in shaping ecosystem generativity. Lastly, while the end user as a consumption system offers insights into end users' needs through user-provider relationships, it lacks focus on the ecosystem-level generation of user benefits (Autio & Thomas, 2019). Therefore, it is necessary to synthesise the various perspectives to create an integrative framework that provides a comprehensive view of the ecosystem value co-creation process. Integrating the three lenses offers analytical strength and complementary capabilities that each perspective cannot provide alone.

5.5.1. Explaining the integrative framework

The research findings enabled us to scrutinise the ecosystem's different activities, actors, roles, relationships and interactions to identify the concepts that shape value co-creation. The study was able to examine the developed themes and reframe them in light of the literature and conceptual framework owing to the iterative analysis that was undertaken. The proposed integrative framework asserts that understanding the value co-creation phenomena in a mobile money ecosystem requires examining the collective orchestration of interdependent ecosystem constituents. To obtain a comprehensive understanding of the dynamics of value co-creation, this analysis has taken into account the ecosystem phenomena from both a static and process perspective. The static view adopts the structuralist approach to the ecosystem outlined by

Adner (2017), which comprises interdependent actors with defined roles and activity flows who interact to attain a focal value proposition. In turn, the integrative framework considers the different roles of the actors at a point in time in the evolution of the ecosystem (Moore, 1993), while the process view examines how the different roles in the ecosystem connect through the digital platform or otherwise to create value (Adner & Kapoor, 2010a).

The results of this study help us comprehend the evolution of mobile money ecosystems and the numerous interconnections between different ecosystem elements and actors. The earlier work by Rong et al. (2015) made the case that rather than viewing ecosystems in a static manner, it is important to take into account how they evolve over time. It also suggested that as these ecosystems change, so may the roles of the actors within them and interactions thus making the value co-creation process complex, non-linear and collective in nature as it involves several actors and elements. Thus, this study identifies three overlapping and interconnected dimensions in understanding the dynamics of value co-creation in mobile money ecosystems. These dimensions namely the context, governing value co-creation and ecosystem value co-creation assist in operationalising the integrative framework proposed by this study. The next section provides summaries of each of these three perspectives so that researchers and practitioners can engage in critical reflective discussions regarding understanding the evolution and dynamics of value co-creation in mobile money ecosystems. Each dimension has generated a set of theoretically informed questions that could be used to understand the evolution and dynamics of value co-creation in the ecosystem.

5.5.1.1. Context dimension

The context dimension covers the different elements and factors that shape the dynamics of value co-creation in mobile money ecosystems. The various interactions and relationships that exist between the production system, the digital platform, and the consumption system enable the collection of a variety of narratives from different actors at various levels and from multiple perspectives as they co-create value. This information can then be analysed and interpreted to understand the influence of context on the value co-creation process. As depicted in figure 5.2, the context dimension involves identifying and questioning how the elements in the environment such as institutional goals and mission, regulation and policy as well as market conditions influenced the dynamics of value co-creation within the mobile money ecosystem. Researchers can then better understand how the ecosystem functions and evolves as well as

how contextual factors influence the dynamics of value co-creation by taking into account the relationships and interactions between the various ecosystem constituents.

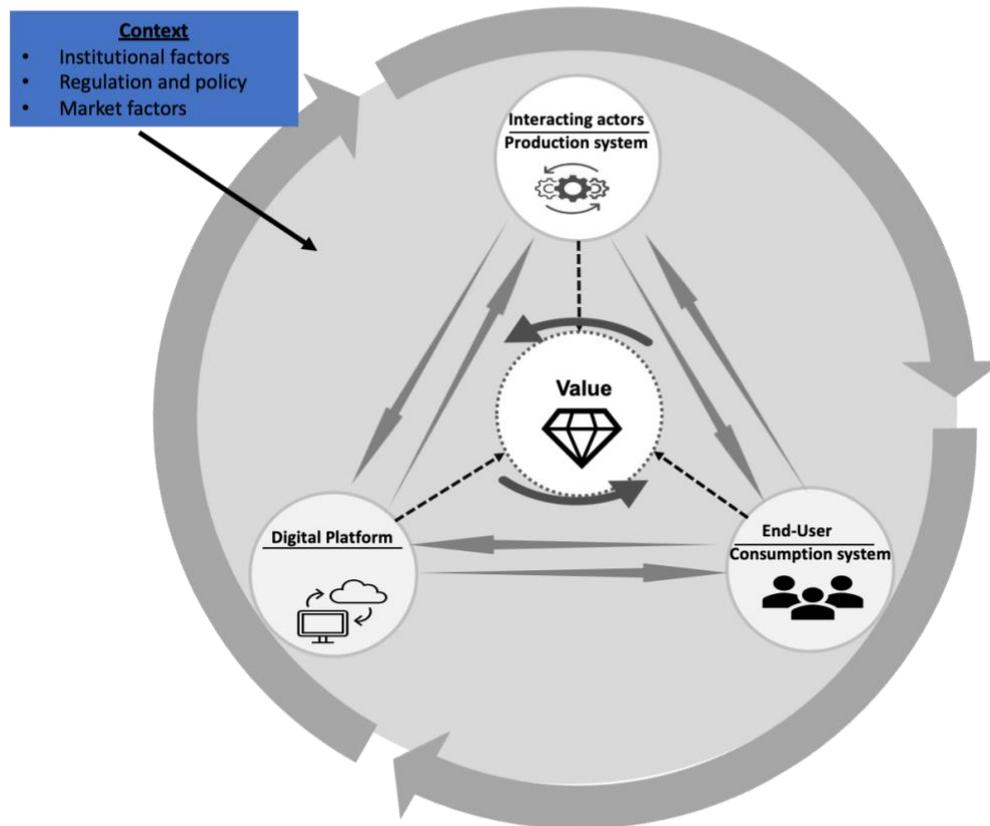


Figure 5.2: Context dimension of the integrative framework for value co-creation in mobile money ecosystems

Source: *Author*

Figure 5.2 also demonstrates the diverse perspectives in which value may be considered by different actors due to the varied contextual factors at any point in time in the ecosystem. Previous research has emphasized the significance of recognising the role context plays in the co-creation of value (Corvellec & Hultman, 2014; Edvardsson et al., 2011). It has also been stressed that value has a unified and relational component, and is embedded in a particular social context, as well as being always determined by social groups with different perspectives and valuation criteria (Appadurai, 1986; Corvellec & Hultman, 2014; Edvardsson et al., 2011). As a result, different contextual circumstances have an impact on how actors perceive value. For instance, regulation and policy, as contextual factors, allowed for interactions and partnerships between different actors in Kenya's M-Pesa rollout as well as permitting mobile

network providers to assume the focal actor role in the mobile money ecosystem. The same cannot be stated for the Nigerian mobile money ecosystem during its inception, where MNOs were not allowed to become focal actors in the mobile money ecosystem due to regulation. These factors played a significant role in influencing the dynamics of value co-creation in the mobile money ecosystem and its adoption in these different contexts. On the contrary, while Malawi's regulatory framework permitted interaction and relationships between various ecosystem actors, as well as allowing MNOs to become focal actors, the institutional goals and mission of the focal actor during the rollout of mobile money placed a strong emphasis on gaining a competitive advantage than growing ecosystem value co-creation. This resulted in exclusive focal firm dominated innovations due to the closed nature of the platform as there was insufficient focus on collaboration with other actors. Additionally, end users were considered to have a passive role in the ecosystem which also affected the value co-creation process. These examples demonstrate the importance of the influence of contextual factors in the dynamics of value co-creation process.

Context is a significant dimension to consider in understanding its influence on the dynamics of value co-creation particularly in the global South where a number of contextual challenges prevail. According to Chataway et al. (2014), for technological innovation based on the global North approaches to succeed in the global South, a number of factors must be considered. These contextual elements include the need to have established institutions that enable information flows between service providers and end users and thriving markets that can offer innovators sufficient benefits for their investment. The context dimension in value co-creation for the global South is of significant theoretical contribution to scholars as it emphasises the criticality of understanding the distinctive social, economic, regulatory and political contexts of the global South in creating value for different ecosystem constituents. Given the variety of countries within the global South with diverse contexts, this has an impact on how value is co-created in each unique environment. The context dimension demonstrates that value is shaped by the context in which it is produced rather than being produced in isolation. In order to establish strategies and interventions for value co-creation that are pertinent to and effective in meeting the needs of stakeholders, it is crucial to understand the context of the global South. Furthermore, the context component also emphasises the importance of engaging stakeholders in value co-creation as exemplified by the cultural differences between Malawi and Kenya. Stakeholders in the global south, could have different objectives and expectations than those in other regions, and it is important to comprehend these expectations in order to create value

that is relevant and meaningful to them. This requires an open and collaborative approach to value co-creation that takes into account the unique multiple perspectives and needs of stakeholders.

5.5.1.1.1 Exploratory and guiding questions for the context dimension

- How does the mission and strategic goals of the focal firm support ecosystem value co-creation?
- What regulatory and policy interventions were in place to support ecosystem value co-creation?
- How does the regulation and policy influence ecosystem value co-creation?
- What market conditions supported the ecosystem value co-creation?
- How do the social practices, norms and local systems of logic influence the value co-creation process to enable end users integrate the digital innovation into their daily lives?

5.5.1.2. Governing value co-creation

This dimension focuses on the governance of value co-creation by the focal actor and other governed participants during the ecosystem evolution to understand how decisions and control mechanisms are made in relation to the value co-creation process. Governing value co-creation is depicted in Figure 5.3 as three bubbles: the production system, which is primarily comprised of business actors; the consumption system, which includes end users; and the digital platform, which provides the technical foundation for the mobile money platform. The mobile money ecosystem is a complex system that involves interactions and relationships between multiple actors, including the mobile money operator, end users, financial institutions, government agencies, development partners and service agents. The focal actor provides the leadership role that is crucial in activities that include decision making, attract partners, design roles, provide technical platform and engage end users. The dotted ellipsis around two pairs of elements in the Figure 5.2 represent direction and focus of the governance related decisions and activities undertaken by the focal actor and other ecosystem actors in relation to value co-creation. Various governance activities undertaken in the ecosystem that include creation of structures, resourcing the platform and applying control mechanisms in the ecosystem support generative value co-creation as they enable coordination and interaction. The platform provides capabilities to other actors for value co-creation. On the other hand, the engagement with the

IS innovation by the end users brings to the fore more use cases and the focal firm and other business actors gain knowledge about these usages and later incorporate into the offering.

The governance aspect includes leadership and decision making on the actors as well as deciding on interaction and engagement with end users. Such governance decisions and approaches can shape the way value is co-created in the mobile money ecosystem. Effective governance is essential because it allows these actors and elements to interact effectively and efficiently so as to achieve their goals and co-create value in the ecosystem. Some of the key aspects considered under the governance component include the design and development of structures to support ecosystem functionality, create partnerships and that can be used to co-create value on the platform; resourcing the platform ecosystem to extend capabilities to third-party actors and; the control mechanisms to support collaboration with platform complementors.

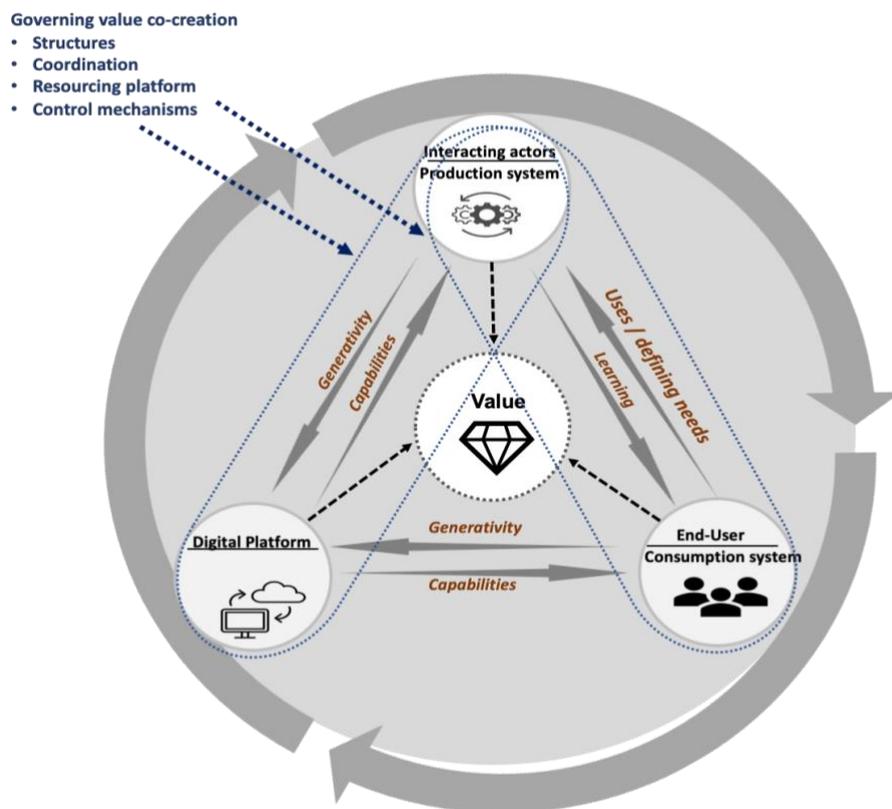


Figure 5.3: Governance of value co-creation dimension of the integrative framework

Source: *Author*

As an example of how the governance dimension affects the dynamics of value co-creation in a mobile money ecosystem is the decision to open up access to the platform, which transforms the co-creation organising logic and enables third parties to collaborate with the focal actor in value co-creation. The focal actor's decision to provide resources which offered digital capabilities that extended the scope and diversity of the platform functionalities and thus influencing value co-creation opportunities.

The governing dimension in value co-creation for the global South is of significant theoretical contribution to researchers because it helps to elucidate the role of governance in facilitating or hindering value co-creation processes in mobile money ecosystems. The success of value co-creation processes can be significantly impacted by how mobile money ecosystems govern the process. Governance is essential in the context of mobile money ecosystems in the global South because it promotes value co-creation between multiple actors, such as mobile network operators, financial service providers, governments, and end users. A co-creation of value that is inclusive, transparent, and responsive to the demands of all stakeholders may be ensured with the aid of effective governance. This necessitates the development of approaches for ecosystem actor involvement and participation as well as clear, consistent rules and regulations that encourage openness, fair competition and safeguard of end user interests. On the other hand, inefficient governance can impede efforts to co-create value in the global South's mobile money ecosystems. This can happen when specific groups' participation in value co-creation projects is restricted due to among other things unclear roles and responsibilities, closed platforms, or power asymmetries between parties. In these circumstances, value co-creation may be limited, resulting in less than ideal results for all stakeholders.

5.5.1.2.1 Exploratory and guiding questions for governing value co-creation dimension

- What roles have been designed by the focal actor to support value co-creation?
- What type of relationships have been created?
- Does the platform have open interfaces to support collaboration for value co-creation?
- How do different ecosystem actors play an active role in the ecosystem?
- Are relationships adopting an ecosystem type of coordination?

- What platform capabilities have been created for value co-creation with third-party actors?
- Does the focal firm engage with end user to ensure their active participation in value co-creation?
- What governance structures have been implemented to support value co-creation?

5.5.1.3. Ecosystem value co-creation

This dimension focuses on understanding the ecosystem value co-creation activities on how different actors, elements, people and artefacts interact to co-create value. The ecosystem value co-creation dimension explicates the dynamics of ecosystem value co-creation from three perspectives that include instrumental value, functional value and consumption value. Figure 5.3 demonstrates the different value perspectives enabled by the dynamics in the ecosystem.

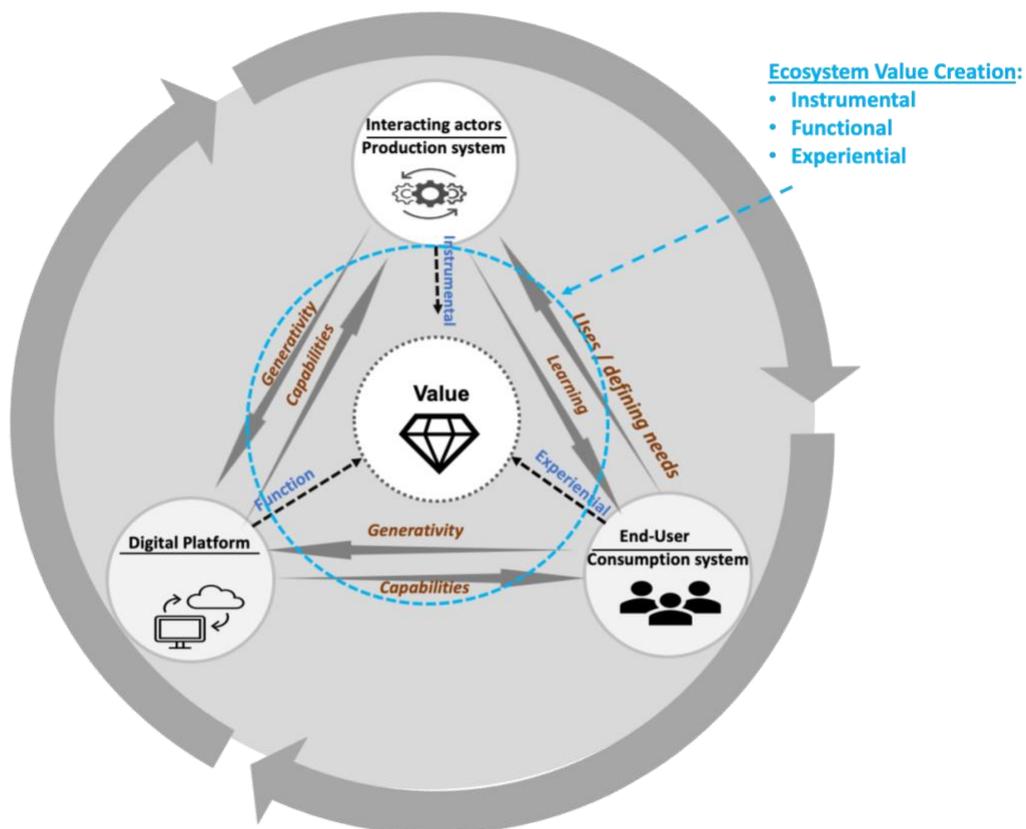


Figure 5.4: Ecosystem value -creation dimension of the integrative framework

Source: *Author*

An example of how ecosystem value co-creation is influenced by the consumption system is demonstrated by the experiential role provided by the consumption system. Thus, if end users are provided a diminished role in value co-creation as an active agent in the ecosystem, it may impact the generative input that the end users may make towards the ecosystem and thus affect value co-creation.

Understanding ecosystem value co-creation is important from a theoretical perspective because it helps us understand how innovation works in these platforms and how it should be fostered and supported. This is especially true for mobile money ecosystems in the global South. The process of innovation involves many different actors working together to co-create value in a collaborative and interactive way. Innovation is essential in the context of mobile money platforms in the global South for enhancing access to financial services and promoting financial inclusion.

5.5.1.3.1 Guiding questions to understand interactions for ecosystem value co-creation

- What value is being delivered by the interactions of different actors to co-create value?
- What functions of the digital platform enable interactions for value co-creation?
- What role do end users play in ecosystem value co-creation?

What structures support interaction of different actors for value co-creation?

5.5.2. A holistic integrative framework

The proposed integrative framework joins the structural and process perspectives to generate novel insights into ecosystem value co-creation by examining how the roles in the ecosystem become connected during the ecosystem lifecycle to co-create value (Rong, Hu, Lin, Shi, & Guo, 2015).

The approach allows the entire ecosystem to be viewed as a process through the three stages in the evolution of its lifecycle, as depicted in Figure 5.5.

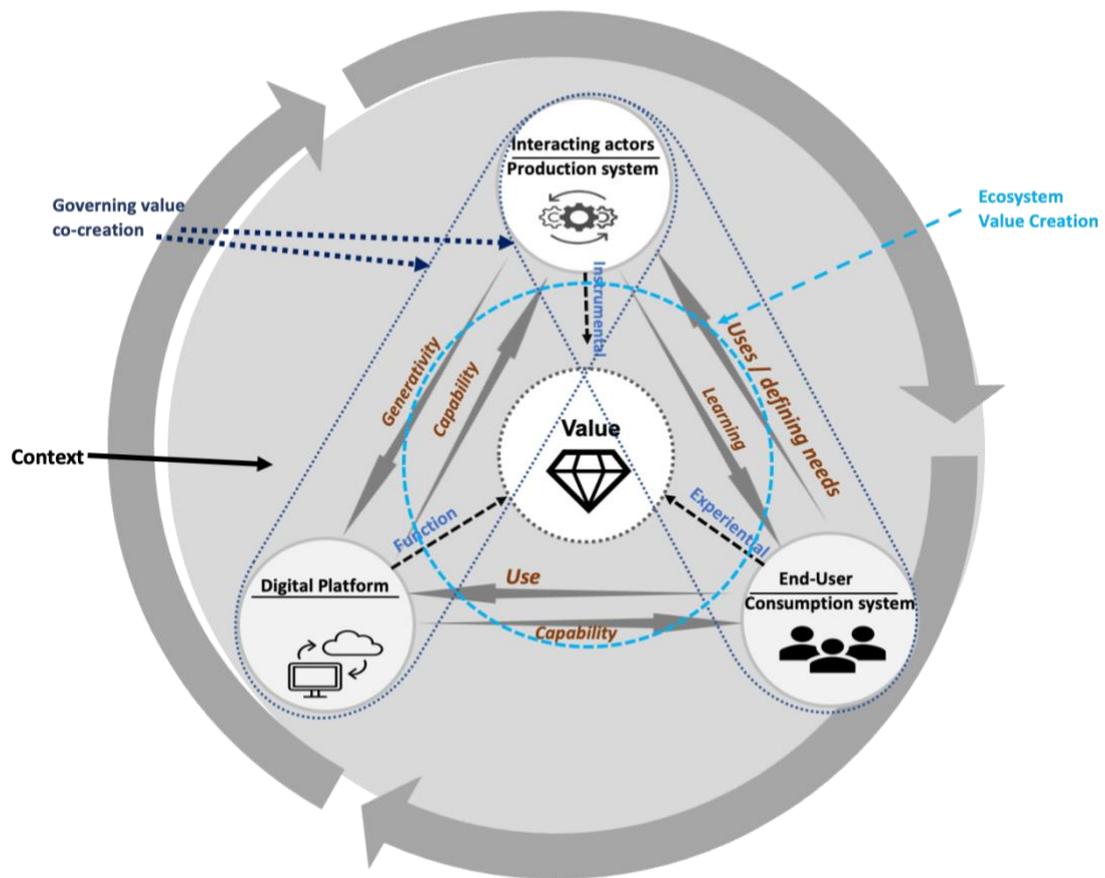


Figure 5.5: Integrative framework for value co-creation in mobile money ecosystems

Source: Author

During the three stages of the ecosystem lifecycle, a combination of different platform and interaction patterns contributes capabilities to co-create value in various ways. Based on the combination of the interaction patterns, ecosystem components and governance mechanisms, different stages of the ecosystem lifecycle exhibit distinct capabilities to create value for the ecosystem. Thus, the integrative framework offers a way to understand these interaction patterns and dynamics of value co-creation in the ecosystem lifecycle through static stages depicted as static moments in time or as a process across the evolution of the ecosystem growth stages. Overall, other researchers may find that the dynamics of value co-creation and that have been revealed through the research and depicted in Figure 5.5 as generativity, capability, uses,

and learning provide theoretical insights that could be used to study similar mobile money platforms in the global South.

Our results support the suggested process perspective of the ecosystem lifecycle. In the case studied in this research, the ecosystem's structure and context evolved over time, as shown in Figure 5.6, which impacted the formation of novel interaction patterns and influenced the dynamics of value co-creation. For example, contextual settings, such as regulation and the strategic goals of the focal firm, influenced the value co-creation process in different ways. The findings also support the notion that the governance of value co-creation first appears in the roles established and relationships between the components of the production system and the digital platform. Figure 5.6 also highlights challenges inhibiting ecosystem interaction between different actors with the potential to co-create ecosystem value

	Birth Stage	Expansion Stage	Leadership
Ecosystem Structure			
Governing value co-creation	<ul style="list-style-type: none"> • Supplier-led production system with other roles designed by focal firm. • Dyadic relationships creating a transaction platform. • Closed platform • End-users with passive role in ecosystem. • Institutional coordination • Relationships oriented towards linear supply chain approach. 	<ul style="list-style-type: none"> • Towards creating a collaborative environment for value co-creation (VCC). • Enhanced platform capabilities for value co-creation. with third parties • Focal firm engaging end-users for VCC. • Semi-open interfaces with focal actor controlling who is allowed. • Hybridisation of platform i.e. changes in platform purpose and governance structures. 	<ul style="list-style-type: none"> • Towards more opening up the platform to support VCC with launch of a semi-public API. • More formalised governance structures emerging. • More collaboration with third party developers to develop new business models.
Value co-creation	<ul style="list-style-type: none"> • Focused on delivering Instrumental value from interacting actors according to the value proposition. • Experiential benefits to end-users 	<ul style="list-style-type: none"> • Structures providing instrumental utility to support ecosystem value co-creation. • Enhanced digital platform affording new functional value and capability for value co-creation • Experiential value for end users 	<ul style="list-style-type: none"> • Improved structures offering instrumental value for production of complementarity • Enhanced platform affording diverse functional value and capabilities • Experiential value for end users
Context	<ul style="list-style-type: none"> • Mission to build competitive advantage over rivals thus mission of focal firm oriented towards exclusive value creation. • Regulation focused on safeguarding financial stability 	<ul style="list-style-type: none"> • Institutional goals by focal firm towards active opportunity creation by collaborating with other ecosystem actors to co-create value. • Revised regulation still focusing on economic value but also collaboration between established firms but barriers remained for small firms. 	<ul style="list-style-type: none"> • Goal of focal firm shifts to collaboration with launch of developer portal to support value co-creation with 3rd parties. • Lack of regulation to facilitate innovation that opens up access of digital platform to third parties to support value co-creation.
Bottlenecks/Challenges	<ul style="list-style-type: none"> • Co-innovation challenges due to closed platform. • Focal firm dominated innovations. • Insufficient attention to end-users role in ecosystem. • Insufficient attention given to the role of digital platform in facilitating value co-creation ignored 	<ul style="list-style-type: none"> • Platform ecosystem governance challenges affecting VCC. • Insufficient attention paid to social technical generativity 	<ul style="list-style-type: none"> • Lack of regulatory certainty for platform openness and collaboration. • Limited interaction amongst potential innovator to exchange knowledge

Figure 5.6: Summary of the evolution of value co-creation in the mobile money ecosystem

5.5.3. Utility of the integrative framework

The integrative framework offers the following insights:

1. It offers a novel method of integrating the three disciplinary perspectives of ecosystem value co-creation using the concept of regimes of value, which reinforces and complements each of the respective theories constituting the integrative framework.
2. It emphasises the interaction between the core elements and activities from different perspectives in a holistic way to elucidate their influence on ecosystem value co-creation.
3. It provides insight into the mechanisms that function in the co-creation of value across the ecosystem's lifecycle stages.
4. It provides an approach to understanding the challenges and opportunities that influence the success or failure of value co-creation among the ecosystem elements.

It enables understanding of mechanisms that provide a collaborative environment for value co-creation and of factors that create tensions, conflicts or bottlenecks that affect value co-creation.

5.5.4. Theoretical generalisations

The suggested theoretical framework's components were primarily derived from the research on Malawi's mobile money ecosystem. The integrative framework has the potential to provide an understanding of the dynamics of value co-creation in other mobile money ecosystems and within mobile money ecosystems for similar Global South settings, specifically. Some studies have highlighted the challenges of generalising case study findings to contexts other than the one being researched (Firestone, 1993). Nonetheless, other studies have argued that qualitative case study findings can be analytically or conceptually generalised to different contexts in both empirical and theoretical ways (Tsang, 2014; Wikfeldt, 2008). Lee and Baskerville (2003, 2012), for example, suggest that researchers may generalise their findings from one context to a new theory that the researchers construct, from one situation to an existing theory that the researchers widen with their new results and from one context to another. Yin (2018) proposes the two following conditions on which these analytical or theoretical generalisations might be

based: “(a) corroborating, modifying, rejecting or otherwise advancing theoretical concepts that you referenced in designing your case study or (b) new concepts that arose upon the completion of your case study” (p. 38). These conditions imply that the theoretical generalisations are based on the theoretical propositions that informed the initial study design and are empirically strengthened by the research findings. Conversely, the results of the case study alone may lead to new theoretical generalisations.

This case study offers an empirical opportunity to elucidate the theoretical ideas surrounding ecosystem value co-creation. The analytical generalisations, which apply to the conceptual level rather than specific case details in Malawi, emerged based on the theoretical constructs specified at the outset of the case study. Therefore, our approach reaffirms the proposition by Yin (2018) that analytic generalisation must take place at a higher conceptual level than that of the specific case being investigated. Theoretical generalisations may also result in deeper understandings of how to interpret the findings of other case studies that have already been conducted or may lead to definitions of new case studies (Tsang, 2014; Robert Yin, 2018). This integrated framework could be used to understand the dynamics of value co-creation in mobile money ecosystems focusing on the Global South.

Chapter 6: Conclusion

6.1. Introduction and research overview

The main premise of this thesis was to investigate mobile money service, a digital innovation that functions on a digital platform and comprises sociotechnical elements that combine and interact in different ways. Mobile money services have become an important issue in the Global South due to their ability to support the financial inclusion agenda and contribute towards socioeconomic development.

Despite the benefits, it has been a challenge to replicate the success of mobile money services across different countries in the global South. Extensive studies have been conducted to determine the causes of these variable results. The majority of them have concentrated on the outcomes of the deployments, particularly emphasising adoption and implementation challenges, while only a few have looked at the process of innovation. However, studies have conceptualised mobile money as digital innovation organised around ecosystems involving multiple actors and components interacting to co-create value. Consequently, this study aimed to take a different route and explore the dynamics of value co-creation in mobile money platform ecosystems. The primary aim of this research has been *to understand the dynamics of value co-creation in a mobile money ecosystem in a global South context in general and Malawi in particular*. Therefore, five objectives were established to assist in achieving this aim as below:

- i. To conduct a literature review that will assist in understanding the interplay between mobile money ecosystems, digital platforms, and value co-creation in the context of mobile money in Malawi;
- ii. To undertake desk research and explore mobile money ecosystems in the Global South in general and Malawi in particular;
- iii. To carry out an empirical analysis to understand the dynamics of value co-creation in mobile money ecosystem in Malawi;
- iv. To develop an integrative framework that explains the dynamics of value co-creation in mobile money ecosystems;

- v. To provide theoretical and practical implications for researchers and policy makers on mobile money ecosystems in the Global South.

The first two objectives of the study were fulfilled by conducting a comprehensive literature review on the fundamental concepts that underpinned the study, which included understanding mobile money as a digital innovation that functions as a digital platform ecosystem. The goal of the literature investigation was to explore how digital infrastructure and technology properties have influenced digital innovation, resulting in the emergence of the new organising logic of digital platforms and their associated ecosystems. Additionally, the exploration of the literature demonstrated how value co-creation has been transformed due to this ecosystem phenomenon that provides a contextual force which changes the dynamics of interaction between different actors. The review also revealed that while there has been a lot of research on mobile money platform ecosystems, some areas remain underexplored, particularly those that focus on the process of digital innovation and value co-creation in the global South. The literature review also noted that previous studies have conceptualised mobile money as a digital innovation that exploits digital capabilities to reconfigure sociotechnical elements and undertake ecosystem value co-creation. Despite this complex sociotechnical view in which different actors and elements play a role to realise digital innovation, there was lack of studies that had used the ecosystem lens to understand the dynamics of value co-creation in this global South context.

The remaining three objectives were met by developing a comprehensive plan for the study, which included choosing a mobile money-based digital platform ecosystem in Malawi as the case for the study and using an exploratory single-case study for the research design. The ecosystem context entailed investigating multiple actors that included service providers, banks, agents, intermediaries, government officials and end-users who all undertook different roles in the ecosystem. Different data collection approaches were adopted, and they included semi-structured in-depth interviews, focus groups and document analysis. A thematic analysis was applied on all data collected for the research. The final objective of the study was to develop an integrative framework whose purpose was to abstract the primary research outcomes.

The empirical findings have confirmed the validity of using the ecosystem approach for mobile money platforms as argued by other authors (Lepoutre & Oguntoye, 2018; Markus & Nan,

2020; Senyo et al., 2022). The results have also reinforced the notion that mobile money is a complex sociotechnical phenomena that uses technological capabilities to reconfigure various sociotechnical components that enable the provision of the service (Dahlberg, Guo, & Ondrus, 2015; Kallinikos et al., 2013; Markus & Nan, 2020).

6.2. Addressing research questions

This research set out to address three main research questions and in this section we revisit them with the goal of reviewing the extent to which the empirical work for the study has responded to the questions.

Research question 1: What role do the structural elements and governance mechanisms play in influencing value co-creation in the mobile money ecosystem in Malawi?

Across the three stages of the ecosystem lifecycle, this study has provided substantial evidence on the influential role of the structural elements and the governance mechanisms in influencing value co-creation in the mobile money ecosystem. By using an ecosystem approach to analysis, the study is able to specify precise parameters that demonstrate how ecosystem structures emerge and contribute to ecosystem value co-creation. Additionally, by analysing the interplay between the actors and how this influence interactions in the ecosystem, the study reveals valuable insights into the value co-creation process. For example, at the beginning to initiate and develop ecosystem functionality for value co-creation, the findings show how the focal actor was involved in designing roles, coordinating interactions and orchestrating the linkages between the ecosystem actors. The findings also show how the focal actor's emphasis during the initial stage was building structures of the ecosystem to provide instrumental utility of a production system (Autio & Thomas, 2019). The expansion stage has also demonstrated the influence of the technical platform in value co-creation as it was partially opened up for third-party innovation to expand the services and products developed on the platform. These different structures played a significant role in nurturing innovation for the mobile money ecosystem.

The study is able to make the role of structures in the ecosystem visible over the time by adopting Moore's (1993) ecosystem lifecycle stages, which provided a way of evaluating the evolutionary aspects of the mobile money ecosystem at different points. The three evolutionary

stages showed how roles within the structure changed over time and how this influenced value co-creation in the ecosystem at different stages confirming the impact of co-evolution in the ecosystem.

The study also allowed exploration of changes in governance mechanisms and how this influenced the co-creation of ecosystem value due to the evolutionary approach that was used to understand the stages of the ecosystem lifecycle. For instance, the research data is consistent with the claim that early-stage governance mechanisms lead to the development of relationships that are more oriented toward a linear supply chain strategy. The evidence also demonstrates that the platform's structures allowed for adjustments in its governance approach to become hybrid as it evolved from the birth stage to the expansion phase. These observations show the significant role that the structural elements and governance properties played in the value co-creation process in the mobile money ecosystem.

The study also reveals that although structural properties and governance mechanisms play a prominent role in producer-centric value co-creation, failure to recognise the role of platform capabilities and end users runs the risk of under-appreciating the role of generative value co-creation. Therefore, the next section focuses on the role of these additional ecosystem elements.

Research question 2: How does the digital platform influence value co-creation in the mobile money ecosystem?

This research has demonstrated that the mobile money platform underwent various changes that had varying influence on value co-creation in the ecosystem. The birth stage was characterised by a closed mobile money platform exhibiting signs of a supplier-led production system offering focal-firm dominated innovations. For example, the services on the mobile platform were dominated by peer-to-peer transfers, credit top-ups and cash-in/cash-outs, all of which were products exclusively developed by the platform owner. Although the birth stage showed some evidence of the focal actor developing governance structures, value co-creation on the digital platform ecosystem was hindered by the closed platform architecture. However, the enhancement of the platform during the expansion stage partially opened up the platform ecosystem to external innovation, which allowed more value co-creation interactions. The emergence of more services during the expansion stage is evidence of the critical role that the

platform played in orchestrating generativity that enhanced the scope and diversity of the platform.

The study has also confirmed the challenges faced by platform owners on the trade-offs between opening up the platform to third parties to develop innovations through co-creation of value and providing control mechanisms that ensure quality of products and services are maintained. In addressing these tensions, the study has shown how the platform owner used different platform governance approaches, which resulted in restricting flexibility to third parties and constraining participation of local developers on the platforms. In addition, the findings have revealed the emergence of a new type of governance mechanism, a hub solution that supports marginalised third-party developers to create innovations that address specific challenges of the global South.

Research question 3: What role do end users play in value co-creation within mobile money ecosystems?

The findings of this study have demonstrated the critical role that end-users can play in offering knowledge about the usages they attach to IS innovations as they bring the innovations into their daily lives and share their experiential value through social learning opportunities of value co-creation. The engagement between the service provider and the end user created collaborative interactions that can influence the value co-creation process. The study has further shown that contextual factors such as socioeconomic conditions and life experiences play a significant role in shaping the usages of the IS innovations. The low-resourced nature of the global South context entails that service adoption is largely shaped by its context rather than being end user driven. The study has thus shown that value co-creation processes, such as social learning established through provider and end user interaction, are just as important as the structures set up by the focal firm in determining the success of digital innovations in these low-resourced contexts. The study has demonstrated that end users' contribution to value co-creation through their feedback, knowledge exchange or practices is a crucial consumption system whose value experiences once integrated into the digital innovation offer invaluable insights for developing relevant digital innovation.

6.3. Research contribution

6.3.1. Empirical contribution

This research is interdisciplinary and therefore, will be of interest to academic scholars from a variety of fields within the social science, such as information systems, strategic management, and development studies. The study is located at the intersection of information systems and management disciplines and also contributes to an increasingly important debate in ICT4D on digital platforms for development (Bonina et al., 2021; Koskinen, Bonina, & Eaton, 2019; Nielsen, 2017).

This study has made a significant empirical contribution to the understanding of the sociotechnical nature of mobile money platform ecosystems, by producing an account of the phenomenon that helps to explain the dynamics of value co-creation in a global South context. To the best of my knowledge, there is little research in Malawi or within Sub Saharan Africa that explores this phenomenon. Undertaking the empirical work for this study has contributed to the literature on the design and development of mobile money platform ecosystems comprising both technical components and social elements for its functioning. The empirical data has shown how such digital platforms entail design and development of appropriate structures and governance mechanisms that enable ecosystem interactions which support the mobile money service functionality. Additionally, the study also observed that creation of partnerships between different actors of the ecosystem as an important aspect in the development of mobile money systems and commences with the attraction of other actors into the network initiated by the focal actor. The study has additionally shown empirical evidence of how partnerships foster collaborations that bring together various resources and expertise to produce new services for the ecosystem. The technical platform facilitates the interactions between different actors and elements which support the functionality of the mobile money service. Therefore, the study observed that the main activities required to be done as part of the platform development and functionality include designing and developing the technical platform.

The empirical work carried out in this study has also contributed to the literature on digital platform ecosystems for mobile money in the global South in terms of how such platforms are technically developed and managed. According to empirical data, designing and developing

the technical foundation upon which the mobile money service will run are among the first steps in the development of a mobile money platform. To enable value co-creation with other actors, the platform also needs to be made accessible to external parties.

The thesis contribution to IS knowledge is mainly concerned with the sociotechnical nature of digital platform ecosystems which comprise different components that include the technical artifacts, the structures and governance mechanisms as well as the end users. Specifically, the study offers empirical evidence to help in enlightening and understanding the sociotechnical elements of the mobile money platform ecosystem.

6.3.2. Theoretical contribution

The proposed mobile money integrative framework presented in the discussion chapter (Section 5.5) offers important theoretical insights through its analytical strength that extends the understanding of the dynamics of value co-creation in mobile money ecosystems. The proposed integrative framework is useful in this context as it enables the conceptualisation of the interactions and relationships between different ecosystem actors and components in the evolution of the ecosystem. The framework offers three main areas that could be analysed to explore the implementation of mobile money ecosystems: governance of value co-creation, ecosystem value co-creation and context. Most notably, the integrative framework helps to identify the opportunities, challenges, bottlenecks or tensions that may exist between and across the different ecosystem actors and elements. Additionally, the framework assists in interrogating the relationships and collaborations between the different actors in the ecosystem. The combination of the different components such as the context, ecosystem structure, governance mechanisms, platform and roles of actors, evolve over time as they contribute in different ways towards generation of value. Consequently, the framework helps to contextualise value and how it evolves over time. The framework demonstrates different emphasis and insights at different stages in the evolution of the mobile money ecosystem. As a result, the integrative framework provides a dynamic view of the ecosystem with its process perspective which focuses on the changing contextual factors, governance mechanisms, the interactions between the actors and the value that was co-created. The use of value as the output at the core of the ecosystem interactions, integrates the varied theoretical perspectives into a coherent framework that offers a distinctive approach to understanding the dynamics of value co-creation and the various regimes of value that follow.

Consequently, the integrative framework contributes in several ways to the understanding of governance of value co-creation in digital platforms in the global South to address challenges that different actors face in co-creating value on mobile money platforms. The integrative framework can be used to understand platform governance practices and identify challenges faced by local developers from third party firms to co-create value with the mobile money platform owners. In engaging with the research, this study has combined IS, strategic management and marketing literature to bridge the gaps between the disciplines to contribute to a better understanding of the dynamics of value co-creation in digital platform ecosystems, for the global South context. By exploring the different components in the dynamics of mobile money ecosystem value co-creation, the study aims to make contributions to information systems and ICT4D research in relation to the use of digital platforms ecosystems for development. The focus of the following section will now be to revisit some significant areas to which each element of our integrative framework contributes.

First, with the regard to **platform governance**, the study validates the challenge platform owners encounter in the platform ecosystem to strike a balance between openness and control, which ultimately determines the potential for value co-creation (Ghazawneh & Henfridsson, 2013; Huber et al., 2017). The results show that the issue of enhanced platform openness for mobile money platforms remains a challenge as the platform owner prioritises its financial interests to ensure it achieves its strategic goals. The research findings point to a lack of transparency in the process for allowing third parties onto the platform, which is exacerbated by a seemingly deliberate choice to suppress information on boundary resource tools from smaller third party developers. These challenges imply third parties have limited access to co-create value on the mobile money platforms thus preventing joint development of digital innovations on the digital platform. In the context of the global South, limiting access to such digital platforms due to lack of openness entails denying prospects to local developers who may be able to incorporate local needs and preferences that shape the digital innovation to achieve local goals (Bonina et al., 2021; Hewapathirana & Sahay, 2017). Additionally, the findings indicate that focusing on just the technical aspects of the boundary resources might not be sufficient to stimulate ecosystem value co-creation and might therefore require engaging in informal platform governance practices to control the ecosystem dynamics, especially in the global South.

In relation to the control mechanisms, the study also reveals various approaches that have been implemented by the platform owner to secure and maintain quality of the services. The platform owner adopted different tools as control mechanisms for heterogeneous actors with the goal of enforcing rules in line with the platform owner's interests. The constraints emanating from the control mechanisms have thus necessitated an introduction of different types of governance approaches to create opportunities for value co-creation, such as the disintermediating role of a hub solution. The study confirms that although mobile money platforms potentially offer opportunities for local developers to co-create value, the nature of the controls implemented can effectively limit the capability of local innovators to participate in the ecosystem.

Second, with regard to the issue of ecosystem **value co-creation**, the study contributes to the literature on digital platform ecosystems by explicating the dynamics of ecosystem value co-creation from three distinct perspectives. The study confirms the challenge that mobile money platforms have to contend with: on the one hand, to create a competitive advantage for their firms; on the other hand, to build collaborative capabilities and undertake innovation with third parties. This entails building dynamic control strategies that can support unbounded range of value propositions (Dattée et al., 2018). The outcomes of this study show that third-party firms who were thought to offer innovations that were at odds with the focal firm's mission encountered barriers to being approved to co-create value on the mobile money platform. This approach might entail having experimental sandboxes to test new products with new value propositions, which may help reduce the uncertainty that focal firms face in ecosystems.

This research has further demonstrated the important role of end users as an active constituent in the dynamics of value co-creation in the mobile money ecosystem. This is in line with the research on value co-creation and inclusive innovation which emphasises the significant role that end users play in comprehending, interpreting and giving meaning to digital innovations as they bring the offerings into their daily lives within their contexts (Chandler & Vargo, 2011; Christopher Foster & Heeks, 2014; Vargo & Lusch, 2008a). From a social learning and inclusive innovation approach, the engagement of end users in the value co-creation process also offers opportunities for the focal actor to learn about new usages of the digital innovation. By using a value co-creation approach, innovation for the global South involves all relevant parties, such as end users, local communities, and other related stakeholders, in the innovation process. It acknowledges that innovation is a collaborative process between various actors

rather than a one-way process that is driven by global North concepts and therefore strives to develop solutions that are more pertinent and advantageous to local contexts. Value co-creation in innovation involves a shift from a traditional top-down approach to a more participatory and inclusive approach, where all stakeholders are involved in problem-solving and decision-making. This approach aids in ensuring that innovations are created and developed in a manner that is sustainable, culturally responsive, and meets the needs of the communities they are intended to benefit.

In the global South, where many communities face unique challenges, taking a value co-creation approach can help to ensure that innovations are relevant and effective. This approach recognizes the importance of understanding local contexts, cultures, and traditions, and involves local communities in the creation and application of innovations. Overall, taking a value co-creation approach in innovation for the global South entails creating solutions that are more responsive to the needs of local communities and that promote sustainable development.

Third, with regards to the **context** as an influential factor in ecosystem value co-creation, the study identified contextual factors, such as institutional elements of the focal firm and regulation, as some of the factors that influenced value co-creation. Thus, the study affirms the significant part played by context in determining how the end user perceives value (Chandler & Vargo, 2011; Edvardsson et al., 2011). The dynamic, relational and layered nature of the contextual factors had varying degrees of influence on value co-creation in the mobile money ecosystem. The study has confirmed that actors also have an impact on the broader social context in which value is created, in addition to engaging to jointly produce value for themselves and others within the context (Chandler & Vargo, 2011).

Lastly, understanding the dynamics of value co-creation in mobile money ecosystems can contribute significantly to development studies in several ways. These include (a) provide a better understanding of the role of digital innovation in development: In many developing countries, mobile money has become a vital instrument for financial inclusion (D. Evans & Pirchio, 2015). Learning how value is co-created within these ecosystems can help us understand the role of digital innovation in development. This can assist in informing practice and policy in areas such as financial inclusion, economic growth, and poverty alleviation; (b) Identifying obstacles to value co-creation: mobile network operators, financial institutions, regulators, and users are just a few of the many actors that interact to co-create value in mobile

money ecosystems (Jenkins, 2008). In order to encourage more inclusive and sustainable development, it can be useful to understand the obstacles to effective value co-creation; (c) Developing effective interventions: Development professionals may create more effective interventions that encourage the co-creation of value between various stakeholders by understanding the dynamics of value co-creation in mobile money ecosystems. This could make initiatives more in tune with local communities' needs and interests and promote sustainable development;(d) Increasing the potential for local innovation: Value co-creation in mobile money ecosystems entails the creation of novel products and services that cater to local needs. By recognizing the abilities and resources required to create and implement new products and services, an understanding of the dynamics of value co-creation can help to increase local innovation capability. Overall, by shedding light on the role of technology in development, identifying barriers to successful value co-creation, designing efficient interventions, and enhancing local innovation capacity, an understanding of the dynamics of value co-creation in mobile money ecosystems can significantly contribute to development studies.

6.4. Practical implications and recommendations

The discussion of the study results in this chapter could not be complete without highlighting the practical implications of exploring the phenomenon of mobile money platform ecosystems. As a result, this section discusses the practical implications of this study. Several stakeholders have been identified, to whom the practical implications of this research are offered. Practitioners that plan, manage, participate in, or regulate the development and operations of mobile money platform ecosystems in a variety of roles and capacities can utilise these principles, which were primarily taken from the integrative framework, as a guide. The integrative framework can be applied in different contexts and at different stages of the ecosystem lifecycle to understand challenges and opportunities within mobile money platform ecosystem deployments.

6.4.1. Mobile money platform owners

As platform owners, they are responsible for platform governance, and they typically make decisions about: (a) how to create the structures that guarantee the service's functionality, (b) what resources to make available to encourage value co-creation, and (c) what control mechanisms must be put in place to protect the service's quality while also ensuring its security,

and (d) undertaking value co-creation through an appropriate business model that sustains the digital platform. The findings indicate that the platform owners could contribute more to enhancing value co-creation by having appropriate governance structures that support collaboration with different external actors including third party firms, end users and government entities. Therefore, a number of practical implications are proposed from this study for the platform owners. Platform owners need to engage end users in value co-creation activities through various social learning interactions. The focal firm must also consider how to optimally open the up platform access for value co-creation. Another key role for the platform owner is ensuring facilitating complementary capabilities and innovation functionality to facilitate value co-creation processes with third parties.

6.4.2. Government entities

Some of the key functions that government entities undertake in relation to mobile money platforms include providing policy direction and regulating the operations of mobile services. With regard to policy direction, governments would need to formulate appropriate policies that take into account citizen participation in the development of digital innovations such as mobile money services to ensure their active participation and involvement. This would also allow such innovations to address the needs and challenges in a particular context. Additionally, governments must also have an enabling policy and take keen interest in how digital platforms such as mobile money can be opened up for access to stimulate local innovation that supports inclusive digital economies. In terms of regulation, the practical recommendation from this study is that the regulators must be flexible enough to stimulate and support value co-creation between different ecosystem actors including new entrants. Regulation considered to stifle value co-creation must be reviewed so that it does not deter innovation. Additionally, it is suggested that regulators may consider creating deliberate channels of interactions between different innovators to support the testing of new ideas such as sandboxes.

6.4.3. Development partners

The findings have shown that developmental partners have played an important role in developing the mobile money ecosystem in different ways through mainly the provision of expertise to address market development challenges. The research has demonstrated that this support primarily focused on the supply side. The findings indicate that there is need for the engagement of the demand side by engaging end users on various roles in innovation and value

co-creation so that they are an empowered entity. Another aspect that requires support from the development partners is to address issues of inclusive innovation by engaging digital entrepreneurs that can co-create value with mobile money platform owners that address context specific challenges.

6.4.4. Citizens

Citizens are an important constituent of any mobile money ecosystem as they play different roles in value co-creation in the ecosystem. The results demonstrated that the majority of end users believed that the mobile money providers already knew and understood the needs of end users and therefore, were of the opinion that the services offered were the best that could be provided. However, the findings confirm that end users are best placed to highlight their needs. There is need for more awareness to citizens to actively participate in providing feedback on the challenges they face and also new needs they need to be addressed.

6.5. Limitations and directions for future research

While the study has been able to advance the understanding of the dynamics in ecosystem value co-creation, there are some issues which need to be highlighted here worth being considered in future research. The first one concerns the use of a single case design by selecting one mobile money platform in Malawi. Since this limits the scope of the study, future research could expand it by looking at other countries in the Sub-Saharan region, such as Kenya and Nigeria. This approach could provide an opportunity to undertake a comparative case analysis with countries with distinctive contextual characters that may also provide important insights. In spite of this limitation, this thesis has endeavored to relate the findings to other mobile money instances in other countries in the Sub-Saharan Africa which enables the reader to understand the significance of the results in relation to other similar cases.

In addition, while this research focused on the interactions in the mobile money ecosystem between the focal firm and the other ecosystem actors, it did not consider on the impact of the interaction with a competitive mobile money provider. The direct competition with another mobile money platform provider may also influence the dynamics of value co-creation and provide additional insights into the phenomenon.

Lastly, digital platforms in the Global South seem to have potential for playing a significant role in supporting inclusive innovation and digital inclusion. Therefore, understanding nuances and implications of developing open platform ecosystems with commercial firms that serve multiple purposes such as economic and social objectives requires attention in future research. This will help to understand how digital platforms can be used for development in the Global South.

Based on the directions for future research outlined in this chapter, the following strands of research could be considered for research:

- a. 'Exploring the role of boundary resources in nurturing and fostering value co-creation with local developers and end users in mobile money ecosystems in the Global South'. This strand of research would imply exploring and understanding the interactions and relationships between the platform owner and other ecosystem constituents to co-create value.
- b. 'Understanding the level of flexibility and openness required to best exploit third party value co-creation in mobile money ecosystems in the Global South'. This research would investigate the optimum levels of platform openness and control so as to understand the appropriate governance practices for mobile money platforms.
- c. 'Exploring the tension between commercial and social objectives in digital platform ecosystems: the case of mobile money in Sub Saharan Africa'.

6.6. Chapter summary

The significance and increasing adoption of digital innovations such as mobile money in the Global South will play an important part in the socioeconomic development of countries in these contexts. This thesis set out to have an empirical understanding of the dynamics of value co-creation in a mobile money ecosystem in Malawi. The rationale of adopting an ecosystem lens to explore this phenomenon was to understand the reasons why mobile money ecosystem evolves in different ways across different settings. The study commenced the work by undertaking comprehensive literature review to identify key concepts that underpin the study.

This chapter has provided an overview of the research by providing the research aim, underlying objectives and how the findings address the research questions. The chapter then provides both theoretical and practical contribution. With regard to theoretical contribution, the proposed integrative framework offers three main dimensions that could be used to explore and analyse the implementation of mobile money ecosystems: governance of value co-creation, ecosystem value co-creation and context. The practical contribution provides guidelines based on the integrative framework that could be used to understand challenges and opportunities within mobile money platform ecosystem deployments. These guidelines, provide insights of what practitioners such as mobile money service providers, regulators and policy makers could do to enhance the chances of mobile money platforms working and achieving some of their social and economic outcomes such as financial inclusion. The final section acknowledged the study limitations and suggested areas for future research.

References

- Aanestad, M., Monteiro, E., & Nielsen, P. (2007). Information infrastructures and public goods: Analytical and practical implications for SDI. *Information Technology for Development, 13*(1), 7–25. <https://doi.org/10.1002/itdj.20055>
- Adner, R. (2006). Match Your Innovation Strategy to Your Innovation Ecosystem Match Your Innovation Strategy to Your.
- Adner, R. (2017). Ecosystem as Structure : An Actionable Construct for Strategy. *Journal of Management, 43*(1), 39–58. <https://doi.org/10.1177/0149206316678451>
- Adner, R., & Kapoor, R. (2010a). Value creation in innovation ecosystems: How the structure of technological interdependence affect firm performance in new technology generations. *Strategic Management Journal, 31*(3)(June 2010), 306–333.
- Adner, R., & Kapoor, R. (2010b). Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations. *Strategic Management Journal, 31*(3), 306–333. <https://doi.org/10.1002/smj.821>
- Adomavicius, Bockstedt, Gupta, & Kauffman. (2008). Making Sense of Technology Trends in the Information Technology Landscape: A Design Science Approach. *MIS Quarterly, 32*(4), 779–809. <https://doi.org/10.2307/25148872>
- Adomavicius, G., Bockstedt, J. C., Gupta, A., & Kauffman, R. J. (2007). Technology roles and paths of influence in an ecosystem model of technology evolution. *Information Technology and Management, 8*(2), 185–202. <https://doi.org/10.1007/s10799-007-0012-z>
- Afi. (2010). Enabling mobile money transfer The Central Bank of Kenya ’ s treatment of M-Pesa. *Alliance for Financial Inclusion, 16*. Retrieved from <http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/09/enablingmobilemoneytransfer92.pdf>
- 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>
- Ambrosini, V., & Bowman, C. (2000). Value creation versus value capture : towards a coherent definition of value in strategy - an exploratory study. *British Journal of Management, 11*, 1–15. <https://doi.org/10.1111/1467-8551.00147>
- Ansari, S. S., Garud, R., & Kumaraswamy, A. (2016). The disruptor’s dilemma: TiVo and the U.S. television ecosystem. *Strategic Management Journal, 37*(9), 1829–1853. <https://doi.org/10.1002/smj>
- Appadurai, A. (1986). *The Social Life of Things. The Social Life of Things*. <https://doi.org/10.1017/cbo9780511819582>
- Aron, J. (2018). 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>
- Autio, E., Nambisan, S., Thomas, L. D. W., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal, 12*(1), 72–95. <https://doi.org/10.1002/sej.1266>
- Autio, E., & Thomas, L. (2014). Innovation ecosystems: Implications for innovation management. *Oxford Handbook of Innovation Management, 204–228*. <https://doi.org/10.1093/oxfordhb/9780199694945.013.012>
- Autio, E., & Thomas, L. D. W. (2019). *Value co-creation in ecosystems: insights and research promise from three disciplinary perspectives published in Handbook of Digital Innovation*.

- Avgerou, C. (2001). The significance of context in information systems and organizational change. *Information Systems Journal*, 11(1), 43–63. <https://doi.org/10.1046/j.1365-2575.2001.00095.x>
- Avgerou, C. (2010). Discourses on ICT and Development. *Information Technologies and International Development*, 6(3), 1–18.
- Avgerou, C. (2019). Contextual explanation: Alternative approaches and persistent challenges. *MIS Quarterly: Management Information Systems*, 43(3), 977–1006. <https://doi.org/10.25300/MISQ/2019/13990>
- Baldwin, C., & von Hippel, E. (2011). Modeling a paradigm shift: From producer innovation to user and open collaborative innovation. *Organization Science*, 22(6), 1399–1417. <https://doi.org/10.1287/orsc.1100.0618>
- Baldwin, C., & Woodard, C. J. (2009). The architecture of platforms: A unified view. In A Gawer (Ed.), *Platforms, Markets and Innovation*, Cheltenham, 19–44. <https://doi.org/10.4337/9781849803311.00008>
- Ballantyne, D., Frow, P., Varey, R. J., & Payne, A. (2011). Value propositions as communication practice: Taking a wider view. *Industrial Marketing Management*, 40(2), 202–210. <https://doi.org/10.1016/j.indmarman.2010.06.032>
- Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, 47(8), 1323–1339. <https://doi.org/10.1108/00251740910984578>
- Barrett, M., Oborn, E., & Orlikowski, W. (2016). Creating value in online communities: The sociomaterial configuring of strategy, platform, and stakeholder engagement. *Information Systems Research*, 27(4), 704–723. <https://doi.org/10.1287/isre.2016.0648>
- Basole, R., & Patel, S. (2018). Transformation Through Unbundling : Visualizing the Global FinTech Ecosystem. *Informs*, 10(4), 1–18.
- Baxter, P., & Jack, S. (2008). The Qualitative Report Qualitative Case Study Methodology: Study Design and Implementation for Novice Researchers. *The Qualitative Report*, 13(2), 544–559. <https://doi.org/citeulike-article-id:6670384>
- Benbasat, I., Goldstein, D. K., & Mead, M. (1987). Strategy in Studies of Information Systems. *MIS Quarterly*, 11(3), 369–386. <https://doi.org/10.2307/248684>
- Benlian, A., Hilkert, D., & Hess, T. (2015). How open is this platform? The meaning and measurement of platform openness from the complementors' perspective. *Journal of Information Technology*, 30(3), 209–228. <https://doi.org/10.1057/jit.2015.6>
- 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. <https://doi.org/10.1177/1468794112468475>
- Bessant, J., Lamming, R., Noke, H., & Phillips, W. (2005). Managing innovation beyond the steady state. *Technovation*, 25(12), 1366–1376. <https://doi.org/10.1016/j.technovation.2005.04.007>
- Bharadwaj, A., El Sawy, O. A., Pavlov, P., & Venkatraman, N. (2013). Digital Business Strategy: Toward a next generation of insights. *MIS Quarterly*, 37(2), 471–482. <https://doi.org/10.1615/TelecomRadEng.v76.i10.20>
- Bianco, V. D., Myllarniemi, V., Komssi, M., & Raatikainen, M. (2014). The role of platform boundary resources in software ecosystems: A case study. *Proceedings - Working IEEE/IFIP Conference on Software Architecture 2014, WICSA 2014*, 11–20. <https://doi.org/10.1109/WICSA.2014.41>
- Bijker, W. E., Hughes, T. P., & Pinch, T. (2012). The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology.
- Bijker, W., & Law, J. (1992). *Shaping Technology, Building Society: Studies in Sociotechnical Change*. Cambridge: MIT Press.

- Blaschke, M., Haki, K., Aier, S., & Winter, R. (2019). Taxonomy of Digital Platforms: A Platform Architecture Perspective. *Wirtschaftsinformatik*, 572–586.
- Bonina, C., Koskinen, K., Eaton, B., & Gawer, A. (2021). Digital platforms for development: Foundations and research agenda. *Information Systems Journal*, 31(6), 869–902. <https://doi.org/10.1111/isj.12326>
- Bosch, J. (2009). From software product lines to software ecosystem From Software Product Lines to Software Ecosystems. In *Software Product Line Conference* (pp. 1–10).
- Boudreau, K. (2010). Open platform strategies and innovation: Granting access vs. devolving control. *Management Science*, 56(10), 1849–1872. <https://doi.org/10.1287/mnsc.1100.1215>
- Boudreau, K. (2012). Let a thousand flowers bloom? An early look at large numbers of software app developers and patterns of innovation. *Organization Science*, 23(5), 1409–1427. <https://doi.org/10.1287/orsc.1110.0678>
- Bowman, C., & Ambrosini, V. (2010). How value is created, captured and destroyed. *European Business Review*, 22(5), 479–495. <https://doi.org/10.1108/09555341011068903>
- Braa, Monteiro, & Sahay. (2004). Networks of Action: Sustainable Health Information Systems across Developing Countries. *MIS Quarterly*, 28(3), 337. <https://doi.org/10.2307/25148643>
- Brailovskaya, V., Dupas, P., & Robinson, J. (2022). Is Digital Credit Filling a Hole or Digging a Hole? Evidence from Malawi. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4090115>
- Braun, V., & Clarke. (2022). *Thematic Analysis : A Practical Guide*. London: SAGE Publications Ltd. Retrieved from <http://digital.casalini.it/9781526417305>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77–101. <https://doi.org/10.1017/CBO9781107415324.004>
- Braun, V., & Clarke, V. (2020). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328–352. <https://doi.org/10.1080/14780887.2020.1769238>
- Bryman, A. (2016). *Social Research Methods*. New York: Oxford University Press.
- Buhalis, D., Andreu, L., & Gnoth, J. (2020). The Dark Side of the Sharing Economy: Balancing Value Co-creation and Value Co-destruction. *Psychology and Marketing*, (March).
- Cañeque, F. C., & Hart, S. (2017). *Base of the Pyramid : Sustainable Development through Innovation and Entrepreneurship* (2nd Editio). New York: Routledge. <https://doi.org/10.4337/9781784711429.00019>
- CBN. (2009). Guidelines on Mobile Money services. *Central Bank of Nigeria*. Retrieved from [http://www.cenbank.org/out/2015/bpsd/guidelines on mobile money services in nigeria.pdf](http://www.cenbank.org/out/2015/bpsd/guidelines%20on%20mobile%20money%20services%20in%20nigeria.pdf)
- Ceccagnoli, M., Forman, C., Huang, P., & Wu, D. (2012). Cocreation of Value in a Platform Ecosystem - The Case of Enterprise Software. *MIS Quarterly*, 36(1), 263–290.
- Cennamo, C. (2018). Building the Value of Next-Generation Platforms: The Paradox of Diminishing Returns. *Journal of Management*, 44(8), 3038–3069. <https://doi.org/10.1177/0149206316658350>
- Cennamo, C., Ozalp, H., & Kretschmer, T. (2018). Platform architecture and quality trade-offs of multihoming complements. *Information Systems Research*, 29(2), 461–478. <https://doi.org/10.1287/isre.2018.0779>
- Chandler, J. D., & Vargo, S. L. (2011). Contextualization and value-in-context: How context frames exchange. *Marketing Theory*, 11(1), 35–49. <https://doi.org/10.1177/1470593110393713>

- Chataway, J., Hanlin, R., & Kaplinsky, R. (2014). Inclusive innovation: an architecture for policy development. *Innovation and Development*, 4(1), 33–54. <https://doi.org/10.1080/2157930x.2013.876800>
- Chesbrough, H. (2003). *Open Innovation : The new imperative for creating and profiting from technology*. Harvard Business School Publishing Corporation.
- Chishti, S., & Barberis, J. (2016). *The Fintech book : the financial technology handbook for investors, entrepreneurs and visionaries*. John Wiley & Sons.
- Constantinides, P., Henfridsson, O., & Parker, G. G. (2018). Platforms and infrastructures in the digital age. *Information Systems Research*, 29(2), 381–400. <https://doi.org/10.1287/isre.2018.0794>
- Corbin, J., & Strauss, A. (2015). *Basics of Qualitative Research: Techniques and Procedures for Developing* (4th ed.). SAGE Publications. Retrieved from <https://books.google.co.uk/books?id=hZ6kBQAAQBAJ>
- Corvellec, H., & Hultman, J. (2014). Managing the politics of value propositions. *Marketing Theory*, 14(4), 355–375. <https://doi.org/10.1177/1470593114523445>
- Cossetta, A., & Palumbo, M. (2014). The Co-production of Social Innovation Social innovation : The Case of Living Lab Living Lab, 221–235. https://doi.org/10.1007/978-3-319-06160-3_11
- Cozzens, S., & Sutz, J. (2014). Innovation in informal settings: reflections and proposals for a research agenda. *Innovation and Development*, 4(1), 5–31. <https://doi.org/10.1080/2157930x.2013.876803>
- Creswell, J. W. (2014). *Research design : qualitative, quantitative, and mixed method approaches* (Fourth edi). Thousand Oaks: Thousand Oaks : SAGA Pub., 2014.
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches, 4th Edition* (4th Editio). London: SAGE Publications.
- Crotty, M. (1998). *The Foundations of Social Research: Meaning and Perspective in the Research Process*.
- Cusumano, M. A., Gawer, A., & Yoffie, D. (2019). *The Business of Platforms: Strategy in the age of digital competition, innovation, and power*. New York: HarperCollins.
- Dahlberg, T., Guo, J., & Ondrus, J. (2015). A critical review of mobile payment research. *Electronic Commerce Research and Applications*, 14(5), 265–284. <https://doi.org/10.1016/j.elerap.2015.07.006>
- Dattée, B., Alexy, O., & Autio, E. (2018). Maneuvering in poor visibility: How firms play the ecosystem game when uncertainty is high. *Academy of Management Journal*, 61(2), 466–498. <https://doi.org/10.5465/amj.2015.0869>
- David-West, O., & Evans, P. C. (2015). The Rise of African Platforms: A Regional Survey (The Emerging Platform Economy Series No. 2), (2).
- Davison, R. M., & Martinsons, M. G. (2016). Context is king! Considering particularism in research design and reporting dp. *Journal of Information Technology*, 31(3), 241–249. <https://doi.org/10.1057/jit.2015.19>
- De Reuver, M., Sørensen, C., & Basole, R. C. (2018). The digital platform: A research agenda. *Journal of Information Technology*, 33(2), 124–135. <https://doi.org/10.1057/s41265-016-0033-3>
- Dedehayir, O., Mäkinen, S. J., & Roland Ortt, J. (2018). Roles during innovation ecosystem genesis: A literature review. *Technological Forecasting and Social Change*, 136, 18–29. <https://doi.org/10.1016/j.techfore.2016.11.028>
- Demirguc-kunt, A., Klapper, L., & Singer, D. (2017). Financial inclusion and inclusive growth: A review of recent empirical evidence. *Policy Research Working Paper*, (April), 1–27.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2021). *The Global Findex*

Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19.

- Denzin, N., & Lincoln, Y. (2018). *The SAGE Handbook of Qualitative Research, 5th Edition*.
Dermish, A., Kneiding, C., Leishman, P., & Mas, I. (2012). Branchless and Mobile Banking Solutions for the Poor: A Survey. *SSRN Electronic Journal*, 6(4), 81–98.
<https://doi.org/10.2139/ssrn.1745967>
- Dey, B. L., Babu, M. M., Rahman, M., Dora, M., & Mishra, N. (2018). Technology upgrading through co-creation of value in developing societies: Analysis of the mobile telephone industry in Bangladesh. *Technological Forecasting and Social Change*, 145(May 2018), 413–425. <https://doi.org/10.1016/j.techfore.2018.05.011>
- DHIS2. (2022). DHIS2. Retrieved October 2, 2021, from dhis2.org
- Diga, K., & May, J. (2016). The ICT Ecosystem: The Application, Usefulness, and Future of an Evolving Concept. *Information Technology for Development*, 22, 1–6.
<https://doi.org/10.1080/02681102.2016.1168218>
- Drummer, D., Feuerriegel, S., & Neumann, D. (2017). Crossing the next frontier: The role of ICT in driving the financialization of credit. *Journal of Information Technology*, 32(3), 218–233. <https://doi.org/10.1057/s41265-017-0035-9>
- Easterby-Smith, M., Thorpe, R., & Jackson, P. (2015). *Management and Business Research. News.Ge*. SAGE Publications.
- Eaton, B., Elaluf-Calderwood, S., Sørensen, C., & Yoo, Y. (2015). Distributed tuning of boundary resources: the case of Apple’s iOS service system. *MIS Quarterly*, 39(1), 217–243. Retrieved from <http://www.misq.org>
- Echeverri, P., & Skålén, P. (2011). Co-creation and co-destruction. *Marketing Theory*, 11(3), 351–373. Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-10292>
- Edvardsson, B., Tronvoll, B., & Gruber, T. (2011). Expanding understanding of service exchange and value co-creation: A social construction approach. *Journal of the Academy of Marketing Science*, 39(2), 327–339. <https://doi.org/10.1007/s11747-010-0200-y>
- Eijkman, B. F., Kendall, J., & Mas, I. (2009). Bridges to Cash : the retail end of M-PESA The challenge of maintaining liquidity for M -PESA Agent Networks. *Victoria*, (June 2008), 1–20.
- Eisenmann, T., Parker, G. G., & Van Alstyne, M. W. (2006). Strategies for Two- Sided Markets. *Harvard Business Review*. Retrieved from <http://hbr.org/2006/10/strategies-for-two-sided-markets/>
- Eisenmann, T., Parker, G., & Van Alstyne, M. (2009). Opening Platforms: How, When and Why? in A. Gawer (ed). In *Platforms, Markets and Innovation* (pp. 131–162). Cheltenham: Edward Elgar Publishing. [https://doi.org/10.1016/0010-4361\(78\)90588-8](https://doi.org/10.1016/0010-4361(78)90588-8)
- Evans, D., & Pirchio, A. (2015). An Empirical Examination of Why Mobile Money Schemes Ignite in Some Developing Countries but Flounder in Most. *Review of Network Economics*, 13(4), 397–451. <https://doi.org/10.1515/rne-2015-0020>
- Evans, P., & Gawer, A. (2016). The Rise of the Platform Enterprise A Global Survey. *The Center for Global Enterprise, The emergi*(January).
- Faulkner, P., & Jochen, R. (2013). Technology Objects, Social Positions and The Transformational Model of Social Activity. *Mis Quaterly*, 37(3), 803–818.
- Faulkner, P., & Runde, J. (2011). The social, the material, and the ontology of non-material technological objects, (958), 1–34.
- Felin, T., Kauffman, S., Mastrogiorgio, A., & Mastrogiorgio, M. (2016). Factor markets, actors, and affordances. *Industrial and Corporate Change*, 25(1), 133–147.
<https://doi.org/10.1093/icc/dtv049>
- Finextra. (2015). Safaricom Opens Up M-Pesa API. Retrieved October 3, 2022, from

- <https://www.finextra.com/newsarticle/27813/safaricom-opens-up-m-pesa-api>
- Firestone, W. a. (1993). Arguments for Generalizing Applied to Qualitative Research. *Educational Researcher*, 22(4), 16–23.
- Foster, Chris, & Heeks, R. (2013). Innovation and scaling of ICT for the bottom-of-the-pyramid. *Journal of Information Technology*, 28(4), 296–315. <https://doi.org/10.1057/jit.2013.19>
- Foster, Christopher. (2021). Global Transfers: M-Pesa, Intellectual Property Rights and Digital Innovation. In *Proceedings of the 1st Virtual Conference on Implications of Information and Digital Technologies for Development, 2021* (pp. 821–835). Retrieved from <https://arxiv.org/abs/2108.09781> <https://arxiv.org/pdf/2108.09781>
- Foster, Christopher, & 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(3), 333–355. <https://doi.org/10.1057/ejdr.2013.7>
- Foster, Christopher, & Heeks, R. (2014). Nurturing user–producer interaction: inclusive innovation flows in a low-income mobile phone market. *Innovation and Development*, 4(2), 221–237. <https://doi.org/10.1080/2157930x.2014.921353>
- Garud, R., Berends, H., & Tuertscher, P. (2017). Qualitative approaches for studying innovation as process. *The Routledge Companion to Qualitative Research in Organization Studies*, 226–247. <https://doi.org/10.4324/9781315686103-15>
- Garud, R., Gehman, J., & Kumaraswamy, A. (2011). *Complexity Arrangements for Sustained Innovation: Lessons From 3M Corporation*. *Organization Studies* (Vol. 32). <https://doi.org/10.1177/0170840611410810>
- Garud, R., Tuertscher, P., & Van De Ven, A. (2013). Perspectives on Innovation Processes. *Academy of Management Annals*, 7(1), 773–817.
- Gawer, A. (2002). *Platform leadership : how Intel, Microsoft and Cisco drive industry innovation*. (M. A. Cusumano, Ed.). Boston, Mass. : London: Boston, Mass. : Harvard Business School .
- Gawer, A. (2009). *Platforms, Markets and Innovation*. (E. Elgar, Ed.). London, UK. Retrieved from <http://library1.nida.ac.th/termpaper6/sd/2554/19755.pdf>
- Gawer, A. (2014). Bridging differing perspectives on technological platforms: Toward an integrative framework. *74th Annual Meeting of the Academy of Management, AOM 2014*, 43, 423–428. <https://doi.org/10.5465/AMBPP.2014.278>
- Gawer, A. (2020). “Introduction to Part III”. In *Handbook of Digital Innovation*. Cheltenham, UK: Edward Elgar Publishing. <https://doi.org/10.4337/9781788119986.00016>
- Gawer, A. (2021). Digital platforms and ecosystems: remarks on the dominant organizational forms of the digital age. *Innovation: Organization and Management*, 00(00), 1–15. <https://doi.org/10.1080/14479338.2021.1965888>
- Gawer, A., & Cusumano, M. (2008). How Companies Become Platform Leaders. *MIT Sloan Management Review*, 28–35. <https://doi.org/10.1002/pen.24648>
- Ghazawneh, A., & Henfridsson, O. (2013). Balancing platform control and external contribution in third-party development: The boundary resources model. *Information Systems Journal*, 23(2), 173–192. <https://doi.org/10.1111/j.1365-2575.2012.00406.x>
- Gibbs, J., & Kraemer, K. (2004). A Cross-Country Investigation of the Determinants of Scope of E-commerce Use: An Institutional Approach. *Electronic Markets*, 14(2), 124–137.
- Gilman, I. (2016). The impact of mobile money interoperability in Tanzania. Available at: Http://Www.Gsma.Com/Mobilefordevelopment/Wp-Content/Uploads/2016/10/2016_GSMA_The-Impact-of-Mobile-Money-Interoperability-in-Tanzania.Pdf. Retrieved from www.gsma.com/mobilemoney

- Gimpel, H., Rau, D., & Röglinger, M. (2018). Understanding FinTech start-ups – a taxonomy of consumer-oriented service offerings. *Electronic Markets*, 28(3), 245–264. <https://doi.org/10.1007/s12525-017-0275-0>
- GOM. (2020). Malawi 2063. *Malawi 's Vision. An Inclusively Wealthy and Self-Reliant Nation*, 1–92.
- Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services. *Journal of Management Information Systems*, 35(1), 220–265. <https://doi.org/10.1080/07421222.2018.1440766>
- Gough, B., & Madill, A. (2012). Subjectivity in psychological science: from problem to prospect. *Psychological Methods*, 17(3), 374–384.
- Granstrand, O., & Holgersson, M. (2020). Innovation ecosystems: A conceptual review and a new definition. *Technovation*, 90–91(May). <https://doi.org/10.1016/j.technovation.2019.102098>
- Grasser, M., Nyaga, A., del Ser, D., & Mas, I. (2016). Payment APIs: What, Why and for Whom?, (March).
- Greenacre, J., Malady, L., & Buckley, R. P. (2014). The Regulation of Mobile Money in Malawi. *Ssrn*, (March). <https://doi.org/10.2139/ssrn.2491995>
- Grönroos, C. (2008). Service logic revisited: Who creates value? And who co-creates? *European Business Review*, 20(4), 298–314. <https://doi.org/10.1108/09555340810886585>
- Grönroos, C. (2012). Conceptualising value co-creation: A journey to the 1970s and back to the future. *Journal of Marketing Management*, 28(13–14), 1520–1534. <https://doi.org/10.1080/0267257X.2012.737357>
- Grönroos, C., & Ravald, A. (2011). Service as business logic: Implications for value creation and marketing. *Journal of Service Management*, 22(1), 5–22. <https://doi.org/10.1108/09564231111106893>
- Grönroos, C., & Voima, P. (2013). Critical service logic: Making sense of value creation and co-creation. *Journal of the Academy of Marketing Science*, 41(2), 133–150. <https://doi.org/10.1007/s11747-012-0308-3>
- Grover, V., & Kohli, R. (2012). Cocreating IT Value: New Capabilities and Metrics for Multifirm Environments. *MIS Quarterly*, 36(1), 225–232.
- GSMA. (2017a). M'chikumbe 212 - A mobile agriculture service by Airtel Malawi, (July).
- GSMA. (2017b). *State of the Industry Report on Mobile Money Mobile Money*. GSMA. Retrieved from http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/03/GSMA_State-of-the-Industry-Report-on-Mobile-Money_2016.pdf
- Gummerus, J. (2013). Value creation processes and value outcomes in marketing theory: Strangers or siblings? *Marketing Theory*, 13(1), 19–46. <https://doi.org/10.1177/1470593112467267>
- Haki, K. (2021). *A Research Agenda for Studying Platform Ecosystems*. In: Aier, S., Rohner, P., Schelp, J. (eds) *Engineering the Transformation of the Enterprise*. *Engineering the Transformation of the Enterprise*. Springer. https://doi.org/10.1007/978-3-030-84655-8_2
- Haki, K., Blaschke, M., Aier, S., & Winter, R. (2019). A Value Co-creation Perspective on Information Systems Analysis and Design. *Business and Information Systems Engineering*, 61(4), 487–502. <https://doi.org/10.1007/s12599-018-0557-x>
- Haki, K., Blaschke, M., Aier, S., Winter, R., & Tilson, D. (2022). Dynamic capabilities for transitioning from product platform ecosystem to innovation platform ecosystem. *European Journal of Information Systems*, 00(00), 1–19.

- <https://doi.org/10.1080/0960085X.2022.2136542>
- Hannah, D. P., & Eisenhardt, K. M. (2018). How firms navigate cooperation and competition in nascent ecosystems. *Strategic Management Journal*. <https://doi.org/10.1002/smj.2750>
- Hayes, N., & Westrup, C. (2012). Context and the processes of ICT for development. *Information and Organization*, 22(1), 23–36. <https://doi.org/10.1016/j.infoandorg.2011.10.001>
- Heeks, R., Mirta, A., Kintu, R., & Shah, N. (2013). Inclusive Innovation: Definition, Conceptualisation and Future Research Priorities (Development Informatics Working Paper Series, Paper No. 53), 28. Retrieved from <http://www.seed.manchester.ac.uk/subjects/idpm/research/publications/wp/di/di-wp53/>
- Heeks, Richard. (2002). Information systems and developing countries: Failure, success, and local improvisations. *Information Society*, 18(2), 101–112. <https://doi.org/10.1080/01972240290075039>
- Henfridsson, O., & Lindgren, R. (2010). User involvement in developing mobile and temporarily interconnected systems. *Information Systems Journal*, 20(2), 119–135. <https://doi.org/10.1111/j.1365-2575.2009.00337.x>
- Henfridsson, O., Nandhakumar, J., Scarbrough, H., & Panourgias, N. (2018). Recombination in the open-ended value landscape of digital innovation. *Information and Organization*, 28(2), 89–100. <https://doi.org/10.1016/j.infoandorg.2018.03.001>
- Hewapathirana, R., & Sahay, S. (2017). Open source adoption in health sector: Understanding the stakeholder relationships in a resource constrained setting. *Electronic Journal of Information Systems in Developing Countries*, 81(1), 1–21. <https://doi.org/10.1002/j.1681-4835.2017.tb00593.x>
- Heyer, A., & Mas, I. (2009). Seeking Fertile Grounds for Mobile Money. *GSMA: Mobile Money for the Unbanked; Bill & Melinda Gates Foundation*, (September), 1–22. <https://doi.org/10.1109/IMSAA.2008.4753937>
- Howell, R., van Beers, C., & Doorn, N. (2018). Value capture and value creation: The role of information technology in business models for frugal innovations in Africa. *Technological Forecasting and Social Change*, 131(September 2017), 227–239. <https://doi.org/10.1016/j.techfore.2017.09.030>
- Hua, W. S. K. (2016). The Fintech Revolution : An Opportunity for the West African Financial Sector, 771–782. <https://doi.org/10.4236/ojapps.2016.611068>
- Huber, T. L., Kude, T., & Dibbern, J. (2017). Governance practices in platform ecosystems: Navigating tensions between cocreated value and governance costs. *Information Systems Research*, 28(3), 563–584. <https://doi.org/10.1287/isre.2017.0701>
- Hughes, N., & Lonie, S. (2007). M-PESA: Mobile Money for the “Unbanked.” *Policy Innovations The Central Address for a Fairer Globalization*, (March), 63–81. Retrieved from http://www.policyinnovations.org/ideas/innovations/data/m_pesa
- Iansiti, M., & Levien, R. (2004). *The keystone advantage : what the new dynamics of business ecosystems mean for strategy, innovation, and sustainability*. Harvard Business School Press.
- ITU. (2017). *Measuring the information society Report 2017. International Communication Union* (Vol. 8). <https://doi.org/10.3359/oz0303157>
- ITU. (2018). *Measuring the Information Society Report. ITU Publications* (Vol. 1). Retrieved from https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2017/MISR2017_Volume1.pdf
- Jaakkola, E. (2020). Designing conceptual articles: four approaches. *AMS Review*, 10(1–2), 18–26. <https://doi.org/10.1007/s13162-020-00161-0>
- Jack, W., & Suri, T. (2011). Mobile Money: The Economics of M-Pesa. *NBER Working Paper Series*, 1–30.

- Jack, W., & Suri, T. (2014). Risk Sharing and Transactions Costs: Evidence from Kenya's Mobile Money Revolution, *104*(1), 183–223.
- Jack, W., Suri, T., Townsend, R., Ennis, H. M., Athreya, K., Mas, I., ... Sargent, T. (2010). Monetary Theory and Electronic Money: Reflections on the Kenyan Experience. *Economic Quarterly—Volume*, *96*, 83–122.
- Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, *39*(8), 2255–2276. <https://doi.org/10.1002/smj.2904>
- Jenkins, B. (2008). Developing Mobile Money Ecosystems. *IFC and the Harvard Kennedy, Washington, D.C.*
- Jha, S. K., Pinsonneault, A., & Dubé, L. (2016). The evolution of an ICT platform-enabled ecosystem for poverty alleviation: The case of Ektir. *MIS Quarterly: Management Information Systems*, *40*(2), 431–445. <https://doi.org/10.25300/MISQ/2016/40.2.08>
- Jiménez, A. (2018). Inclusive innovation from the lenses of situated agency: insights from innovation hubs in the UK and Zambia. *Innovation and Development*, *9*(1), 41–64. <https://doi.org/10.1080/2157930x.2018.1445412>
- Jimenez, A., Delgado, D., Merino, R., & Argumedo, A. (2022). A Decolonial Approach to Innovation? Building Paths Towards Buen Vivir. *Journal of Development Studies*, *58*(9), 1633–1650. <https://doi.org/10.1080/00220388.2022.2043281>
- Jimenez, A., & Roberts, T. (2019). Decolonising Neo-Liberal Innovation : using the Andean philosophy of ‘ Buen Vivir ’ to reimagine innovation hubs. In *In: P. Nielsen, & H. Kimaro (Eds.), Information and communication technologies for development. strengthening southern-driven cooperation as a catalyst for ICT4D. ICT4D 2019. IFIP Advances in Information and Communication Technology (vol. (Vol. 552). Springer.*
- Jones, S. R., Torres, V., & Arminio, J. (2006). *Negotiating the Complexities of Qualitative Reserach in Higher Education: Fundamental Elements. Routledge.*
- Kallinikos, J., Aaltonen, A., & Marton, A. (2010). A Theory of Digital Objects. *First Monday*, *15*, 6–7.
- Kallinikos, J., Aaltonen, A., & Marton, A. (2013). The ambivalent ontology of digital artifacts. *MIS Quarterly: Management Information Systems*, *37*(2), 357–370. <https://doi.org/10.25300/MISQ/2013/37.2.02>
- Kang, C., Aaltonen, A., & Henfridsson, O. (2019). The impact of platform entry strategies on the quality of complements in multihoming. *40th International Conference on Information Systems, ICIS 2019.*
- Kaplan, B., & Maxwell, J. A. (2005). *Introduction to Qualitative Research Methods for Evaluating Computer Information Systems.* Retrieved from <http://eknygos.lsmuni.lt/springer/147/30-55.pdf>
- Kaplinsky, R. (2011a). Innovation for pro-poor growth: from redistribution with growth to redistribution through growth. Presented at the Conference in Honour of Sir Richard Jolly - ‘From structural adjustment to human development: impact on poverty and inequality’, Brighton. R. *Choice Reviews Online*. <https://doi.org/10.5860/choice.51-2973>
- Kaplinsky, R. (2011b). Schumacher meets schumpeter: Appropriate technology below the radar. *Research Policy*, *40*(2), 193–203. <https://doi.org/10.1016/j.respol.2010.10.003>
- Kapoor, R. (2018). Ecosystems : broadening the locus of value creation. *Journal of Organization Design*, *7.1*(2018), 1–16.
- Kapoor, R., & Lee, J. M. (2013). Coordinating and competing in ecosystems: How organizational forms shape new technology investments. *Strategic Management Journal*. <https://doi.org/10.1002/smj.2010>
- Kaulio, M. A. (1998). Customer, consumer and user involvement in product development: A framework and a review of selected methods. *Total Quality Management*, *9*(1), 141–149. <https://doi.org/10.1080/0954412989333>

- Kazan, E., Tan, C. W., Lim, E. T. K., Sørensen, C., & Damsgaard, J. (2018). Disentangling Digital Platform Competition: The Case of UK Mobile Payment Platforms. *Journal of Management Information Systems*, 35(1), 180–219. <https://doi.org/10.1080/07421222.2018.1440772>
- Kendall, J., Machoka, P., Veniard, C., & Maurer, B. (2011). An Emerging Platform: From Money Transfer System to Mobile Money Ecosystem. *SSRN Electronic Journal*, 6(4), 49–64. <https://doi.org/10.2139/ssrn.1830704>
- Kendall, J., Maurer, B., Machoka, P., & Veniard, C. (2011). An Emerging Platform: From Money Transfer System to Mobile Money Ecosystem. *SSRN Electronic Journal*, 6(4), 49–64. https://doi.org/10.1162/inov_a_00100
- Khanna, K., & Palepu, K. G. (2010). Winning in Emerging Markets: A roadmap for strategy and execution. *Harvard Business Review*, Boston, MA.
- Kingiri, A. N., & Fu, X. (2019). Understanding the diffusion and adoption of digital finance innovation in emerging economies: M-Pesa money mobile transfer service in Kenya. *Innovation and Development*, 0(0), 1–21. <https://doi.org/10.1080/2157930x.2019.1570695>
- Kiss, A. N., Danis, W. M., & Cavusgil, S. T. (2011). International entrepreneurship research in emerging economies: A critical review and research agenda. *Journal of Business Venturing*, 27(2). <https://doi.org/10.1016/j.jbusvent.2011.09.004>
- Klein, H. K., & Myers, M. D. (1999). A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *MIS Quarterly*, 23(1), 67. <https://doi.org/10.2307/249410>
- Koskinen, K., Bonina, C., & Eaton, B. (2019). *Digital platforms in the global south: Foundations and research agenda*. *IFIP Advances in Information and Communication Technology* (Vol. 551). Springer International Publishing. https://doi.org/10.1007/978-3-030-18400-1_26
- Kraemer-Mbula, E., & Wamae, W. (2010). *Innovation and the development agenda*. *Innovation and the Development Agenda* (Vol. 9789264088). <https://doi.org/10.1787/9789264088924-en>
- Kusiak, A. (2007). Innovation: The Living Laboratory Perspective. *Computer-Aided Design and Applications*, 4(6), 863–876. <https://doi.org/10.1080/16864360.2007.10738518>
- Laamanen, M., & Skälén, P. (2015). Collective–conflictual value co-creation: A strategic action field approach. *Marketing Theory*, 15(3), 381–400. <https://doi.org/10.1177/1470593114564905>
- Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons*, 61(1), 35–46. <https://doi.org/10.1016/j.bushor.2017.09.003>
- Lee, S., Olson, D., & Trimi, S. (2012). Co-innovation: Convergenomics, collaboration, and co-creation for organizational values. *Management Decision*, 50(5), 817–831. <https://doi.org/10.1108/00251741211227528>
- Leonardi, P. (2011). When Flexible routines meet flexible technologies: Affordance, constraint and the imbrication of human and material agencies. *MIS Quarterly*, 35(1), 147–167.
- Lepoutre, J., & Oguntoye, A. (2018). The (non-)emergence of mobile money systems in Sub-Saharan Africa: A comparative multilevel perspective of Kenya and Nigeria. *Technological Forecasting and Social Change*, 131(November), 262–275. <https://doi.org/10.1016/j.techfore.2017.11.010>
- Levén, P., & Holmström, J. (2008). Consumer cocreation and the ecology of innovation: A Living Lab approach. *Public Systems in the Future: Ldots*, 14.
- Levine, R. (2005). Finance Growth Theory Evidence. *Nber Working Paper Series*,

- (September), 1–118. Retrieved from <http://www.nber.org/papers/w10766>
- Lindgren, R., Eriksson, O., & Lyytinen, K. (2015). Managing identity tensions during mobile ecosystem evolution. *Journal of Information Technology*, 30(3), 229–244. <https://doi.org/10.1057/jit.2015.8>
- Liu, J., Kauffman, R. J., & Ma, D. (2015). Competition, cooperation, and regulation : Understanding the evolution of the mobile payments technology ecosystem. *Electronic Commerce Research and Applications*, 14(5), 372–391. <https://doi.org/10.1016/j.elerap.2015.03.003>
- London, T. (2008). The base-of-the-pyramid perspective: A new approach to poverty alleviation. *Academy of Management 2008 Annual Meeting: The Questions We Ask, AOM 2008*. <https://doi.org/10.5465/ambpp.2008.33716520>
- Lusch, R., & Nambisan, S. (2015). Service Innovation: A service-dominant logic perspective. *MIS Quarterly*, 39(1), 155–175. <https://doi.org/10.25300/MISQ/2015/39.1.07>
- Lusch, R., & Vargo, S. (2014). *Service - Dominant Logic: Premises, perspectives, possibilities*. Cambridge University Press.
- Lyytinen, K., Sørensen, C., & Tilson, D. (2017). Generativity in digital infrastructures: A research note. In *The Routledge companion to management information systems* (pp. 253–275). Routledge.
- MacDonald, S., & Headlam, N. (2008). Research Methods Handbook. *Centre for Local Economic Strategies*, 72. <https://doi.org/10.13140/RG.2.1.4464.3448>
- MacKenzie, D., & Wajcman, J. (1999). *Introductory essay: the social shaping of technology. The Social Shaping of Technology*.
- Madise, S. (2019). *The Regulation of Mobile Money Series Editor*. Palgrave Macmillan.
- Madon, S., Reinhard, N., Roode, D., & Walsham, G. (2009). Digital inclusion projects in developing countries: Processes of institutionalization. *Information Technology for Development*, 15(2), 95–107. <https://doi.org/10.1002/itdj.20108>
- Majanga, B. B. (2016). The journey to financial inclusion in Malawi: What does the future hold? *International Journal of Economics and Financial Research*, 2(9), 169–175.
- Majchrzak, A., & Markus, M. L. (2013). Technology Affordances and Constraints Theory (of MIS). In *In H. Kessler (Ed.), Encyclopedia of management theory*. Thousand Oaks, CA: SAGE Publications.
- Malawi. (2018). *2018 Malawi population and housing census Main report. Report*. <https://doi.org/10.1097/01.gim.0000223467.60151.02>
- Markus, M. L., & Nan, W. (Vince). (2020). “Theorizing the connections between digital innovations and societal transformation: learning from the case of M-Pesa in Kenya.” In *Handbook of Digital Innovation*. Cheltenham, UK: Edward Elgar Publishing. <https://doi.org/https://doi.org/10.4337/9781788119986.00013>
- Marsden, J. (2013). Stigmergic self-organization and the improvisation of Ushahidi. *Cognitive Systems Research*, 21, 52–64. <https://doi.org/10.1016/j.cogsys.2012.06.005>
- Mas, I., & Morawczynski, O. (2009). Designing Mobile Money services lessons from M-PESA. *Innovations*, 4(2), 77–91.
- Mas, I., & Ng’weno, A. (2012). Three Keys to M-PESA’s Success: Branding, Channel Management and Pricing. *SSRN Electronic Journal*, 1–26. <https://doi.org/10.2139/ssrn.1593387>
- Mas, I., & Radcliffe, D. (2010). Mobile payments go viral: M-PESA in Kenya. *Capco Institute’s Journal of Financial Transformation*, 32, 169–183.
- Matzner, M., Pauli, T., Marx, E., Anke, J., Poepelbuss, J., Fiert, E., ... Wieringa, and R. (2021). Transitioning to Platform-based Services and Business Models in a B2B Environment. *Journal of Service Management Research*, 5(3), 143–162. <https://doi.org/10.15358/2511-8676-2021-3-143>

- McKay, C., & Zetterli, P. (2013). Unintentional Consequences: Branchless Banking in Ghana, CGAP, January 3, 2013. Available at: <http://www.cgap.org/blog/unintentional-consequences-branchless-banking-ghana>.
- Minto, A., Voelkerling, M., & Wulff, M. (2017). *Separating apples from oranges: identifying threats to financial stability originating from FinTech*. *Capital Markets Law Journal* (Vol. 12). <https://doi.org/10.1093/cmlj/kmx035>
- MoF. (2016). National Strategy for Financial Inclusion. *Ministry of Finance, Economic Planning and Development, Malawi*.
- Moore, J. F. (1993). Predators and Prey: A New Ecology of Competition. *Harvard Business Review*, 75–86.
- Msiska, B. (2018). Cultivating Third Party Development in Platform-centric Software Ecosystems: Extended Boundary Resources Model. *The African Journal of Information Systems*, 10(4), 6.
- Msiska, B., & Nielsen, P. (2018). Innovation in the fringes of software ecosystems: the role of socio-technical generativity*. *Information Technology for Development*, 24(2), 398–421. <https://doi.org/10.1080/02681102.2017.1400939>
- Mwiti, F. G. (2015). Conceptualizing Mobile Money Innovations as Value Networks – the case of Mpesa in Kenya. In *Marketing as Provisioning Technology: Integrating Perspectives on Solutions for Sustainability, Prosperity, and Social Justice* (pp. 508–513). Chicago.
- Myers, M. (2013). *Qualitative Research in Business & Management* (Second Edi). London,UK: SAGE Publications.
- Myers, M., & Avison, D. (2002). *Qualitative Research in Information Systems*.
- Nakata, C., & Weidner, K. (2012). Enhancing new product adoption at the base of the pyramid: A contextualized model. *Journal of Product Innovation Management*, 29(1), 21–32. <https://doi.org/10.1111/j.1540-5885.2011.00876.x>
- Nambisan, S., Lyytinen, K., Majchrzak, A., & Michael, S. (2017). Digital Innovation Management : Reinventing Innovation Management Research In a Digital World. *MIS Quarterly*, 41(1), 223–238. <https://doi.org/10.25300/MISQ/2017/41>
- Nambisan, S., Lyytinen, K., & Yoo, Y. (2020). Digital innovation: towards a transdisciplinary perspective. *Handbook of Digital Innovation*, 2–12. <https://doi.org/10.4337/9781788119986.00008>
- Nambisan, S., & Sawhney, M. (2007). Your Roadmap for Innovating Faster and Smarter in a Networked World. In *The Global Brain*. Upper Saddle River, NJ: Wharton School Publishing.
- Nambisan, S., Siegel, D., & Kenney, M. (2018). On open innovation, platforms, and entrepreneurship. *Strategic Entrepreneurship Journal*, 12(3), 354–368. <https://doi.org/10.1002/sej.1300>
- Nan, W. (Vince). (2019). Mobile Money and Socioeconomic Development: A Cross-Country Investigation in Sub-Saharan Africa. *Journal of International Technology and Information Management*, 27(4), 36.
- Nan, W. (Vince), & Markus, M. L. (2019). Is inclusive digital innovation inclusive? An investigation of M-Shwari in Kenya. *IFIP Advances in Information and Communication Technology*, 551(2017), 460–471. https://doi.org/10.1007/978-3-030-18400-1_38
- Ngugi, B., Pelowski, M., & Ogembo, J. G. (2010). M-pesa: A Case Study of the Critical Early Adopters' Role in the Rapid Adoption of Mobile Money Banking in Kenya. *The Electronic Journal of Information Systems in Developing Countries*, 43(1), 1–16. <https://doi.org/10.1002/j.1681-4835.2010.tb00307.x>
- Nguyen, S. P., & Mahundi, M. H. (2019). The dynamics of national ICT ecosystems. *Electronic Journal of Information Systems in Developing Countries*, 85(1), 1–10.

- <https://doi.org/10.1002/isd2.12058>
- Nguyen, S. P., Nielsen, P., & Saebo, J. I. (2017). The Role of Global Standardization Communities in Shaping National Health Information Architectures. In J Choudrie, M.S. Islam, F. Wahid, J.M. Bass, & J.E. Priyatama (Eds). *IFIP Advances in Information and Communication Technology*, 504, 93–103. <https://doi.org/10.1007/978-3-319-59111-7>
- Nicoletti, B. (2017). *The Future of Fintech: Integrating Finance and Technology in Financial Services*. *Venture Break*. Retrieved from <http://venturebreak.com/2016/08/19/future-fintech-revolut/>
- Nielsen, P. (2017). Digital innovation: A research agenda for information systems research in developing countries. *IFIP Advances in Information and Communication Technology*, 504, 269–279. https://doi.org/10.1007/978-3-319-59111-7_23
- Nielsen, P., & Sahay, S. (2022). A critical review of the role of technology and context in digital health research. *Digital Health*, 8(June). <https://doi.org/10.1177/20552076221109554>
- NSO. (2019). National Survey on Access and Use of ICTs by Households and Individuals in Malawi. Retrieved from http://www.nsomalawi.mw/images/stories/data_on_line/economics/ICT/ICT Household Survey 2019.pdf
- Oborn, E., Barrett, M., Orlikowski, W., & Kim, A. (2019). Trajectory dynamics in innovation: Developing and transforming a mobile money service across time and place. *Organization Science*, 30(5), 1097–1123. <https://doi.org/10.1287/orsc.2018.1281>
- OECD. (2012). “Innovation and Inclusive Development, Conference Discussion Report.” Retrieved March 9, 2023, from <http://www.oecd.org/sti/inno/oecd-inclusive-innovation.pdf>
- Oh, D. S., Phillips, F., Park, S., & Lee, E. (2016). Innovation ecosystems: A critical examination. *Technovation*, 54, 1–6. <https://doi.org/10.1016/j.technovation.2016.02.004>
- Oke, A. (2007). *Innovation types and innovation management practices in service companies*. *International Journal of Operations and Production Management* (Vol. 27). <https://doi.org/10.1108/01443570710750268>
- Omwansa, T., & Sullivan, N. (2012). *Money, Real Quick: Kenya’s Disruptive Mobile Money Innovation* (1.0). Croydon: Guardian.
- Ondrus, J., Gannamaneni, A., & Lyytinen, K. (2015). The impact of openness on the market potential of multi-sided platforms: A case study of mobile payment platforms. *Journal of Information Technology*, 30(3), 260–275. <https://doi.org/10.1057/jit.2015.7>
- Onsongo, E. K., & Schot, J. (2017). Inclusive Innovation and Rapid Sociotechnical Transitions: The Case of Mobile Money in Kenya. *Ssrn*, 07(March). <https://doi.org/10.2139/ssrn.2940184>
- Orlikowski, W. J., & Iacono, C. S. (2001). Research Commentary: Desperately Seeking the “IT” in IT Research - A Call to Theorizing the IT Artifact. *Information Systems Research*, 12(2), 121–134. <https://doi.org/10.1287/isre.12.2.121.9700>
- Ortt, J. R., & Van Der Duin, P. A. (2008). The evolution of innovation management towards contextual innovation. *European Journal of Innovation Management*, 11(4), 522–538. <https://doi.org/10.1108/14601060810911147>
- Pansera, M. (2013). Frugality, grassroots and inclusiveness: new challenges for mainstream innovation theories. *African Journal of Science, Technology, Innovation and Development*, 5(6), 469–478.
- Pansera, M., & Owen, R. (2018). Framing inclusive innovation within the discourse of development. *Research Policy*, 47(1), 23–34.
- Papioannou, T. (2012). How inclusive can innovation and development be in the twenty-

- first century? *Innovation and Development*, 4(2), 187–202.
<https://doi.org/10.1080/2157930x.2014.921355>
- Parker, G., Alstyne, M. Van, & Jiang, X. (2017). Platform Ecosystems : How Developers Invert the Firm. *MIS Quarterly*, 41(1), 255–266. <https://doi.org/10.2139/ssrn.2861574>
- Parker, G., & Van Alstyne, M. (2018). Innovation, openness, and platform control. *Management Science*, 64(7), 3015–3032. <https://doi.org/10.1287/mnsc.2017.2757>
- Parker, G., Van Alstyne, M. W., & Choudary, S. P. (2016). *Platform revolution: How networked markets are transforming the economy and how to make them work for you*. WW Norton & Company.
- Pelletier, A., Khavul, S., & Estrin, S. (2019). Innovations in emerging markets: the case of mobile money. *Industrial and Corporate Change*, 29(2), 395–421.
<https://doi.org/10.1093/icc/dtz049>
- Plé, L. (2017). Why Do We Need Research on Value Co-destruction? *Journal of Creating Value*, 3(2), 162–169. <https://doi.org/10.1177/2394964317726451>
- Plé, L., & Cáceres, R. C. (2010). Not always co-creation: Introducing interactional co-destruction of value in service-dominant logic. *Journal of Services Marketing*, 24(6), 430–437. <https://doi.org/10.1108/08876041011072546>
- Poole, M. S., Ven, A. H. Van de, Kevin, D., & Holmes, M. E. (2000). *Organizational Change and Innovation Processes: Theory and Methods for Research*. Retrieved November 10, 2019, from <https://www.amazon.com/Organizational-Change-Innovation-Processes-Research/dp/0195131983>
- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.
- Praceus, S. (2014). *Consumer Innovation at the Base of the Pyramid: Emerging Patterns of User Innovation in a Resource-Scare Setting*. SpringerGabler (2014th Edi). Hamburg, Germany: Springer Gabler. <https://doi.org/10.1007/978-3-658-05105-1>
- Prahalad, C. K., Di Benedetto, A., & Nakata, C. (2012). Bottom of the pyramid as a source of breakthrough innovations. *Journal of Product Innovation Management*, 29(1), 6–12. <https://doi.org/10.1111/j.1540-5885.2011.00874.x>
- Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, 18(3), 5–14.
<https://doi.org/10.1002/dir.20015>
- Puschmann, T. (2017). Fintech, 59(1), 69–76. <https://doi.org/10.1007/s12599-017-0464-6>
- Rahman, K. S. (2018a). Regulating Informational Infrastructure: Internet platforms as new public utilities.
- Rahman, K. S. (2018b). The New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Concept. *Cardozo Law Review*, 39(5), 1621–1692.
- Ranjan, K. R., & Read, S. (2016). Value co-creation: concept and measurement. *Journal of the Academy of Marketing Science*, 44(3), 290–315. <https://doi.org/10.1007/s11747-014-0397-2>
- RBM. (2015). *Monthly Payment Systems Report - December 2015*. Retrieved from <https://www.rbm.mw/PaymentSystems/>
- RBM. (2016). *Monthly Payment Report - December 2016*. Retrieved from <https://www.rbm.mw/PaymentSystems/>
- Rea, S. C., & Nelms, T. C. (2017). Mobile Money: The First Decade. *Institute for Money, Technology & Financial Inclusion*, 1–35.
- Rip, A., Misa, T., & Schot, J. (1995). Managing Technology in Society: The Approach of Constructive Technology Assessment. *Managing Technology in Society*.
- Ritchie, J., Lewis, J., Nicholls, M. C., & Ormston, R. (2014). *Qualitative Research Practice: A guide for social science students and researchers*. News.Ge. SAGE Publications.

- Rochet, J., & Tirole, J. (2003). Platform competition in two-sided markets. *European Economic Association*, 1(4), 990–1029.
- Rogers, E. M. (1983). *Diffusion of innovations* (3rd ed.). New York : London: New York : Free Press .
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: New York : Free Press, 2003.
- Rogers M. (1998). The Definition and Measurement of Attention. *The American Journal of Psychology*, 36(4), 601. <https://doi.org/10.2307/1413914>
- Rong, K., Hu, G., Lin, Y., Shi, Y., & Guo, L. (2015). Understanding business ecosystem using a 6C framework in Internet-of-Things-based sectors. *International Journal of Production Economics*, 159(2015), 41–55. <https://doi.org/10.1016/j.ijpe.2014.09.003>
- Sadoulet, L., & Furdelle, O. (2015). Vodaphone M-Pesa: “Unusual innovation” - from a corporate social responsibility project to buisness model innovation. In *Case Studies in Social Entrepreneurship - The Oikos collection* (pp. 243–264). Sheffield, United Kingdom: Greenleaf.
- Saha, V., Mani, V., & Goyal, P. (2020). Emerging trends in the literature of value co-creation: a bibliometric analysis. *Benchmarking*, 27(3), 981–1002. <https://doi.org/10.1108/BIJ-07-2019-0342>
- Sandberg, J., Holmström, J., & Lyytinen, K. (2020). Digitization and phase transitions in platform organizing logics: Evidence from the process automation industry. *MIS Quarterly: Management Information Systems*, 44(1), 129–153. <https://doi.org/10.25300/MISQ/2020/14520>
- Sarker, S., Sarker, S., Sahaym, A., & Bjorn-andersen, N. (2012). Exploring Value Cocreation in Relationships Between an ERP Vendor and its Partners: A Revelatory Case Study. *MIS Quarterly*, 36(1), 317–338.
- Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research Methods for Business Students 7th Edition*. Pearson Education limited.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students 8th Edition*.
- Schmid, M., Aier, S., & Schmid, M. (2021). Taming Complexity in Business Ecosystems : Investigating the Role of Platforms. *Association for Information Systems AIS Electronic Library (AISeL) ICIS*, (November), 0–17.
- Schrieck, M., Wiesche, M., & Krcmar, H. (2021). Capabilities for value co-creation and value capture in emergent platform ecosystems: A longitudinal case study of SAP’s cloud platform. *Journal of Information Technology*, 36(4), 365–390. <https://doi.org/10.1177/02683962211023780>
- Schueffel, P. (2016). Taming the Beast: A Scientific Definition of Fintech. *Ssrn*, 4, 32–54. <https://doi.org/10.2139/ssrn.3097312>
- Schumpeter, J. A. (1934). *The theory of economic development; an inquiry into profits, capital, credit, interest, and the business cycle*,. Harvard University Press. Retrieved from <http://www.hup.harvard.edu/catalog.php?isbn=9780674879904>
- Schuurman, D., De Marez, L., & Berte, K. (2011). Adoption versus use diffusion of iDTV in flanders - personalized television content as a tool to cross the chasm? *Computers in Entertainment*, 9(3), 1–15. <https://doi.org/10.1145/2027456.2027466>
- Schuurman, D., De Moor, K., De Marez, L., & Evens, T. (2011). A Living Lab research approach for mobile TV. *Telematics and Informatics*, 28(4), 271–282. <https://doi.org/10.1016/j.tele.2010.11.004>
- Senyo, P. K., Karanasios, S., Gozman, D., & Baba, M. (2022). FinTech ecosystem practices shaping financial inclusion: the case of mobile money in Ghana. *European Journal of Information Systems*, 31(1), 112–127. <https://doi.org/10.1080/0960085X.2021.1978342>

- Silverstone, R., & Haddon, L. (1996). *Information and Communication Technologies*. Oxford University Press. Retrieved from [http://eprints.lse.ac.uk/64821/1/Haddon_Design and domestication_2016.pdf](http://eprints.lse.ac.uk/64821/1/Haddon_Design_and_domestication_2016.pdf)
- Simanis, E., & Hart, S. L. (2009). Innovation from the inside out. *MIT Sloan Management Review*, 50(4), 8–18. Retrieved from [http://books.google.at/books?hl=de&lr=&id=4hTRWStFhVgC&oi=fnd&pg=PR9&dq=Chesbrough,+H.W.+\(2003\).+Open+Innovation&ots=XrTBWSu4xB&sig=FRkbEnZ5QNAJ4bix-nEGqRD4EcU](http://books.google.at/books?hl=de&lr=&id=4hTRWStFhVgC&oi=fnd&pg=PR9&dq=Chesbrough,+H.W.+(2003).+Open+Innovation&ots=XrTBWSu4xB&sig=FRkbEnZ5QNAJ4bix-nEGqRD4EcU)
- Smith, A. M. (2013). The value co-destruction process: A customer resource perspective. *European Journal of Marketing*, 47(11–12), 1889–1909. <https://doi.org/10.1108/EJM-08-2011-0420>
- Snihur, Y., Thomas, L. D. W., & Burgelman, R. A. (2018). An Ecosystem-Level Process Model of Business Model Disruption: The Disruptor's Gambit. *Journal of Management Studies*. <https://doi.org/10.1111/joms.12343>
- Stake, R. E. (1995). [Robert_E._Stake]_The_Art_of_Case_Study_Research(z-lib.org).pdf.
- Stark, D. (2009). *The Sense of Dissonance: Accounts of worth in Economic Life*. Princeton, N.J.: University Press.
- Stewart, J., & Hyssalo, S. (2008). Intermediaries, Users and Social Learning in Technological Innovation. *International Journal of Innovation Management*, 12(03), 295–325. <https://doi.org/10.1142/s1363919608002035>
- Strong, D. M., Johnson, S. A., Trudel, J., Volkoff, O., Pelletier, L. R., Bar-on, I., & Garber, L. (2014). A Theory of Organization-EHR Affordance Actualization. *Journal of the Association for Information Systems*, 15(2), 53–85.
- Suri, T. (2021). Mobile Money. *VoxDevLit*, 2(1), 1–28.
- Suri, T., & Jack, W. (2016). The long-run poverty and gender impacts of mobile money. *Science*, 354(6317), 1288–1292. <https://doi.org/10.1126/science.aah5309> LK - http://sfx.metabib.ch/sfx_locator?sid=EMBASE&issn=10959203&id=doi:10.1126%2Fscience.aah5309&atitle=The+long-run+poverty+and+gender+impacts+of+mobile+money&stitle=Science&title=Science&volume=354&issue=6317&spage=1288&epage=1292&aualast=Suri&aufirst=Tavneet&aunit=T.&aufull=Suri+T.&coden=SCIEA&isbn=&pages=1288-1292&date=2016&aunit1=T&aunitm=
- Svahn, F., Mathiassen, L., & Lindgren, R. (2017). Embracing digital innovation in incumbent firms: How Volvo cars managed competing concerns. *MIS Quarterly*, 41(1), 239–253.
- Taylor, S., Bogdan, R., & DeVault, M. (2016). *Introduction to Qualitative Research Methods: A Guidebook and Resource*. Wiley. New Jersey.
- Thomas, G. (2016). *How to do your Case Study* (2nd ed.).
- Thomas, L., & Autio, E. (2013). Emergent Equifinality : an Empirical Analysis of Ecosystem Creation Processes. *35th DRUID Celebration Conference 2013*. [https://doi.org/10.1016/0022-3115\(90\)90377-Y](https://doi.org/10.1016/0022-3115(90)90377-Y)
- Thomas, L., Autio, E., & Gann, D. (2014). Architectural leverage: Putting platforms in context. *Academy of Management Perspectives*, 28(2), 198–219.
- Tilson, D., Lyytinen, K., & Sørensen, C. (2010). Digital infrastructures: The missing IS research agenda. *Information Systems Research*, 21(4), 748–759. <https://doi.org/10.1287/isre.1100.0318>
- Tilson, D., Sørensen, C., & Lyytinen, K. (2012). Change and control paradoxes in mobile infrastructure innovation: The Android and iOS mobile operating systems cases. *Proceedings of the Annual Hawaii International Conference on System Sciences*, 1324–1333. <https://doi.org/10.1109/HICSS.2012.149>
- Tiwana, A. (2013). *Platform Ecosystems: Aligning Architecture, Governance, and Strategy*.

- Elsevier.
- Tiwana, A. (2014). *Platform Ecosystem: Aligning architecture, Governance and Strategy*. Elsevier Inc.
- Tiwana, A., Konsynski, B., & Bush, A. A. (2010). Platform evolution: Coevolution of platform architecture, governance, and environmental dynamics. *Information Systems Research, 21*(4), 675–687. <https://doi.org/10.1287/isre.1100.0323>
- Tsang, E. W. K. (2014). Generalizing from research findings: The merits of case studies. *International Journal of Management Reviews, 16*(4), 369–383. <https://doi.org/10.1111/ijmr.12024>
- UNCDF. (2018). *The MM4P Story of Digital Financial Services in Malawi*.
- UNCDF. (2019). Financial Inclusion and the SDGs - UN Capital Development Fund (UNCDF). Retrieved March 27, 2019, from <https://www.uncdf.org/financial-inclusion-and-the-sdgs>
- UNCDF. (2020). *Leaving No one Behind in the digital era*.
- UNCTAD. (2019). *Digital Economy report 2019 : Value creation and capture - implications for developing countries*.
- UNDP. (2022). *Human Development Report 2021-2022 Uncertain Times, Unsettled Lives: Shaping our Future in a Transforming World*. Georgia.
- United Nations. (2015). Sustainable Development Goals | UNDP. Retrieved March 27, 2019, from <https://www.undp.org/content/undp/en/home/sustainable-development-goals.html>
- Van de Ven, A. H. (2005). Running in Packs to Develop Knowledge-Intensive Technologies. *MIS Quarterly, 29*(2), 365–377.
- Van de Ven, A. H., Polley, D. E., Garud, R., & Venkataraman, S. (1999). *The innovation journey*. Oxford University Press. Retrieved from <https://global.oup.com/academic/product/the-innovation-journey-9780195341003?cc=gb&lang=en&>
- Van der Boor, P. E. W. (2014). Three studies on innovation and diffusion: Evidence from mobile banking in developing countries and a user innovation survey in Portugal.
- Varga, D. (2017). Fintech, the new era of financial services. *Vezetéstudomány / Budapest Management Review, 48*(11), 22–32. <https://doi.org/10.14267/VEZTUD.2017.11.03>
- Vargo, S. L. (2008). Customer integration and value creation: Paradigmatic traps and perspectives. *Journal of Service Research, 11*(2), 211–215. <https://doi.org/10.1177/1094670508324260>
- Vargo, S. L., & Lusch, R. F. (2004). Evolving to a New Dominant Logic for Marketing. *Journal of Marketing, 68*(1), 1–17. <https://doi.org/10.1509/jmkg.68.1.1.24036>
- Vargo, S. L., & Lusch, R. F. (2008a). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science, 36*(1), 1–10. <https://doi.org/10.1007/s11747-007-0069-6>
- Vargo, S. L., & Lusch, R. F. (2008b). Why “service”? *Journal of the Academy of Marketing Science, 36*(1), 25–38. <https://doi.org/10.1007/s11747-007-0068-7>
- Vargo, S. L., Maglio, P. P., & Akaka, M. A. (2008). On value and value co-creation: A service systems and service logic perspective. *European Management Journal, 26*(3), 145–152. <https://doi.org/10.1016/j.emj.2008.04.003>
- Viswanathan, M., & Sridharan, S. (2012). Product development for the BoP: Insights on concept and prototype development from university-based student projects in India. *Journal of Product Innovation Management, 29*(1), 52–69. <https://doi.org/10.1111/j.1540-5885.2011.00878.x>
- Von Hippel, E. (1988). *The Sources of Innovation*. Syria Studies (Vol. 7). New York: Oxford University Press. Retrieved from https://www.researchgate.net/publication/269107473_What_is_governance/link/548173

- 090cf22525dcb61443/download%0Ahttp://www.econ.upf.edu/~reynal/Civil wars_12December2010.pdf%0Ahttps://think-asia.org/handle/11540/8282%0Ahttps://www.jstor.org/stable/41857625
- Von Hippel, E., & Katz, R. (2002). Shifting innovation to users via toolkits. *Management Science*, 48(7), 821–833. <https://doi.org/10.1287/mnsc.48.7.821.2817>
- Walsham, G. (1993). *Interpreting Information Systems in Organizations*. John Wiley and Sons, Chichester. <https://doi.org/10.2307/2584090>
- Walsham, G. (2017). ICT4D research: reflections on history and future agenda. *Information Technology for Development*, 23(1), 18–41. <https://doi.org/10.1080/02681102.2016.1246406>
- Wareham, J., Fox, P., & Giner, C. (2014). Technology Ecosystem Governance. *Organisation Science*, 25(January), 1195–1215. Retrieved from www.esadeknowledge.com
- Wikfeldt, E. S. (2008). Generalising from Case Studies. *Halmstad University*, (2008), 1–11. Retrieved from http://www.diva-portal.org/smash/get/diva2:1051446/FULLTEXT01.pdf%0Ahttps://www.researchgate.net/publication/317616888_Generalising_from_Case_Studies
- Williams, R., Stewart, J., & Slack, R. (2005). *Social learning in technological innovation: experimenting with information and communication technologies*.
- Winter, S., Berente, N., Howison, J., & Butler, B. (2014). Beyond the organizational “container”: Conceptualizing 21st century sociotechnical work. *Information and Organization*, 24(4), 250–269. <https://doi.org/10.1016/j.infoandorg.2014.10.003>
- World Bank. (2017). *The Global Findex Database: Measuring Financial Inclusion and the Fintech Revolution*.
- World Bank. (2022). Financial Inclusion Overview. Retrieved September 28, 2022, from <https://www.worldbank.org/en/topic/financialinclusion/overview>
- Xiao, X., Califf, C. B., Sarker, S., & Sarker, S. (2013). ICT innovation in emerging economies: A review of the existing literature and a framework for future research. *Journal of Information Technology*, 28(4), 264–278. <https://doi.org/10.1057/jit.2013.20>
- Xie, K., Wu, Y., Xiao, J., & Hu, Q. (2016). Value co-creation between firms and customers: The role of big data-based cooperative assets. *Information and Management*, 53(8), 1034–1048. <https://doi.org/10.1016/j.im.2016.06.003>
- Yin, R. (2014a). *Case Study Research: Design and Methods, 5th Edition* (5th ed.).
- Yin, R. (2014b). *Case Study Research: Design Methods*.
- Yin, Robert. (2018). *Case Study Research and Applications: Design and Methods (6th edn)*. (8th ed.). London, UK: SAGE Publications.
- Yoo, Y., Boland, R. J., Lyytinen, K., & Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization Science*, 23(5), 1398–1408. <https://doi.org/10.1287/orsc.1120.0771>
- Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). An Organizing Logic of Digital Systems Innovation : Agenda. *Information Systems Research*, 21(4), 724–735. <https://doi.org/10.1287/isre.1100.0322>
- Zachariadis, M., & Ozcan, P. (2017). The API Economy and Digital Transformation in Financial Services: The Case of Open Banking. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2975199>
- Zammuto, R. F., Griffith, T. L., Majchrzak, A., Dougherty, D. J., & Faraj, S. (2007). Information technology and the changing fabric of organization. *Organization Science*, 18(5), 749–762. <https://doi.org/10.1287/orsc.1070.0307>
- Zanello, G., Fu, X., Mohnen, P., & Ventresca, M. (2016). the Creation and Diffusion of Innovation in Developing Countries: a Systematic Literature Review. *Journal of Economic Surveys*, 30(5), 884–912. <https://doi.org/10.1111/joes.12126>

Zittrain, J. (2006). The generative internet. *Harvard Law Review*, 119(7), 1974–2040.
<https://doi.org/10.1145/1435417.1435426>

Appendix I – Focus group questions

Step No.	Details / Question
1	The information and consent form is presented, explained and handed to the participants of the focus group meeting.
2	Introduction on the research topic highlighting the key aims and objectives of the research study.
3	Brief introduction by each of the participants mentioning their background and use of mobile money services; <ul style="list-style-type: none"> • Which mobile money services do are they currently using? • When did they start using mobile money service? • Can they remember a specific event that led them to start using mobile money services? Explain • Which functionalities do they use often? • Why do you use those services?
4	Discussion on the mobile money products and services in general how the service addresses their needs? If not, what shortfalls have they identified?
5	What do they think of the design and functionality of mobile money services?
	Have they ever tried to provide any feedback to the service provider with regards to the design and functionality shortfalls which if improved would provide better mobile money services?
	How was this feedback relayed to the service provider? How easy was it to provide such feedback?
	Was the feedback directly to the mobile money operators or through intermediaries?
	What should service providers do to encourage users to provide feedback?
	Are there enough channels or forums for feedback to improve product design and functionality?
6	Have they ever been contacted to take part in a pilot or experiment for mobile money services? If yes, explain.
	Do they know someone who has been consulted by the service provider to provide feedback about the mobile money products?

Step No.	Details / Question
7	Was the product implemented in such a way that its usage was easily explained to them as users? Was it easy to interpret its meaning or get how to use it in your daily practices?
	Has the innovation been able to replace some of their common practices which previously would be done differently and embedded itself in their daily lives? Discussion.
	Do they feel there are other potential usages of mobile money services which have not been fully exploited? Discussion
8	What should the service provider do to engage the end users to solicit user feedback? Discussion
9	Are they satisfied that the mobile money innovations address some of the contextual challenges? Discussion
	What sort of local contexts or practices would you want to see addressed by these mobile money innovations?
10	What should government policy focus on to ensure mobile money innovations address the needs of Malawians?
11	Do you feel there are areas relating to the innovation process which if improved would encourage the uptake of mobile money innovations?
12	What other challenges or opportunities relating to mobile money innovations would want to be addressed by various actors working in this sector.

Appendix II – Interview guide for service provider

Step No.	Details / Questions
1	<p>Introduction</p> <ul style="list-style-type: none"> • The information and consent form is presented, explained and handed to the potential participant. • Introduction on the research topic highlighting the key aims and objectives of the research study. • Brief introduction by the participant on their; <ul style="list-style-type: none"> ○ Background, role and responsibility ○ Briefly describe purpose, goals and vision of your firm? ○ Explain which parties/individuals that the participant works with the most within or outside the organisation in your daily work
2	<p>Initiation phase of innovation for mobile money services?</p> <ul style="list-style-type: none"> • When and how did the idea behind mobile money emerge? • Did the idea emerge from within the firm or borrowed from elsewhere? If yes from where? • What were the main elements that played a role in the emergence of this idea? • What approach has been adopted for innovation process on such new ideas?
3	<p>Development phase</p> <ul style="list-style-type: none"> • How did the process of transforming the idea into a product emerge? • How do you ensure the product development or design meets the user needs or requirements? • Did your firm have the entire project plan for the rollout of mobile money beforehand and was it adhered to? • If there were deviations from the original plan, what were these deviations and what caused them? • How was your company organised to ensure the originally intended innovation is realized in the end?

Step No.	Details / Questions
	<ul style="list-style-type: none"> • Did your firm work on several options at the same time? • What sort of challenges (difficulties or challenges) did you meet in the development of mobile money products from these early stages? • Did you engage end-users (potential customers) requesting feedback on the potential relevancy or usability of the products? Was the feedback valuable? • How well organised were these forums for feedback (pilot studies or experiments)? • How did you motivate potential end-users to commit time and provide valuable feedback on these relatively unknown products at the beginning? • How did you assist potential customers to develop meaning and practices on the use of the innovations? • How was the knowledge emerging from these potential end-users integrated into the final product? • What other actors did you engage in the development of the product and what was your involvement on the product development? How was the feedback again integrated into the final product? • Explain the relationship between you as the producer of the mobile money service and other actors working in the innovation ecosystem for the development of this service? Was the relationship amongst the actors collaborative or competitive and what is the extent of your involvement on the project? • What was the relationship between the project and its context how was this managed? (learning by regulating, influencing other actors, shaping policy and learning by interacting)
4	<p>Implementation Phase</p> <ul style="list-style-type: none"> • When did the mobile money service go live? • At the time of going live, did you feel that your original goals were achieved on the purpose behind the idea for the innovation? • Did product continue to undergo changes during implementation period?

Step No.	Details / Questions
	<ul style="list-style-type: none"> • How did the firm manage the emerging innovations as the product was being implemented?
5	<p>Period of use</p> <ul style="list-style-type: none"> • How were various actors involved in providing feedback during the period of use of the innovation? • Describe the management of this phase as part of the innovation process? • What challenges did you face to incorporate feedback from various actors into the product? • What are the things that you would see done differently in the interplay between the various actors as you undertake innovation of these products?
6	<p>General questions</p> <ul style="list-style-type: none"> • Describe the evolution of fintech in Malawi and what factors have affected its uptake in Malawi? • What policy and regulation affect the fintech innovation process? Do you feel there is an enabling policy to support the innovation process in Malawi, more specifically for fintech innovation? • Does the innovation process influence the uptake of innovations such as these mobile money products? • Are end-users fully involved in the innovation process for mobile money products? • Provide historical reports for mobile money products showing key events and incidences for each product.

Appendix III – Interview guide for government agencies

Step No.	Details / Questions
1	<p>Introduction</p> <ul style="list-style-type: none"> • The information and consent form is presented, explained and handed to the potential participant. • Introduction on the research topic highlighting the key aims and objectives of the research study. • Brief introduction by the participant on their, <ul style="list-style-type: none"> ○ Background, role and responsibility ○ Briefly describe purpose, goals and vision of your firm? ○ Explain which parties/individuals that the participant works with the most within or outside the organisation in your daily work
2	<p>Initiation phase of innovation for mobile money services?</p> <ul style="list-style-type: none"> • When and how did the idea behind mobile money first emerge? • How did the policy holder interpret such initial ideas around launching of mobile money services? • Was the idea of mobile money largely influenced and imposed with external forces or it has been a homegrown and locally contextualized innovation? • What were the main factors that played a role in the acceptance by policy makers and regulators to allow the ideas to proceed into development phase of the product? • Have any policies been put in place to encourage actors to formulate ideas that assist in the innovation of fintech products?
3	<p>Development phase</p> <ul style="list-style-type: none"> • What measures of support has the regulator or policymaker put in place for the development of fintech products and services amongst various actors in the fintech innovation ecosystem?

Step No.	Details / Questions
	<ul style="list-style-type: none"> • Have any regulatory sandboxes been created for innovators beyond the formal banking and telecommunication sectors such as fintech startups? • What incentives are there to encourage innovation round mobile money services amongst fintech startups? • How do you ensure that the design and functionalities of fintech innovations address the user needs? • Have you organised any forums to get feedback from users on the uses and usages of fintech innovations? • How is the knowledge gained from such forums communicated to the service providers? • What challenges do you face in managing the fintech innovation process? • Do you take part in pilot or experiments undertaken by service providers during the development of fintech innovations? Which aspects do you focus on during such tests? • Explain the relationship between the regulator/policymaker and other actors in the fintech innovation ecosystem? Are there any forums to share ideas/knowledge? • How do you ensure the fintech products are developed with regard to the local context and knowledge?
4	<p>Implementation Phase</p> <ul style="list-style-type: none"> • Provide a sequence of events in the rollout of mobile money services and products. • How was the implementation of fintech innovations managed? • At the time of going live, did you feel that the original goals were achieved on the purpose behind the idea for the innovation? • Have the products continued to undergo changes during implementation period? • How are these changes managed from a policy/regulator perspective? • What role have you played in ensuring that emerging innovations from end-users or intermediaries are incorporated into the products?

Step No.	Details / Questions
5	<p>Period of use</p> <ul style="list-style-type: none"> <li>• How were various actors involved in providing feedback during the period of use of the innovation? <li>• Describe the management of this phase as part of the innovation process? <li>• What are the things that you would see done differently in the interplay between the various actors as they undertake the innovation process of these products?
6	<p>General questions</p> <ul style="list-style-type: none"> <li>• Describe the evolution of fintech in Malawi and what factors have affected its uptake in Malawi? <li>• What policy and regulation affect the fintech innovation process? Do you feel there is an enabling policy to support the innovation process in Malawi, more specifically for fintech innovation? <li>• Does the innovation process influence the uptake of innovations such as these mobile money products? <li>• Are end-users fully involved in the innovation process for mobile money products? <li>• Provide historical reports for mobile money products showing key events and incidences for each product.

Appendix IV – Interview guide for intermediaries

Step No.	Details / Questions
1	<p>Introduction</p> <ul style="list-style-type: none"> • The information and consent form is presented, explained and handed to the potential participant. • Introduction on the research topic highlighting the key aims and objectives of the research study. • Brief introduction by the participant on their <ul style="list-style-type: none"> ○ Background, role and responsibility ○ Briefly describe purpose, goals and vision of your firm? ○ Explain which parties/individuals that the participant works with the most within or outside the organisation in your daily work
2	<p>Initiation phase of the innovation process for mobile money services?</p> <ul style="list-style-type: none"> • Have you proposed any new ideas to the mobile money operators for mobile products and services? • Did those ideas emerge from within the firm or suggested by other parties? • Do you solicit any new ideas from other entities which you pass on to the mobile money operators or consider innovating around on your own? • What approach has been adopted for innovation process on such new ideas?
3	<p>Development phase</p> <ul style="list-style-type: none"> • How have you supported the development of new ideas from mobile money providers? • Have you collaborated with mobile money providers to develop new products? • How do you ensure the product development or design meets the user needs? • Did your firm have the entire plan for the project and it was adhered to throughout its execution? • How was innovation coordinated with the mobile money provider to ensure the intended goals of the project were realized? • What sort of challenges (difficulties or resistance) did you meet in the development of mobile money products from these early stages?

Step No.	Details / Questions
	<ul style="list-style-type: none"> • Did you engage end-users requesting feedback on the potential relevancy or usability of the products? Was the feedback valuable? • How did you motivate potential end-users to commit time and provide valuable feedback on these relatively unknown products at the beginning? • How did you assist potential customers to develop meaning and practices on the use of the innovations? • How was the process of transforming the idea into a product emerge? • How was the knowledge emerging from these potential end-users communicated to the service providers? • Explain the relationship between you as an intermediary of the innovation and other actors in the development of this innovation? Was the relationship amongst the actors collaborative or competitive and what is the extent of your involvement on the project?
4	<p>Implementation Phase</p> <ul style="list-style-type: none"> • When role did you play during the implementation of mobile money services • At the time of going live, did you feel that the original goals were achieved on the purpose behind the idea for the innovation? • Did product continue to undergo changes during implementation period? • What sort of role have you played in the evolution of mobile money services? • How have you provided feedback to the service provider emerging from the end-users during implementation?
5	<p>Period of use</p> <ul style="list-style-type: none"> • How were various actors involved in providing feedback during the period of use of the innovation? • Describe the management of this phase as part of the innovation process in an innovation ecosystem setup? • What challenges did you face to incorporate feedback from various actors and communicate it to the service providers? • What are the things that you would want to see done differently in the interplay between the various actors as you undertake innovation of these products?

Step No.	Details / Questions
6	<p>General questions</p> <ul style="list-style-type: none"> <li>• Describe the evolution of fintech in Malawi and what factors have affected its uptake in Malawi? <li>• Do you feel there is an enabling policy and environment to support the innovation process in Malawi, more specifically for fintech innovation? <li>• Does the innovation process influence the uptake of innovations such as these mobile money products? <li>• Are end-users fully involved in the innovation process for mobile money products? <li>• Provide any historical reports for mobile money products showing key events and incidences for each product.

Appendix V – Interview guide technology firms

Step No.	Details / Questions
1	<p>Introduction</p> <ul style="list-style-type: none"> • The information and consent form is presented, explained and handed to the potential participant. • Introduction on the research topic highlighting the key aims and objectives of the research study. • Brief introduction by the participant on their <ul style="list-style-type: none"> ○ Background, role and responsibility ○ Briefly describe purpose, goals and vision of your firm? ○ Explain which parties/individuals that the participant works with the most within or outside the organisation in your daily work
2	<p>Initiation phase of innovation for mobile money services?</p> <ul style="list-style-type: none"> • Do you initiate ideas in the innovation process around mobile money services as a fintech product? • How have those ideas largely emerged from within the firm or borrowed from elsewhere? • What are the main factors that influence your ideation around the innovation of fintech products? • What approach have you adopted for innovation?
3	<p>Development phase</p> <ul style="list-style-type: none"> • How has the process of transforming the idea into a product taken place within your firm? • How do you ensure the product development or design meets the user needs or requirements? • How does your firm ensure you stick to project timelines agreed at the beginning of the project? • If there were deviations from the original plan, what are the most common deviations?

Step No.	Details / Questions
	<ul style="list-style-type: none"> • What sort of challenges (difficulties or restrictions) have you met in the development of mobile money innovations from start to finish? • Do you engage end-users (potential customers) requesting feedback on the potential relevancy or usability of the products? Has the feedback been valuable? • How well organised have these forums for feedback (pilot studies or experiments) been organised? • How do you motivate potential end-users to commit time and provide valuable feedback on relatively unknown products at the beginning? • How do you assist potential customers to develop meaning and practices on the use of the innovations? • How has the knowledge emerging from these potential end-users integrated into the final product? • What other actors have you engage in the development of innovations around fintech products and what was your involvement on the product development? How was the feedback integrated into the final product? • Explain the relationship between you as an innovator and other actors in the development of new innovations? Is the relationship amongst the actors in the innovation ecosystem collaborative or competitive and what is the extent of your involvement on the project? • What is the relationship between the project and its context and how was this managed? (learning by regulating, influencing other actors, shaping policy and learning by interacting)
4	<p>Implementation Phase</p> <ul style="list-style-type: none"> • Which innovations have you implemented around mobile money services? • At the time of going live, did you feel that your original goals were achieved on the purpose behind the idea for the innovation? • Did the innovations you have implemented continue to undergo changes during implementation period?

Step No.	Details / Questions
	<ul style="list-style-type: none"> • How did you manage the emerging innovations as the product was being implemented
5	<p>Period of use</p> <ul style="list-style-type: none"> • How were various actors involved in providing feedback during the use of the innovation? • Describe the management of this phase as part of the innovation process? • What challenges did you face to incorporate feedback from various actors into the product? • What are the things that you would see done differently in the interplay between the various actors as you undertake product development in an innovation ecosystem?
6	<p>General questions</p> <ul style="list-style-type: none"> • Describe the evolution of fintech in Malawi and what factors have affected its uptake in Malawi? • What policy and regulation affect the fintech innovation process? Do you feel there is an enabling policy to support the innovation process in Malawi, more specifically for fintech innovation? • Does the innovation process influence the uptake of innovations such as these mobile money products? • Are end-users fully involved in the innovation process for mobile money products? • Provide historical reports for mobile money products showing key events and incidences for each product.

Appendix VI – Interview guide – Miscellaneous

Step No.	Details / Questions
1	<p>Introduction</p> <ul style="list-style-type: none"> • The information and consent form is presented, explained and handed to the potential participant. • Introduction on the research topic highlighting the key aims and objectives of the research study. • Brief introduction by the participant on their <ul style="list-style-type: none"> ○ Background, role and responsibility ○ Briefly describe purpose, goals and vision of your firm? ○ Explain which parties/individuals that the participant works with the most within or outside the organisation in your daily work
2	<p>Initiation phase of the innovation process for mobile money services?</p> <ul style="list-style-type: none"> • Have you proposed any new ideas to the mobile money operators for mobile products and services? • Did those ideas emerge from within the firm or suggested by other parties? • Do you solicit any new ideas from other entities which you pass on to the mobile money operators or consider innovating around on your own? • What approach has been adopted for innovation process on such new ideas?
3	<p>Development phase</p> <ul style="list-style-type: none"> • How have you supported the development of new ideas from mobile money providers? • Have you collaborated with mobile money providers to develop new products? • How do you ensure the product development or design meets the user needs? • Did your firm have the entire plan for the project and it was adhered to throughout its execution? • How was innovation coordinated with the mobile money provider to ensure the intended goals of the project were realized?

Step No.	Details / Questions
	<ul style="list-style-type: none"> • What sort of challenges (difficulties or resistance) did you meet in the development of mobile money products from these early stages? • Did you engage end-users requesting feedback on the potential relevancy or usability of the products? Was the feedback valuable? • How did you motivate potential end-users to commit time and provide valuable feedback on these relatively unknown products at the beginning? • How did you assist potential customers to develop meaning and practices on the use of the innovations? • How was the process of transforming the idea into a product emerge? • How was the knowledge emerging from these potential end-users communicated to the service providers? • Explain the relationship between you as an intermediary of the innovation and other actors in the development of this innovation? Was the relationship amongst the actors collaborative or competitive and what is the extent of your involvement on the project?
4	<p>Implementation Phase</p> <ul style="list-style-type: none"> • When role did you play during the implementation of mobile money services • At the time of going live, did you feel that the original goals were achieved on the purpose behind the idea for the innovation? • Did product continue to undergo changes during implementation period? • What sort of role have you played in the evolution of mobile money services? • How have you provided feedback to the service provider emerging from the end-users during implementation?
5	<p>Period of use</p> <ul style="list-style-type: none"> • How were various actors involved in providing feedback during the period of use of the innovation? • Describe the management of this phase as part of the innovation process in an innovation ecosystem setup? • What challenges did you face to incorporate feedback from various actors and communicate it to the service providers?

Step No.	Details / Questions
	<ul style="list-style-type: none"> • What are the things that you would want to see done differently in the interplay between the various actors as you undertake innovation of these products?
6	<p>General questions</p> <ul style="list-style-type: none"> • Describe the evolution of fintech in Malawi and what factors have affected its uptake in Malawi? • Do you feel there is an enabling policy and environment to support the innovation process in Malawi, more specifically for fintech innovation? • Does the innovation process influence the uptake of innovations such as these mobile money products? • Are end-users fully involved in the innovation process for mobile money products? • Provide any historical reports for mobile money products showing key events and incidences for each product.

Appendix VII – Information sheet and participant consent form

The University of Sheffield Information School	Investigating the fintech innovation process in Low and Middle Income Countries (LMICs): A Malawian perspective
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Information and Consent Form for Fintech Interviews

Researchers

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Purpose of the research

This research study is part of the work towards the attainment of a PhD award for the researcher. The topic of study is to investigate the fintech innovation process in Low and Middle Income Countries (LMICs), a case of Malawi. Fintech, a contraction of two words ‘financial’ and ‘technology’, represents a new paradigm for technological financial innovation. Fintech innovations have provided alternative platforms to access financial services, which potentially can assist to deepen financial inclusion, especially in the Global South. Financial inclusion is touted to assist in achieving different Sustainable Development Goals, as it creates opportunities that reduce poverty and increase economic growth.

The aim of the study is to achieve a conceptual and empirical understanding of the Fintech innovation process in an ecosystem perspective within an LMIC context using Malawi as the case study. The study will consider fintech innovation to be a subset of technological innovation.

The key objectives of the research study are stated thus:

- a. To examine the drivers shaping the evolution of the Fintech innovation process in Malawi.
- b. To investigate factors in the Fintech innovation process that affect the uptake of Fintech innovations in an LMIC context, such as Malawi.

- c. To study the interplay and interdependencies amongst the constellation of actors operating in the Fintech innovation ecosystem in Malawi, as they compete or cooperate to create value.

Who will be participating?

The participants for this research study will be drawn from the fintech innovation ecosystem for which this research study has adopted to use in investigating the fintech innovation process. Based on previous studies, five groups have been identified to belong to the fintech innovation ecosystem and these include end users of the services, fintech service providers, government as a policymaker and regulator of the service, fintech startups or entrepreneurs, and intermediaries such as service agents and banks. Therefore you have been selected to participate in this study based on the criteria that you belong to one or more groups of the fintech innovation ecosystem.

What will you be asked to do?

Participants for this study will be interviewed about the fintech innovation process as it pertains to Malawi. In line with the main aim and objectives of the study, the researcher will seek to understand the participants' views and perceptions on the fintech innovation process in an ecosystem perspective in Malawi.

What are the potential risks of participating?

No major risks are expected to materialize from participating in this study or during the course of data collection, no psychological or emotional harm is expected to materialize to the participants. However, it is possible for an unforeseen circumstance, such as violation of anonymity, to cause certain risks to materialize however, all measures will be put in place to minimize such an occurrence. Participants are requested to raise any risks which they envisage to occur for participating in this study. The interviewees will be urged to contact the researcher should they experience any harm, stress or any other concerns emanating from their participation in this research.

What data will I collect?

The study adopts an interpretive research paradigm using a qualitative case study approach. A mobile money service in Malawi has been selected for the research study to investigate the

fintech innovation process. In this particular instance, the study has adopted two key methods for data collection, which are in-depth interviews and interrogating official documents. Therefore various experts belonging to the fintech innovation ecosystem will be interviewed on various aspects of the fintech innovation process. Furthermore, archived official records in the form of written policies, reports, and regulations from various participant groups will be requested from the expert participants of the research study. The documentary evidence is expected to provide official documents to understand specific areas of the phenomenon.

What will I do with the data?

I will be analyzing the data for inclusion in my PhD thesis. The data will be stored on the University of Sheffield Information School's research data drive or secure cloud drive which can be accessed only by me, my supervisor, and the School's Examinations Officer and ICT staff operating the facility. I will also store an encrypted password protected back up copy on my personal laptop. Transcription service providers may also have access to the data at a certain point after data collection in a form that personal data is identifiable. A confidentiality agreement shall be signed with the transcriber prior to any such data transfer work taking place.

The study will ensure the use of all identifiable personal information is removed as far as possible in line with the objectives of the research study. To achieve this, the study will ensure all identifiable personal data or company information is anonymized or pseudonymized at the earliest possible time without compromise to the research data, likely during the writing of the findings of the study. Furthermore, the study shall ensure all personal information is kept secure at all times by encrypting all data stored on laptop devices. Personal information shall not be retained for longer than it is necessary and all laptops used for storage of data shall have strong passwords.

Will your participation be confidential?

All the information that we collect about you during the course of the research will be kept strictly confidential and will only be accessible to members of the research team and transcription service providers. You will not be able to be identified in any reports or publications unless you have given your explicit consent for this. If you agree to us sharing the

information you provide with other researchers (e.g. by making it available in a data archive) then your personal details will not be included unless you explicitly request this. All expert interviews, all participants working for various firms will be provided pseudonyms and the identity of their organisations will not be mentioned.

What will happen to the results of the research project?

The results of this study will be included in my PhD thesis which will be publicly available at the end of my study expected to be in 2022. Partial results might also be reported through publication in journal papers before the award of the PhD in the intervening period.

What is the legal basis for processing your personal data?

The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly. In order to collect and use your personal information as part of this research project, we must have a basis in law to do so. The basis that we are using is that the research is ‘a task in the public interest’.

Declaration of consent

- I confirm that I have read and understand the description of the research project, and that I have had an opportunity to ask questions about the project.
- I understand that my participation is voluntary and that I am free to withdraw at before 1st July 2020 without any negative consequences.
- I understand that if I withdraw I can request for the data I have already provided to be deleted, however, this might not be possible if the data has already been anonymised or findings published.
- I understand that I may decline to answer any particular question or questions, or to do any of the activities.

- I understand that my responses will be kept strictly confidential, that my name or identity will not be linked to any research materials, and that I will not be identified or identifiable in any report or reports that result from the research, unless I have agreed otherwise.
- I give permission for all the research team members to have access to my responses.
- I give permission for the research team to re-use my data for future research as specified above.
- I agree to take part in the research project as described above.

Participant Name (Please print)

Participant Signature

Researcher Name (Please print)

Researcher Signature

Date

Note: Further information, including details about how and why the University processes your personal information, how we keep your information secure, and your legal rights (including how to complain if you feel that your personal information has not been handled correctly), can be found in the University's Privacy Notice <https://www.sheffield.ac.uk/govern/data-protection/privacy/general>.

If you have any difficulties with, or wish to voice concern about, any aspect of your participation in this study, please contact Dr Paul Reilly, Research Ethics Coordinator, Information School, The University of Sheffield (ischool_ethics@sheffield.ac.uk).

Appendix VIII – Research Ethics Approval Letter



Downloaded: 17/01/2020
Approved: 17/01/2020

Elijah Chirwa
Registration number: 180213214
Information School
Programme: PhD in Information Systems

Dear Elijah

PROJECT TITLE: Investigating the fintech innovation process in Low and Middle Income Countries (LMIC): A Malawian perspective

APPLICATION: Reference Number 031794

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 17/01/2020 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 031794 (form submission date: 18/12/2019); (expected project end date: 01/10/2022).
- Participant information sheet 1073874 version 1 (13/12/2019).
- Participant information sheet 1073873 version 1 (13/12/2019).
- Participant information sheet 1072912 version 2 (24/11/2019).
- Participant consent form 1074086 version 1 (18/12/2019).
- Participant consent form 1074085 version 1 (18/12/2019).
- Participant consent form 1072913 version 1 (21/11/2019).

If during the course of the project you need to [deviate significantly from the above-approved documentation](#) please inform me since written approval will be required.

Your responsibilities in delivering this research project are set out at the end of this letter.

Yours sincerely

Paul Reilly
Ethics Administrator
Information School

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy: <https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure>
- The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.671066!/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.