

**AN INVESTIGATION INTO THE POLICY AND
REGULATORY CHALLENGES OF DIGITAL FINANCIAL
SERVICES ICT INFRASTRUCTURE IN ZAMBIA**

BY

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**A dissertation submitted to the University of Zambia in partial fulfilment
of the requirements for the award of the degree in Masters of Engineering
in ICT Regulation, Policy and Management.**

THE UNIVERSITY OF ZAMBIA

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APPROVAL

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ABBREVIATIONS AND ACRONYMS

DFS	Digital Financial Services
CDD	Customer Due Diligence
CFT	Combating Financing of Terrorism
CPMI	Committee on Payments and Market Infrastructure
EMV	Europay, MasterCard and Visa
E-Money	Electronic-Money
FinTech	Technology Enabled Financial Solutions
FATF	Financial Action Task Force
FINDEX	World Bank's Global financial inclusion survey
GSM	Global System for Mobile
GFC	Global Financial Crisis
GSMA	GSM Association
KYC	Know Your Customer
MM4P	Mobile Money for the Poor
MNO	Mobile Network Operator
MMO	Mobile Money Operators
MFS	Mobile Financial Services
NPS	National Payment System
NFC	Near Field Communications
PKI	Public Key Infrastructure
RBA	Risk Based Approach
RegTech	Technologies that facilitate the delivery of regulatory requirements.
SIM	Subscriber Identity Module
SMS	Short Message Service
SWIFT	Society for Worldwide Interbank Financial Telecommunications
USSD	Unstructured Supplementary Service Data

ABSTRACT

Digital financial services (DFS) regulations including that of mobile money services have been discussed at length in Sub-Saharan region as the answer to financially including the poor and provide access to affordable financial services. DFS set up costs are cheaper than traditional Brick and Mortar banking services and Africa is thriving at these initiatives as it benefits the underserved. This research was aimed at exploring the challenges of the Policies and regulations of digital financial services on Zambia's ICT infrastructure and brought out the inadequacies of the current Banking and ICT regulations. The research further unearthed the challenges of DFS ICT infrastructure and compared Zambia's regulatory challenges with similar World Bank Findex ranked developing countries around the globe. The discussions focused on the merits and demerits of overlapping jurisdictions of the Banking and ICT regulations and how they allow for enabling ICT environment to improve the overall underlying financial landscape and the financial inclusion ecosystem for the unbanked. The research also looks at the challenges of some dispute cases due to unclear regulations on the use of shared USSD ICT infrastructure on which DFS operates. Based on the research results, the study concludes by showing the exponential growth in the volumes of transactions on mobile financial services. The results also compare the financial risks thresholds and the tiered bands of regulation which are directly proportional and leads to increase in financial inclusion and brings about the convergence of traditional financial services and mobile financial services (MFS). The study further provides recommendations on the need for a consolidated, enabling, interoperable and harmonized set of policies and regulation to avoid restrictive regulations and allow for innovation in this space for the successful implementation and growing usage of DFS in Zambia.

Keywords: Digital Financial Services (DFS), Policies and Regulatory challenges, ICT Infrastructure, USSD, Mobile Financial Services (MFS), Mobile Money, Financial Inclusion

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter introduces the research study. It covers the motivation and significance of the research, the scope, statement of the problem and the purpose of the study. This is followed by the objectives, research questions and the research contributions. Finally, the organization of the thesis and a summary of the chapter is presented

1.2 Background

In the aftermath of the 2008 global financial crisis (GFC), and the catastrophic scale of regulatory failures, much attention has been paid to the various financial system regulation currently in force across all economies in the world. As a reaction to GFC, several countries have moved or are moving towards risk based regulation of both physical and digital money in order to foresee and avoid another global financial meltdown (Buckley & Arner, 2014).

Currently, economists estimate that only 8 percent of the world's money exists as physical cash, the other 92 percent is in the form of digital money (Economist, 2016). It follows that, most of the world's transactions are based on the 92 percent of the digital money. Digital payments are exchanged digitally using technologies which depend on Telecommunications infrastructure, public and private internet and intranets which have to be regulated to allow for improved competition, improved quality of service (QOS), increased investment, greater economic growth, consumer protection and financial inclusion. The use of digital financial services has increased exponentially in the last 10 years because of their easy on-boarding procedures and ease of use, allows for real-time transactions, affordable transaction costs, allows for audit trails, are convenient and easily accessible (Gates Foundation, 2017).

The evolution of payments started in the stone age where stones and shells were used as a store of value, medium of exchange and unit of account to now electronic funds represented as digital financial services (DFS). According to (Narula, 2016), there is a culture called the Yap that lived in Micronesia in the early 1900's, and they used limestone disks, called "Rai" stones as a means of money. They didn't actually move the stones around or exchange them the way we spend our coins today, because the Rai stones were massive stones, the biggest weighing 400

Kg and were 3.6 meters across. The Yap just kept track of who owned what part of the stone and this was publicly accepted as to who owned the value of the stones. After the stone era, most federal reserves and central banks printed banknotes according to how much gold or silver they held in their reserve vaults and for the last two decades, federal reserve and central banks now issue fiat money as legal tender. This legal tender is in the form of paper money or digital format.

According to a study by the world bank global Findex of 2016, digital financial services leads to a great increase in financial inclusion (World Bank, 2016). Financial inclusion is defined as a global effort that seeks to ensure that all individuals, households and businesses, regardless of income levels, have access and can effectively use the appropriate financial services they need to improve their lives. Financial inclusion is critical in reducing poverty and achieving inclusive economic growth. The world bank study furthers states that when people participate in financial systems, they are better able to plan for the future by saving and investing in good health to avoid diseases, plan for their children's future and plan for any other natural disasters. Research by the Bill and Melinda gates foundation also agrees that digital financial services (DFS) bring about financial inclusion and reduces poverty by enhancing education through innovation, improves planning for good nutrition to reduce child deaths and allows for the Investment in healthy societies (Gates Foundation, 2017).

It is against this background that DFS has provided the solutions to the long standing problems and has increased financial inclusion through agent banking and digital mobile financial services such as mobile money. Mobile financial services (MFS) on mobile platforms are loosely referred to as electronic money which is stored using the Subscriber Identity Module (SIM) as an identifier as opposed to an account number in the conventional banking business (ITU, 2017). This provides basic financial services and offers the alternative to traditional banking by using mobile telephony technology. Financial services in the developing world are traditionally provided through bank branch networks. In African and Zambia in particular, these networks tend to be concentrated in cities and for poor people in remote regions, access to financial services through bank branches has been severely limited and is unaffordable. In most low-income countries, people in remote areas perceive mobile banking as the best opportunity to bring financial services to the unbanked poor population.

Digital financial services have thrived and are greatly encouraged around the world because they have helped billions of poor people without access to formal banking services. It is estimated that that 1.7 billion of the world's population do not have access to any formal financial service (McCarthy, 2018). They are now most prevalent on mobile platforms and have

allowed access to financial services for poor people which cannot be facilitated by the traditional “Brick and Motor” model of banking where there are a lot of costs associated with setting up the infrastructure and maintenance costs are high and ordinarily passed onto the customer. Despite the improved use of DFS in Zambia, there is still a lot to be done in order to further improve the lives of the poor. DFS are facilitated by technologies which depend on telecommunications and ICT infrastructure, public and private internet. DFS are easy, convenient and affordable to use and brings with them bad vices, illegal and illicit activities such as money laundering and financing of terrorism, wars, drugs, child and human trafficking activities. The success of DFS largely depends on supervising, monitoring and regulation of both the service and the infrastructure which has many challenges. We do not know how regulatory enablers will allow for the continued growth of DFS and hence the need to understand and address the challenges of overlapping regulations between financial services and the ICT infrastructure on which these services operate.

This study compared the regulatory challenges of DFS in Zambia to similar findex ranked developing countries in Asia, Latin America, and the sub-Saharan region. It was also designed to evaluate the impacts of the financial risk thresholds on the current regulatory environment on DFS and to identify the challenges. The study also aimed to find how much collaboration and corporation is currently between financial institutions regulators and the ICT and telecommunications regulators in Zambia for DFS to improve the day-to-day lives of the common citizens.

1.3 Motivation and Significance of the Study

Access to basic financial services is a major challenge in developing countries. Many people do not have access to financial services to allow for sending and receiving money for their immediate use for upkeep, medical emergencies and to plan for the education of the children in our societies. Improving basic financial access for all requires enabling regulation of the ICT infrastructure on which these services operate. A functional and well regulated financial service in Zambia will allow for financial inclusion, reduction of poverty and for better emergency planning. Well regulated services will also allow for good financial security in order to reduce child deaths and allow for a healthy society.

1.4 Statement of the Problem

Despite the many studies in the literature reviewed in this research showing the relationship between the enhancement of digital financial services (DFS) and the enabling policies, rules and regulations around the world, in Africa and Zambia in particular, there is a lot that still needs to be done in order to bridge the gap between the technologies that facilitate DFS and the policies, rules and regulations that govern them.

There is a global push for decoupling the mobile money operators (MMO) from mobile network operators (MNO) which makes the MMO business unit to be covered under financial services industry regulation and the MNO under ICT and Telecommunications regulation. In Zambia, MMO are registered as separate strategic business financial entities from the MNO's core business of voice and data communication services and are covered under different regulations from different ministries as shown in Table 1.

Table 1: Regulation Jurisdiction of MMO and MNO

Financial Service Regulator Laws Ministry of Finance and National Planning	ICT & Telecommunications Regulator Laws Ministry of Transport and Communications
Bank of Zambia Act, No.43 of 1996	Information and Communications Technologies (ICT) Act # 15 of 2009
Banking and Financial Services Act, Chapter 387	Postal Services Act # 22 of 2009
National Payment Systems Act of 2007	Electronic Communications and Transactions Act # 21 of 2009

With regulation moving at a slower rate than the rapid technology evolution, an increase in regulatory openness is required to address and overcome regulatory blockers and seek regulatory enablers that allow for the continued growth of DFS and hence the need to understand and address the challenges of overlapping Jurisdictions between the ICT and telecommunications regulator and the financial services regulators. Before the 1990's there was only one financial regulators but the convergence of services is calling for multiple regulators as exhibited in the DFS time scale in Figure 1.

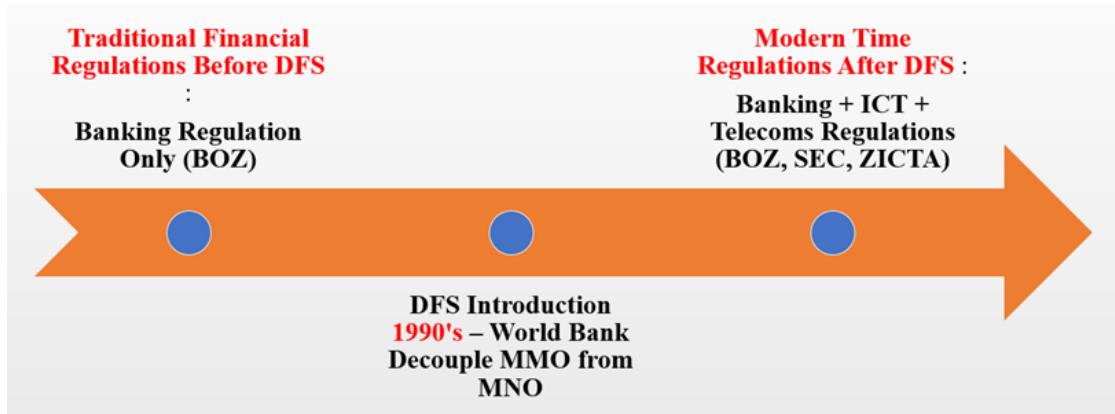


Figure 1: DFS Regulation Time Scale

Zambia currently has many DFS initiatives including online and mobile banking, Mobile Network Operator (MNO) run solutions such as MTN Money, Airtel Money, ZAMTEL Kwacha, mobile banking eWallets and Applications such as Kazang and Zonna. These need enabling policies rules and regulations to have a positive impact on the lives of ordinary citizens. The global push for decoupling the mobile money operations (MMO) from mobile network operators (MNO) meant the MMO business unit would fall under financial services industry regulation and the MNO under ICT and Telecommunications regulation and this brings about many challenges. The two regulators have to collaborate and regulate both the finances of the MMO and the Technology of the MNO. The MMO are registered as strategic business units (SBU) operating as financial entities from the MNO's core business of voice and data communication services. It is also not known whether the existing regulations adequately address the challenges posed to digital financial services and the ICT infrastructure on which these services operate.

1.5 Aim of the Study

The aim of the study is to bring out the current policy and regulatory challenges of Digital financial services ICT infrastructure and propose positive ways to overcome these challenges in order to financially include the common citizens in remote locations of Zambia.

1.6 Purpose of the Study

The purpose of this study is to bring out the main challenges of the current policies, rules and regulations on the digital financial services ICT infrastructure in Zambia and suggest ways of

how DFS can positively impact the citizens especially those in remote locations where traditional banking services are not accessible and are unaffordable. This study is important because it will aim to compare the regulations from the main financial services regulator and the ICT telecommunications infrastructure regulator in order to bring out and identify the current challenges of policies, rules and regulations and suggest positive ways of how to impact digital financial services in Zambia.

1.7 Research Objectives

This research was guided by the following objectives:

1. To Investigate and analyse the effects of integration, collaboration and cooperation between financial services regulators and the telecommunications regulators on DFS ICT infrastructure models.
2. To examine the impacts of the current regulation and policies relating to DFS Risk thresholds and overall financial inclusion in Zambia.
3. To identify any regulatory blockers and establish which other players in the DFS ecosystem can positively impact the current policies and regulations.

1.8 Research Questions

This research was guided by the following research questions:

1. How do we increase the current integration, collaboration and cooperation in order to overcome the policies and regulatory challenges of DFS ICT Infrastructure in Zambia?
2. What is the impact of the current regulation and policies on DFS Risks, integration, collaboration and cooperation between financial services regulator and the ICT and telecommunications infrastructure regulator?
3. Which other players in the DFS ecosystem can positively impact on the policy, and regulation of Digital financial services ICT infrastructure and what changes do we need to make for the continued success of DFS in Zambia?

1.9 Research Contributions

This research aims to contribute to the body of knowledge in that it brought out the inadequacies of the current Banking and ICT regulations in Zambia and proposed solutions to mitigate those challenges. The basic regulatory enablers that have produced the desired positive impacts around the globe have adopted the watch and learn approach to regulation as compared to the wait and see approach which we strongly recommend for Zambia's ICT and financial services regulation. The research further recommends that the financial services regulator, ICT regulator and the competition and consumer protection commission come up with an inter-ministerial working group that will work towards the implementation of a common regulation for the financial services and the enabling infrastructure. Some of this work has been published in the International Journal of Innovative Research in Science, Engineering and Technology (IJISET) and the Social Science Research Network (SSRN) available in the list of publications.

1.10 Organisation of the Dissertation

This thesis is organised into five chapters. Chapter 1 is the Introduction to the research and outlines a brief overview of the work done. This is followed by the background, motivation and significance of the study, problem statement, the purpose and research contributions. The chapter concludes by giving an outline of the entire thesis.

Chapter 2 looks at the literature review and the related works to this research. This chapter brings out a comprehensive digital financial services ecosystem and compares Zambia to other Findex ranked developing countries. The research methodology is given in Chapter 3 and highlights the research design, instruments, data collection procedure and the final analysis. The research further present the research findings and discussions in Chapter 4 based on the set objectives and the discussion, conclusion and recommendations follow on in Chapter 5.

1.11 Scope of the Study

The scope of the research was focused on the main financial services regulator and the ICT and telecommunications infrastructure regulator. The research also included data from the competition and consumer protection commission. The research strongly advocates for the need to carry out follow-on studies which should include challenges of regulation and the

impact of DFS digital identity, cryptocurrencies such as Bitcoin, Bitcoin Cash, Ethereum, Ripple and the Block Chain Technology.

1.12 Ethical Considerations

This research considered ethical issues and all the participants and organisations were treated with respect. Consent was obtained from participants before they participated in the study and the participants have the right to understand what the research accomplished and we have shared the findings through the published work in the list of publications attached.

The ethical clearance was obtained from the University of Zambia School of Natural and Applied Sciences research ethics committee and is attached as Appendix B.

1.13 Chapter Summary

In this chapter, the basic introduction of the work in the thesis was given. The chapter is an introduction to the research and covers the motivation, significance and the aim of the research. Digital financial services (DFS) have provided solutions to the long-standing problems and has increased financial inclusion through the internet, intranets and mobile financial solutions such as mobile money.

The success of DFS largely depends on supervising, monitoring and regulation of both the service and the ICT infrastructure on which these services operate. Regulating DFS has many challenges in the developing world which this study aims to investigate and provide practical recommendations. The chapter also includes the scope, statement of the problem, ethical clearance and the purpose of the study. This was followed by the objectives, research questions and research contributions. Finally, the organization of the thesis and a summary of the chapter is presented

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the literature reviewed and all the related studies to this research in Zambia, the Sub-Saharan region and the world as a whole. Firstly, we explored an extensive review of the regulatory challenges of digital financial services in developing countries in Asia, Latin America and Sub-Saharan Africa. The review begins with looking at the available literature on the topics from outside Africa and further focuses on the African continent and Zambia in particular. This was followed by the review of the regulatory rules in Zambia comparing the financial services regulations and the DFS ICT infrastructure and telecommunications regulation. The review also looked at some common dispute cases on the use of the USSD ICT infrastructure as the owners of the infrastructure are also running mobile money payment systems that operate on the same platforms. The chapter closes by looking at related works in other developing countries and how the regulation has been implemented to allow for the successful operations of digital financial services.

2.2 DFS ICT Infrastructure Ecosystem

The digital financial services ecosystem is made up of players in the digital financial markets which includes consumers, service providers, businesses, government agencies and non-profit groups who have needs for digital and interoperable financial products and services. The DFS ecosystem service providers include the banks, banking agents, mobile network operator owned mobile money business units, mobile money agents and other licensed non-banks financial institutions (Kunal, 2012). All these service providers make use of ICT infrastructure such as the internet, intranets, GSM mobile networks on wired and wireless circuits to make DFS possible. These supply products and services through digital means such as financial, technical, and other ICT infrastructures that make them possible and the policies, laws and regulations which enable them to be delivered in an accessible, affordable, and cost effective manner. The DFS ecosystem aims to support all the players and enterprises within a region and should strive to support national goals including financial inclusion, economic growth, financial stability and integrity of the financial systems.

The goals of financial services that are available through digital means are to contribute to the reduction in poverty and deliver on the recognized benefits of financial inclusion in developing

countries. Financial inclusion means the sustainable provision of affordable financial services that bring the poor into the formal economy (ITU, 2017). An inclusive system includes a range of financial services that provide opportunities for accessing and moving funds, growth capital, and reducing risk. Such services may be provided by banks and other traditional financial services organizations such as non-bank providers.

It has been pointed out that financial inclusion is a means rather than an end (AFI, 2017). Financial inclusion contributes to the development goals of poverty reduction, economic growth and jobs, greater food security and agricultural production, women's economic empowerment and health protection.

The following are some of the benefits of financial inclusion in a DFS ecosystem including, Transaction safety and security, speed and transparency; Increased transaction flexibility, savings incentives, women's empowerment and traceable credit histories.

Many poor people in developing countries, particularly those in rural areas, receive part of their income through domestic and international remittances. These monies sometimes do not arrive at all or do not arrive in time. The transfer can be costly and it is not clear to the payers that their funds will be directed to the proper purpose. DFS can reduce costs and increase the coverage of remittances transfers, making remittances of small amounts viable (AFI, 2017). In addition, DFS can enable remitters to direct funds directly to savings, health, education fees, or other types of targeted accounts that ensure funds are being spent as intended in order to reduce poverty. The increased flexibility of DFS due to enabling ICT infrastructure also allows for the poor to pay for goods and services online, pay-as-you-go, or through other payment options that more closely match their ability to pay.

The goal of the DFS ecosystem and the underlying ICT infrastructure is to allow for the development of financial services that make certain that services are able to efficiently and safely connect and integrate with many other financial services across countries. The core wired, wireless and hybrid physical infrastructure provide voice and data communications networks which are used as the platform on which all the other components of the ecosystem operate. As seen Figure 2, the ecosystem allows for financial inclusion and building of digital economies through availability, affordability, convenience and quality of services.

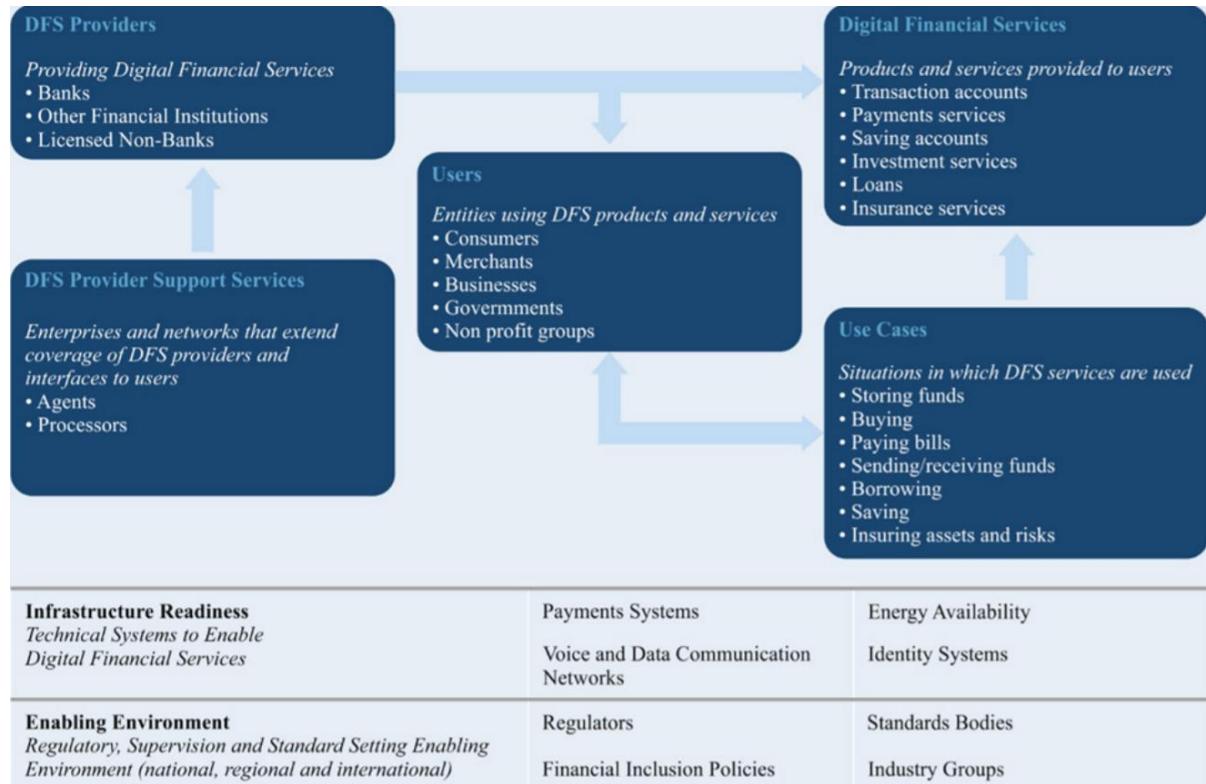


Figure 2: The digital financial services ecosystem (Source: (UNCDF, 2016))

2.3 DFS ICT Infrastructure for Selected Countries

The research reviewed studies on digital financial services regulatory challenges in developing countries similar to Zambia. We compared regulatory challenges in World Bank Findex ranked developing countries in Asia, Latin America and Sub-Saharan Africa. The mobile penetration in these regions are highest on 2G, 3G and 4G and allows usage on both the features phones and the smart phones.

With almost 92 percent of the world's money already existing as digital cash, DFS forms a major part of our financial lives today. Digital financial services will continue to surge as the price of the electronic equipment which supports is such as mobile phones, tablets and other electronic devices became cheaper than personal computers (Warner, 2016).

Establishing the right regulatory and policy template in the advent of these digital financial services is crucial. The implications of this complex, multiparty world of digital financial services for banks, governments and regulators are far-reaching. Indeed, regulators everywhere are concerned about the systemic impact of non-regulated entities that operate in parallel to established banks, particularly for retail financial services customers (Gates Foundation, 2017).

The mobile financial services are largely adopted in Latin America and Sub-Saharan African regions because the traditional banking models are expensive to set up and have a low return on investment for the financial institutions. The GSM Association of the mobile economy report of 2018 depicts mobile penetration in Latin America and Sub-Saharan Africa as highlighted in Figure 3 (GSMA, 2018). As of 2017, Latin America has 50 percent mobile internet penetration with 21 percent for Sub-Saharan Africa with the penetration growing at a high rate.

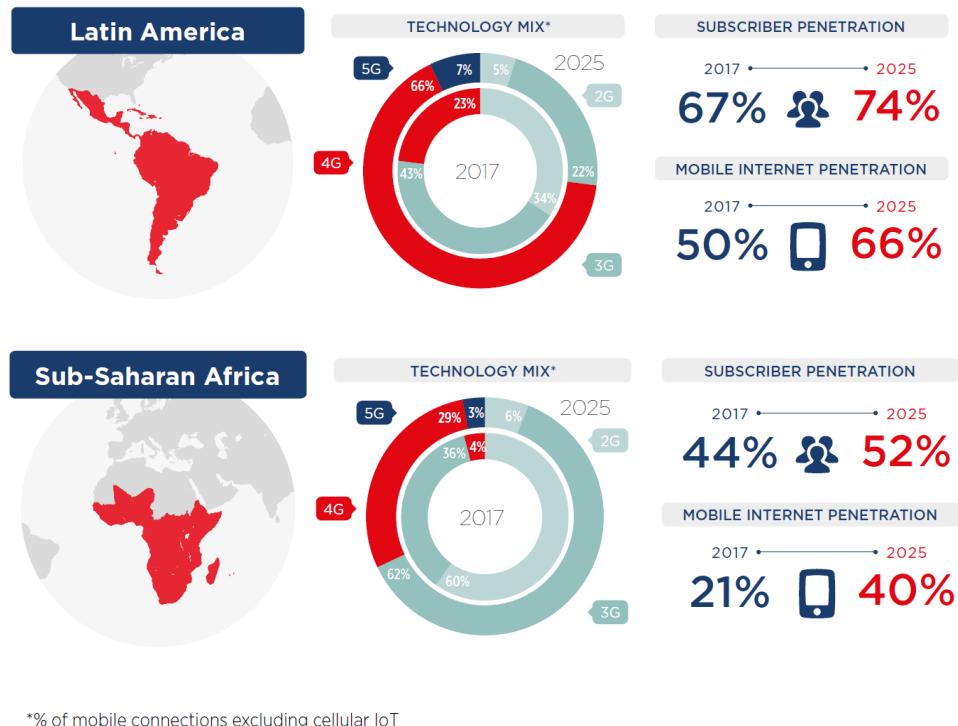


Figure 3: Mobile penetration in Latin America and Sub-Saharan Africa (Source: (GSMA, 2018))

At present, the largest and most active DFS market on the globe is China in the Asian-pacific because of its vast population and an enabling regulatory environment. China has enjoyed a fast and stable growth of DFS which has been made possible by the following contributing factors. China has a pervasive stable ICT infrastructure which has allowed for the rapid take up of smart phones and widespread internet access. It also has a widespread banking infrastructure which comprises of state Banks that have led the way to roll out affordable bank accounts and universal cash handling ICT infrastructure and traditional postal services.

A study on China's financial system further suggests that China has a strong digital financial services sector as demonstrated by the Baidu, Alibaba and Tencent (BAT) internet giants.

These internet providers are guided by enabling regulations and policies and have adjacent business models which enables cheap offerings and allows for a culture of customer responsiveness which has helped to build trust and increased overall financial inclusion (Qian et al., 2014).

According to the World Bank and G20's Global Partnership for Financial Inclusion (GPFI), 2.5 billion people worldwide remain excluded from access to financial services. (GPFI, 2017). The World Bank views financial inclusion as an enabler and not a primary goal and through the United Nations sustainable development goals and defines the global development agenda through 2030. The G20 GPFI came up with practical recommendations for financial services regulators and policy makers worldwide which have been adopted by many developing countries including Zambia. Further research by the GSMA Association recommends the regulation of mobile financial services (MFS) such as mobile money as an alternative to the unbanked who have no access to formal financial services (McGrath, 2016).

Data from the International Telecommunications Union (ITU) facts and figures focus group technical report indicates that, the number of people connected to mobile services surpassed 5 billion globally, with 3.7 billion in developing markets. As such, two out of three people in the world had a mobile subscription by the end of 2017 (Perlman, 2017). This increased usage translates into an increased use of mobile financial services on the mobile platforms. The report investigates the evolution and sampling of the different types of ICT technologies used in digital financial services. The report further states that the smartphones provide an enhanced interface and user experience for customers, offering access to a range of external DFS services which are not available for the text-based SMS and USSD platforms. The ITU policy and regulation on these DFS services refer to the regulatory frameworks within developing countries across the globe. A regulatory framework involves several different aspects including the typical cash-in cash-out (CICO) service for the poor, policies and guidelines to govern and supervise specific aspects of DFS. These guidelines ultimately govern what types of institutions can offer DFS, to what extent and in which contexts. In view of the studies above, most global efforts through organisations such as the World Bank through the G20, ITU and GSM Association recommend for DFS providers to continue offering valuable services that contribute to financial inclusion and act as an alternative for the unbanked poor populations in remote areas.

The ITU Focus Group Digital Financial Services has prepared a set of recommendations for consideration by in-country regulators, policy makers, and other stakeholders in the ecosystem. These recommendations will support a DFS ecosystem that enables financial inclusion through

the delivery of affordable, accessible, secure, transparent, and robust DFS to end users. The Focus Group members recognize that financial inclusion contributes to the development goals of poverty reduction, economic growth and jobs, greater food security and agricultural production, and women's economic empowerment and health protection.

The recommendations assume a willingness by in-country regulatory bodies and authorities, including financial service authorities, central banks, ICT and telecommunications authorities, competition and consumer protection authorities and joint bodies to collaborate to enable a DFS ecosystem to support financial inclusion. It is also noted that the ecosystem, and the ways in which different regulators are involved with the ecosystem, are evolving with technology. The incremental costs and other burdens of regulation are noted and the allocation of these costs to various stakeholders needs to be determined. The Focus Group recommendations have been informed by the G20 high level principles for Digital Financial Inclusion, the guiding principles stated in the CPMI/World Bank PAFI report, and the FATF Principles (FATF, 2015). The work of the Focus Group included mapping out key roles in the DFS ecosystem. These definitions and the related DFS glossary are provided in the published Focus Group report, "The Digital Financial Services Ecosystem". It is recommended that the Glossary be a "live" document within the ITU, with ongoing additions and amendments as the infrastructure and technology evolves.

2.3.1 DFS in South Asia and Latin America

In India, a study conducted by S. Thomas and P. Mohanty (2014) on the financial sector regulation states that digital financial services are easy to use in real time and affordable because of their convenience, traceability and accountability. DFS has many advantages and their ease of use brings with them illegal and illicit activities such as money laundering and financing of terrorist activities. The study further recommends that following the global financial crisis (GFC) of 2008, the world needs strong policies, rules and regulations to guide the use of DFS to allow for a fair playing field for the Incumbents and competitors in the DFS Space.

Further results from a recent study conducted by Deloitte and Touché on the digital revolution in India shows that the India Stack and the Aadhaar digital biometric identification programs are being championed by the government and ICT financial systems regulators to promote a country-wide digital financial service (Deloitte Touché , 2016). India had their fair challenges of digital financial services ICT infrastructure as highlighted the digital payments for rural

India challenges and opportunities (Ali et al., 2017). As a continuation of policy evolution of telecommunications industry within the country and the international arena in the context of millennium development goals, India implemented a national optical fiber network (NOFN) ICT infrastructure which is largely operated by the public sector organizations using the universal service obligation fund. The NOFN connects 250,000-gram panchayats, a local administrative region for a group of villages and aims to deliver ICT based goods and services to the rural households in partnership with private service providers.

The research also compared Zambia to a study that looks at Pakistan's nearly decade old experience with regulating digital financial services. It is referred to as branchless banking and constitutes of Institutions providing microfinance services in Pakistan including microfinance banks (MFBs), microfinance NGOs, and commercial banks, along with government-supported rural support programs (RSPs). MFBs and commercial banks are regulated by the State Bank of Pakistan (SBP), Microfinance NGOs and RSPs, neither of which can accept deposits. (SBP, 2014). The State Bank of Pakistan regulation encouraged the implementation of the over the counter (OTC) truncations as a necessary step and not a missed opportunity to enhance the use of digital financial services. Pakistan used OTC as a stepping stone to DFS and extensively considered the ways of transacting before mobile financial services (MFS), the trust level amongst people in financial transactions, the literacy levels and the market share and room for an interoperability of services.

Pakistan has a specialized law for MFBs, the microfinance institutions ordinance, and prudential regulations for MFBs. There are also specific guidelines on Islamic microfinance issued by the SBP. A pilot Microfinance-Credit Information Bureau developed through a public-private partnership among the SBP, the microfinance industry and a private sector credit bureau was launched in May 2010 in Lahore. The Pakistan government also regulates the national financial switch which now provides the lowest ATM rates in the world enhancing the provision of digital financial services.

Still in Asia, a country report by better than cash alliance outlines that the government of Bangladesh implemented a nationwide mobile payments system called Bkash in 2017. Bkash has rapidly grown the mobile payment services, transforming people's ability to save money securely and access it conveniently. The report further shows that Bangladesh is making significant strides toward a digital economy, and outlines specific policy measures that can underpin further digitization of payments into the future. This has made life better and business easier for the citizens. The Bkash service in Bangladesh is an over-the-counter service, and agent liquidity is managed much more directly by the mobile operators themselves. Bkash is

successful because of favorable regulations that allow for transactions to be over-the-counter (Bangladesh, 2016).

In Latin America, we compared Zambia with Peru which has implemented Modelo Peru, a collaborative government effort to establish an inclusive nationwide digital payments platform, the first of its kind in the world and positively impacting day-to-day life of its citizens. It is a fully-interoperable and accessible mobile money platform. Modelo Peru is a large, collaborative effort between the government and more than 30 financial service providers, telecommunication companies, and other stakeholders to create BIM (Billetera Móvil). BIM was designed to bring together financial institutions, government, telecommunications companies, and large payers and payees to cooperate in constructing a shared infrastructure for mobile payments. It is a fully-interoperable e-wallet that operates on any smart or feature phone across all mobile networks. Using an ecosystem approach, Peru has developed a mobile money infrastructure that has all players share a common brand, technology, agents and even contact centers. Peru is well regarded internationally for having a well-developed formal financial sector. However, more than 70 percent of Peruvians are excluded financially. (Bower , 2015). This is for a variety of reasons, including high transaction costs, financial illiteracy, and lack of accessibility in remote areas. Through Modelo Perú, a unique collaboration between the country's financial institutions, government, telecommunications companies, large payers and payees. Together these institutions have constructed a shared infrastructure for mobile payments, which forms the basis for competition on customer acquisition through product, all with a unifying goal of financial inclusion.

2.3.2 DFS in Sub-Saharan Africa

In Sub Saharan Africa, most countries are still using feature phones on GSM 2 and 3G platforms which are still supported by the telecommunications infrastructure. There has been an increased use of smart phones and the adoption trends are growing in urban areas. The distribution of technology across Latin America and Africa shows how technology is shifting towards 5G but Africa still has large subscriptions on 2G and 3G platforms (GSMA, 2018).

We looked at a study in Ghana that revealed the positive effects of DFS mobile money on national payment systems. It further showed how enabling regulatory frameworks make a significant impact in the uptake and active usage of mobile money services and allows for

buying treasury bills through mobile money, saving and the buying of insurance. The change in regulations has contributed to turning mobile money around in Ghana in three short years.

The landscape overview of DFS in Ghana is determined by the government and other regulatory bodies which provide an enabling environment for mobile money operators (MMO) because of their many merits. MMO presents a new set of operational challenges for the central bank. A study on an effective and robust legislative and regulatory setting recommends that telecommunication companies and commercial banks partnership led models would be easier to regulate (Tagoe, 2016). The telcos must be ring fenced from the Mobile Network Operations to allow for taxation and clear business operating purposes. This model called for a robust legislative and regulatory framework otherwise the telco's would be controlled by a few players on the market because of their subscriber base. The model would also take advantage to charge higher fees and engage in activities outside the boundaries of Banking and Non-Banking financial institutions such as the players in the financial services industry including insurance and money lenders. In effect, the mobile money operator business unit of telco's would be duly decoupled from the MNO and operate as either a Banking Institution or Non-Banking Financial Institution, whichever is appropriate. The national telecommunication commission should still remain as the regulator of the core operations of the telco's while the Bank of Ghana (BOG) takes up the regulatory role of the mobile money and other financial services provided by the telcos.

Ghana has a total of 28 banks and less than 1000 ATM's to support its over 22 million population (Boadu & Birago, 2010). Mobile money with numerous agents and is much more accessible to any ordinary Ghanaian than the formal banking services. This helped the Micro banking financial institutions to go deeper into remote areas very quickly without a substantial increase in the costs. Financial inclusion has a multiplier impact on the lives of the people drawn into the formal financial system, which leads to social inclusion. When the poor people get access to financial services, their cash flow management gets better, their financial planning is enhanced and their savings are increased with increased options for their old age.

To further enhance the benefits of mobile money to the financial ecosystem, the Central Bank of Ghana (BOG) introduced new regulations to govern electronic money transactions and also mobile money agent services. The new directives encompassed all electronic money activities including; mobile money, magnetic debit and credit cards, and internet based money. In July 2015, the Bank of Ghana (BOG), served a notice to revoke its guidelines for branchless banking and replaced them by two different guidelines which were dubbed "Guidelines for E-Money Issuers in Ghana" and the "Agent Guidelines" (Konutsey, 2016).

The core of the electronic money issuers guidelines is for all non-banking institutions in the business of mobile financial services to be licensed as dedicated electronic money Issuer (DEMI) institutions. This decoupling regulation required all MNOs to register new companies, appropriately incorporated in Ghana, to assume responsibility for their mobile money operations as separate legal entities from their core business of voice and data communication services.

The guidelines proceed to identify clearly laid out objectives which include the promotion of financial inclusion initiatives by extending financial services beyond traditional branch-based channels, limiting electronic money issuance only to duly licensed financial institutions that are regulated under the Banking Act, 2004 (Act 673). The guidelines also ensure adequate transparency, fair treatment, and effective recourse for e-money customers. With these objectives, far reaching directives have been issued by these guidelines to bring about uniformity in e-money transactions and hence making room for easier enforcement of regulation by the BOG. These will bring about very notable changes in the operations of Mobile Money services going forward. These guidelines also introduced three-tier risk-based Know Your Customer (KYC) documentation processes with progressively higher capped daily and monthly account balance limits and correspondingly more stringent KYC requirements at each tier of mobile money account opening. Another significant fiat issued by the BOG is for DEMIs to pay interest on balances in mobile money wallets. The guidelines proceed to enhance proof of identification to cash out money from an agent (over-the-counter) depending on the amount involved. Also, the document captures consumer protection rights and provides specific directives in the case of insolvency of DEMI or bank partner. DEMIs are required to provide insurance cover on customer wallet balances under the upcoming deposit insurance protection policies for banks. Finally, the Guidelines proceed with clear directives on how dormant mobile money accounts should be handled.

Studies in Tanzania further affirmed that government driven approaches have fostered private digital financial services innovation due to open regulation (Butt & Mirzoyants-McKnight, 2014). The services are interoperable and have made a difference to the market that has almost become saturated from a growth perspective.

Since launching in Tanzania in 2008, mobile money has helped to expand access to financial services to almost half the population. However, gaps still exist in extending service to vulnerable groups such as the rural poor and expanding the range of services to current users.

In late 2013, the government of Tanzania released its National Financial Inclusion Framework (NFIF) as part of its commitment to the Maya Declaration, which included a pledge to increase the level of Tanzanian adults with formal access to financial services to 75 percent in the next six years. The framework was to be implemented from 2014 to 2016 and oversight of the implementation process was the responsibility of the Financial Inclusion National Council, a body comprising 11 member institutions from various government ministries including the Bank of Tanzania and the Ministry of Finance. The Maya Declaration is the first global and measurable set of commitments by developing and emerging country governments to unlock the economic and social potential of the 2.5 billion ‘unbanked’ people through greater financial inclusion. More than 90 such countries representing more than 75 percent of the world’s unbanked population have supported the Declaration. Each country makes measurable commitments in four broad areas that have been proven to increase financial inclusion.

Within the framework itself, the government has provided its own definition of financial inclusion as: “Regular use of financial services, through payment infrastructures to manage cash flows and mitigate shocks, which are delivered by formal providers through a range of appropriate services with dignity and fairness.” The framework also identified barriers to financial inclusion and four priority areas that it believes to be central to reducing these barriers. Among these barriers are strict Know Your Customer (KYC) regulations; information asymmetry for both consumers and providers of financial services, insufficient access to service points and delivery channels, a lack of consumer-focused products and the lack of interoperability among financial service providers, including banks, MFIs and mobile money providers (Carlyle, 2014).

In addition, the framework focuses on reducing information asymmetry for providers of financial services. In the context of scarce information about consumer behaviors and needs, financial services providers tend to rely on their “gut feeling” rather than hard facts when developing new products or modifying current market offers. This approach leads to the scarcity of consumer-focused products as discussed above. Access to research data and insights can stimulate the appearance of products and services which will address the demand-side needs more effectively.

Since the framework came out, the government has been demonstrating its commitment to financial inclusion by investing in improving rural telecommunications infrastructure and the central bank engaging mobile network operators (MNOs) and commercial banks to develop a strategy for mobile money interoperability. This strategy is promising a number of innovative solutions

Research results from Rwanda suggest that a high degree of coordination and direct communication already exists between the Rwanda Utilities Regulatory Authority (RURA) and the National Payments Council, an entity under the National Bank of Rwanda (Biallas et al., 2012). Rwanda also has the consumer protection legislation which includes the regulations for market competition and also has specific competition regulations, such as the Fair Competition Act of 2003. This type of coordination has increased the access to finance in for the past five years.

Further review of Rwanda found that the financial sector is primarily composed of banking, microfinance, pension and insurance sub-sectors. The financial institutions in these sub-sectors, as well as the payment system and the credit information system, are regulated and supervised by the National Bank of Rwanda. The Capital Markets in Rwanda are regulated by the Capital Market Authority (CMA) which is also an integral part of the Rwandan financial system. The Current Rwandan banking system is composed of 11 commercial banks, three microfinance banks, one development bank and one cooperative bank. The sector is dominated in terms of total assets by banks at 66.9 percent, followed by pension sub-sector (17.1 percent); insurance (9.7 percent) and microfinance sector (6.3 percent) (BSR, 2018).

In addition, enabling regulation has allowed for an important partnership between Visa and the Government of Rwanda with the intention to develop local payment solutions to extend access to financial services to international and local consumers throughout the country. The partnership addressed three critical areas including the laying of the foundation for electronic payments, Promoting electronic payments innovation and the building the country's financial capacity (Margarete et al., 2012).

We continued with our African tour and compared to Kenya, the poster country for Mobile financial services on the globe. Kenya offers lessons to policy makers on both the conditions and policies that have allowed for an innovative ICT-based financial service to scale, with positive effects on the rest of the financial services system. Several studies postulate that the Central Bank of Kenya (CBK) was willing to support a mobile money pilot and found a balance between regulations, oversight, and flexibility for the mobile operators to experiment and be allowed to fail or thrive which led to the success of the famous M-Pesa since its inception in 2007 (ADP, 2013).

Furthermore, the Kenyan MNOs' telecommunications activities are supervised by the Communications Authority of Kenya ("CAK") with the Central Bank of Kenya ("CBK") supervising DFS functional responsibilities. The CBK did not supervise Safaricom's use of

agents, nor agent liability during the market's development phase. Technological innovations and financial inclusion were able to flourish while developments were monitored and the financial system's integrity maintained. Supervising and regulating mobile money was to be undertaken once the market was established. Accordingly, the National Payments Systems Regulations 2014 ("NPSR") have now brought all payment service providers, e-money issuers, and their agents within the CBK's DFS supervisory ambit.

In addition, the Competition Authority of Kenya ruled that Safaricom's contractual agent exclusivity clause was unenforceable, thereby allowing other MNOs to utilise its agent network. With DFS institutional demarcations being eroded by MNOs, the functional approach to supervision is proving to be an efficient way to regulate the use of agents. Kenya has seen phenomenal growth in DFS. High mobile phone penetration rates allowed Safaricom to reach over 17 million customers or two-thirds of the adult population, including the unbanked, disadvantaged, and marginalised communities. Around 25 percent of Kenya's gross national product flows through Safaricom's M-Pesa network (Economist, 2013). The M-Pesa network operates on mobile phones and therefore does not require traditional bank accounts. To gain access to M-Pesa e-money, customers purchase SIM cards and airtime through Safaricom's master agents. M-Pesa retail agents, which number over 32,000, allow customers to top-up or withdraw cash and make digital fund transfers and payments.

Similar to most African countries, Zambia also adopted the decoupling of the MMO from MNO's which meant that the MMO business units fall under financial services industry and the MNO falls under the ICT and telecommunications industry. Subsequently not all MMO users are required to open accounts and many of them are only required to register with their phone numbers. This is where the Branchless banking is more effective as all the agents are duly registered by the MMO unit and the telcos are responsible for the agents. Therefore, the Telco's strictly monitors and evaluates the MMO agents on a regular basis to ensure proper record keeping and strict adherence to regulations. Government is also able to generate more revenue when financial services of the telcos are properly supervised and all the appropriate taxes are collected. The government has a major role in developing the mobile money ecosystems and the regulators are responsible for providing environments that enable the digital financial services ecosystem to develop.

2.4 DFS Technologies and Providers in Zambia

According to a technical report by the International Telecommunications Union (ITU), on the technical evolution and innovations in digital financial services, DFS is facilitated by

technologies which depend on telecommunications and ICT infrastructure, the Public and Private Internets (ITU, 2017). The success of DFS largely depends on the coordination and collaboration of the financial and ICT and telecommunications regulators in any region. Further, documentary evidence from the state of digital financial services markets in Zambia, by the United Nations Capital Development Fund (UNCDF) suggests that Zambia already has many digital financial services initiatives including digital banking and mobile financial applications, Mobile Network Operators (MNO) operated solutions such as MTN Mobile Money, Airtel Mobile Money, ZAMTEL Kwacha, Kazang and Zonna (UNCDF, 2017). For these services to continue functioning, they need to be supported by enabling policies, rules and regulations to continue having a positive impact on the lives of the citizens.

As of June 2017, there were 18 banking institutions and 40 digital financial services providers in Zambia as listed in Table 2 and the number has continued to grow. The money transfers and payment services are facilitated by the Mobile Network Operator (MNO) provided Unstructured Supplementary Service Data (USSD) platform. The USSD is the protocol used by GSM cellular networks for real-time communication with the MNO server infrastructure. In Zambia, the USSD platform is provided by the three licensed MNO namely Airtel Zambia Limited, MTN Zambia Limited and ZAMTEL telecommunications company. The MNO's that provide the USSD platform also provides mobile financial services and have to compete with all the other players on the market. The competitors have to buy the service and capacity on the USSD platform from the MNO. There is always rivalry that occurs because one or more DFS competitors feel the pressure to have more capacity on the USSD platform but the provider who is also in competition implores some defense marketing strategies and sometimes provide a poor service. This has been the challenge for all the other players and the competition and consumer protection commission of Zambia (CCPC) has been in the center to allow for fair playing fields and fair access to these USSD platforms.

2.4.1 Implementation of DFS Payment Systems in Zambia

Table 2 shows the list of some of the DFS providers registered in Zambia. The full list of digital financial services is attached in Appendix D. These service providers use the USSD platform provided by the three mobile network operators namely Airtel Zambia, MTN Zambia and ZAMTEL telecommunications which were decoupled and have subsidiary business units which also operate mobile money. The subsidiary mobile money operators as highlighted in Table 2 are, Airtel Mobile commerce Zambia limited, MTN Mobile money limited and

ZAMTEL Kwacha and have a competitive advantage over the other players because their parent MNO companies own the USSD platform. Table 2 is the list of some of the regulated DFS service providers in Zambia.

Table 2:DFS Payment Systems Providers

Item	Digital Financial Services DFS Operators (USSD MNO Platform)	Service Provided
1	Airtel Mobile Commerce Zambia LTD	Mobile Payment Services And Money Transmission Service
2	AB Bank	RIA International Transfers (Money Transmission Services)
3	Access Bank	Western Union International Money Transfer (Money Transmission Services)
4	Bayport	Mobile Payments Solutions (MPS) Money Transfer (Money Transmission Services)
5	Brookfield LTD T/A Genesis Global Finance	World Link International Money Transfer (Money Transmission Services)
6	MTN Mobile Money LTD	Mobile Payment Services And Money Transmission Services
7	Zamtel Kwacha	Mobile Payment Services And Money Transmission Services

2.4.2 Mobile Telecommunications Infrastructure in Zambia

The USSD platform is part of the overall mobile network elements infrastructure which is under the regulation of the ICT and the telecommunications regulator. It is composed of the terrestrial networks that connect the internet, intranets, base stations and communications towers in different locations. This infrastructure can be wired, wireless or a hybrid to allow the base stations communicate with the subscriber identity module (SIM) which resides on the handset. Figure 4 shows the overall mobile network elements infrastructure.

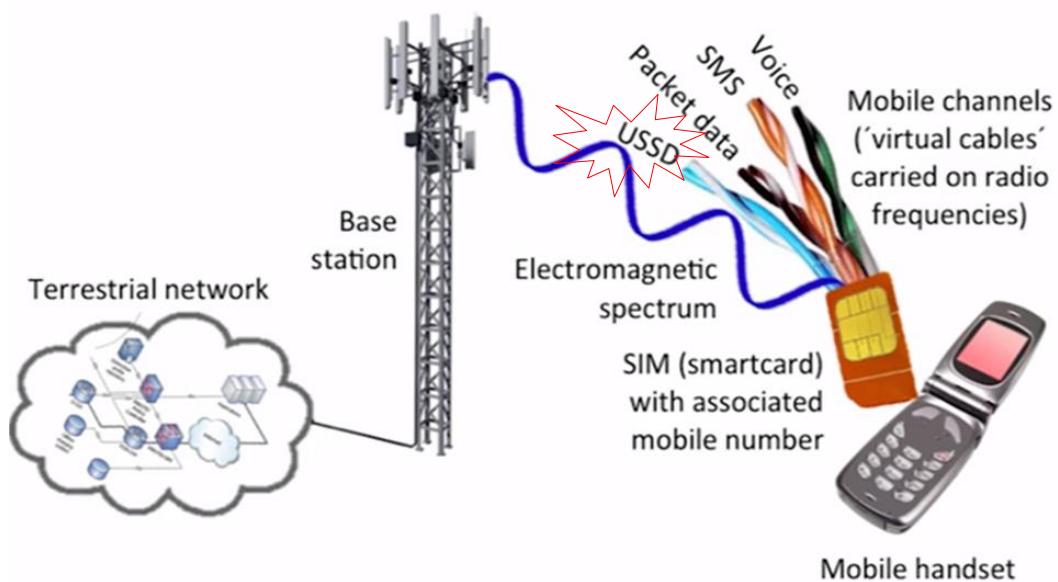


Figure 4: Mobile Telecommunications Infrastructure (Source: (ITU, 2014))

The Unstructured Supplementary Service Data (USSD) is a technology unique to GSM (Global System for Mobile Communication). USSD is sometimes referred to as the "Quick Codes" or "Feature codes", and is a communications protocol used by GSM cellular telephones to communicate with the mobile network operator's infrastructure in real-time. USSD can also be used for services such as prepaid call back service, mobile-money services, location-based content services, menu-based information services, and as part of configuring the phone on the network. It is a capability built into the GSM standard feature phones to support transmitting information over the signaling channels of the GSM network. USSD provides session-based communication, enabling a variety of applications. Financial service providers have envisaged USSD as a channel through which both the challenges of application downloads and typing the syntax, can be avoided, thus bringing a larger mass of customers to use Mobile Banking and also encourage Financial Inclusion even for customers with low literacy levels.

USSD has the following advantages:

- Ease of use and works on all GSM mobiles including feature and Smartphones.
- More secure than traditional SMS platforms.
- No application installation is required.
- USSD allows for applications with an interactive Menu.

2.4.3 How USSD is used in Mobile Banking

The USSD based communication on mobile platforms can be used for checking your account balance, generating mini statement or funds transfer. USSD messages can allow up to 182 alphanumeric characters long. Unlike Short Message Service (SMS) messages, USSD messages create a real-time connection to the service providers' infrastructure during a USSD session (ETSI, 2013). The connection remains open to allow a two-way exchange of a sequence of data. This makes USSD more responsive than other services that use SMS and allows transactions to be done in real time. Table 3 exhibits the products that are used on the USSD platform.

Table 3: Products used on the USSD Platform (Source: (ITU, 2014))

Provider Type	First and Second Generation Products	
 Mobile network operators	Person-to-person transfers Cash-in, Cash-out Airtime purchases Bill (utility) payments International remittances Loan disbursements	Loan repayments Microloans (Microcredit) Micro insurance Bulk payments Merchant payments Bill payments (Collections)
 Mobile banking	Money transfers Airtime purchases	Merchant payments Bill (utility) payments
 Third-party providers	Money transfers Cash-out from bank account Airtime purchases	Merchant payments Bill (utility) payments

2.4.4 Regulatory Enablement in Asia, Latin America and Sub-Saharan Africa

From the literature reviewed and benchmarking Zambia against India and Bangladesh in Asia, Peru in Latin America and Ghana, Tanzania, Rwanda and Kenya in Africa. The regulatory index openness is compared against certainty shows that the countries with more open regulation have better uptake of digital financial services. Figure 6 communicates the outcome of comparing enablement across regulatory environments which allow for affordability, access, usage and fair competition for infrastructure. It was reviewed that the increase in regulatory openness allows for innovation by the market players so that new innovative products can be

tried out. The increase in regulatory index frameworks certainty facilitates an enabling environment for innovation and the investment of resources into digital financial services. Figure 5 also depicts the growth-share matrix which is sometimes called the Boston Box or the BCG-matrix developed by the Boston Consulting Group (Sebastian et al., 2014). The model is based on the product life cycle theory that is used to determine the priorities that business units should adopt in order to create long term value. The model compares market shares and the market growth which is similar to comparing enablement across regulatory environments and the quadrant that facilitates the growth of digital financial services. The open regulatory environment allows for innovation and the clear regulatory index provides for an enabling environment for digital financial services to thrive.

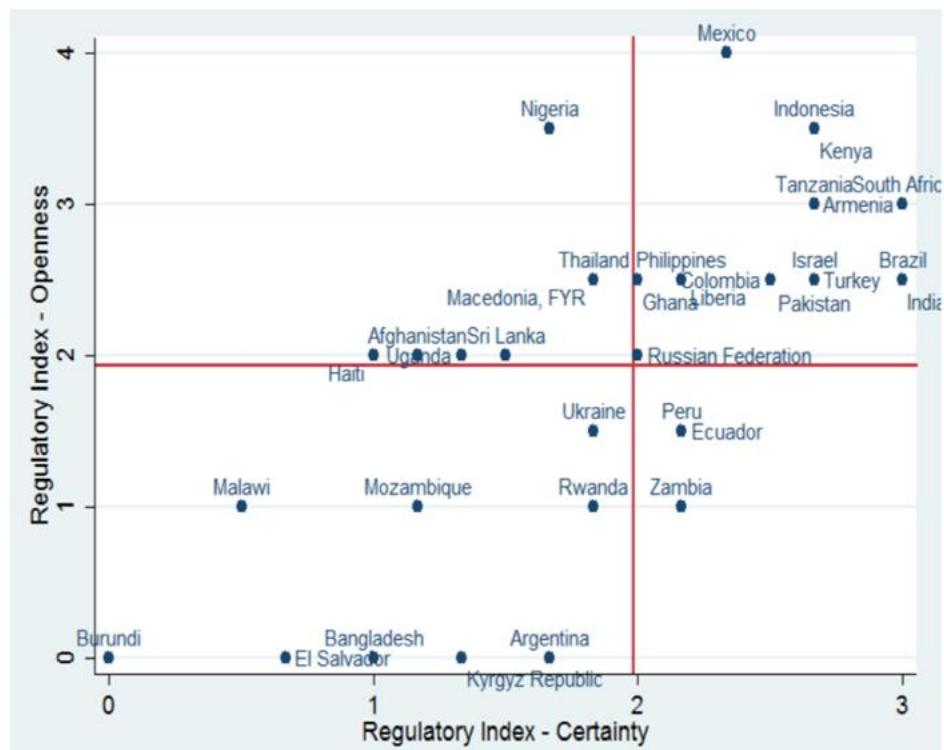


Figure 5: Comparing enablement across regulatory environments (Source: (CGAP, 2016))

From Figure 5, we further argue that both regulatory certainties which is stability in regulation and regulatory openness which are the policies that favor the introduction of new technologies are necessary for mobile financial services adoption. The index of regulatory favourability towards mobile money and the relationship between the index and actual end user behavior using the Global Findex to track outcomes for 35 countries, finding that overall, regulation is a significant factor in explaining mobile money usage among both the banked and unbanked (CGAP, 2016).

2.4.5 Related Works

There has been some related works done on the Zambian ICT Infrastructure Sector Performance Review in 2009. The research by Shuller Habeenzu titled “Towards Evidence-based ICT Policy and Regulation” focused on the renewed surge in the telecommunications reform process, which had stalled since the 1994 liberalisation of the sector (Habeenzu , 2010). In the period 2009 to 2010, the government of Zambia has undertaken major reform initiatives that are intended to further open the market to new entrants and to enhance competition. These measures include the development of a national ICT policy, enactment of the Information and Communications Act in 2009, partial privatisation of the loss-making incumbent ZAMTEL, and liberalisation of the international gateway, which has resulted in significant tariff reductions. This research was vital for ICT infrastructure policies and regulations however, Habeenzu concluded that the Government should rescind the policy decision to restrict market entry as this would hamper the development of a competitive environment which is the key objective of the National ICT Policy and ICT Act of 2009. The study also concluded that reviewing the licensing regulations and revise licensing fees downwards was significant to encourage local entrepreneurship in the ICT sector.

Other related works were done in 2007 on the Zambia ICT and Telecommunications sector performance Review, a supply side analysis of policy outcomes by Sikaaba Mulavu (Sikaaba , 2007). Sikaamba summarised the study by stating that due to the remarkable increase in the number of mobile cellular phone subscribers, mobile penetration has mainly been centred in urban areas. It should nonetheless be acknowledged that efforts were under way by both mobile cellular phone providers and the national Telecommunications company ZAMTEL to extend their services to rural areas. However, penetration of telecommunications services to rural and underserved areas still remained one of the challenges in the sector. There was therefore need to promote universal access to ICT services by extending the same to rural and underserved areas and institute a pro-rural licensing and investment regime (such as duty exemptions on equipment and accessories deployed in rural areas thereby attracting investment and reducing the cost of ICT services) as well as promote awareness and community based ICT initiatives.

In another study by Price Waterhouse and coopers (PWC), on the challenges of the ICT telecommunications infrastructure, cable, satellite Internet and intranets in Sub-Saharan Africa, PWC postulates that in the 1990s and early 2000s, many African countries moved to liberalise their telecommunication markets. They aimed to increase competition and thereby introduce lower prices, more choice, greater investment and improved service quality. This widespread

deregulation set the scene for the rapid expansion seen during the past decade, and the entry of international players seeking to capitalise on investment opportunities (PWC, 2013). With billions of dollars of international investment flowing into Sub-Saharan Africa, and subscriber numbers continued rising across the continent, Africa's communications marketplace has now passed the tipping point from high potential to high growth. Unburdened by a legacy of installed telecom infrastructure, Africa has leapfrogged the fixed-line phase of development to go straight to mass-market mobile networks and services.

All of these studies focused on the regulations and policies of ICT infrastructure and did not take into consideration policy and regulatory challenges of digital financial services infrastructure in Zambia and hence the significance of this research.

2.4.6 Chapter Summary

This chapter provides an overview of the literature that was reviewed in the study. The chapter outlines other researchers work on the regulatory challenges of ICT infrastructure and how they impact on digital financial services that use the underlying substructures. It uncovers theories and concepts that address USSD infrastructure used by digital payment systems on the market, and the challenges of sharing the infrastructure. The chapter also includes the digital financial services ecosystems and the challenges of ICT infrastructure in South Asia, Latin America and Sub-Saharan Africa. The chapter lastly discusses the DFS ICT infrastructure in Zambia and the challenges of the current policies and regulations.

CHAPTER THREE

METHODOLOGY AND METHODS

3.1 Introduction

In this chapter, the materials and methods used to conduct this study are presented. The chapter specifies and defines the methods, tools and techniques that are used in the sampling, collection and analysis of information. It also outlines the research design, population samples, data collection instruments, tools and data collection procedures, techniques and data simulation packages that are used for the final analysis.

3.2 Data Collection and study settings

The study design involved the adopting of a mixed method approach which was mostly qualitative research accompanied by collection and analysis of data from the financial institutions' regulator Bank of Zambia (BOZ), the ICT, and telecommunications infrastructure regulator Zambia Information and Communications Technology Authority (ZICTA) and the competition and consumer protection commission (CCPC). We also used finite sampling and collected data from 10 digital financial service providers out of the 42 currently on the market. The methods used for the primary data collection were questionnaires, in-depth face to face interviews and discussions at communities of practice (COP) focus groups. The questionnaires and interview were designed to help answer and address the research questions of the study.

The target respondents for this study were the financial services regulator supervision departments for banks and non-banks financial institutions and the digital payments systems division of the Central Bank of Zambia because of their direct involvement with the digital financial services participants on the market. The research also targeted the statistics and research department and the consumer protection sections of the ICT and telecommunications regulator (ZICTA) because of the statistical information on the consumer disputes and the consumer protection division at the competition and consumer protection commission (CCPC) in Zambia. The study further targeted the directors and managers of 10 digital financial services organisations that were selected using finite sampling from the total number of 42 currently on the market. The research distributed a total of 90 copies of the questionnaires with some target respondents of 10 at the financial services regulator (BOZ), 10 at the ICT and telecommunications regulator (ZICTA) and another 10 at the competition and consumer protection commission (CCPC) in Zambia. The study further targeted the directors and

managers of 10 digital financial services organisations with each organisation getting 6 copies of the questionnaires. The feedback from the questionnaires was a total of 76 of the 90 distributed representing 84.4 percent retension rate as depicted in the population samples in Table 4.

Table 4: Data Population Samples

Organisation Research Sites	Questionnaires Distributed	Questionnaires Returned
Financial Services Regulator (BOZ),	10	9
ICT and Telecommunications regulator (ZICTA)	10	8
Competition and Consumer Protection Commission (CCPC)	10	7
DFS Service Providers	60	52
Total Returned		76
Percentage		84.4%

Table 5 provides the summary of the research approach, design, research sites and the sample sizes collected.

Table 5: Summary of the Research Approach

Research Approach	➡	Quantitative and Qualitative
Research Design	➡	Mixed Methods
Research Sites	➡	Financial Services regulator (BOZ) ICT and Telecommunications Regulators (ZICTA) Competition and Consumer Protection Commission (CCPC) 10 Finite Sampled DFS Service Providers
Sampling Procedure	➡	10 Questionnaires distributed to selected departments (Selective Targets)
Data Collection Instruments	➡	Questionnaires and Focus Groups, Interviews
Data Analysis	➡	MS Power BI version 2.26, Microsoft Office 365 Excel and Descriptive Analysis

3.3 Ethical Clearance and Study Approval

The research was approved with reference HSSEREC:2018-NOVEMBER-005 and considered ethical issues and all the participants and organisations were treated with respect. Consent was obtained from participants before they participated in the study and the participants had the right to understand what the research accomplished and we have shared the findings through the published work in the list of publications attached. The ethical approval was obtained from the University of Zambia School of Natural and Applied Sciences research ethics committee and is attached as Appendix B.

3.4 Sampling Criteria on DFS Participants

The research considered regulations that made impacts on the digital financial services space in Zambia and some of the target data included the transaction values and volumes on a range of digital financial services from the year 2012 to 2017. The research also considered impacts of regulation on mobile financial services (MFS) and how any change in regulation affected the values and volumes of transactions during the five-year period under consideration. The research further compared the transformation in trends which were caused by the change in regulation over the same period under review.

The mobile financial services are a subset of digital financial services. The targeted digital financial service providers include the Point of Sales (POS), Electronic Funds Transfers (EFT's), Cheques and Mobile Money as the Mobile financial service.

In addition, the study further compared the financial risk thresholds against the tiered categories of transactional values and the corresponding regulatory requirements detailed in the tiered bands of the regulated amounts. The tiered categories were due to a directive by the Bank of Zambia which was issued through a circular of 2014. According to the circular which is attached in Appendix B, the markets were directed to implement an upward revision to the transaction and balance limits for electronic money issues and money transfers. These upward adjustments were intended to encourage greater use of digital financial services to the members of the public. The limits on transactions were placed in incremental tiers in order to manage and mitigate the associated risks. The higher Tiers T3, T4 and T5 required more regulations and the requirements on the MFS platform have started to gravitate towards converging with the stricter regulations applied on the traditional bank accounts. The Know Your Customer

(KYC) requirements for mobile financial services on mobile money has increased with the increase in the transaction amounts.

The other important regulation that had an impact on the digital financial services is the amendment of the National Payment Systems ACT of 2007 through a circular of June 2016. In this amendment, the Item Value Limits (IVL) on cheques and foreign funds transfers were revised as displayed in Table 6 and the full directive attached as Appendix C. This resulted in the reduction in the use of cheques due to the change in regulation to reduce the transaction item value limits from ZMW 100,000 to ZMW 25,000. This regulation also reduced the use of the cheques because of the regulation which continues to discourage the cheques because of their inefficiencies such as the cheques cashed on insufficiently funded accounts where the cheques bounce and inconvenienced the payee.

Table 6: Revision of Item Value Limits on Cheques and EFT

Type of Payment Instrument	Old Item Value Limit (ZMW)	New Item Value Limit (ZMW)
Local Currency Denominated Cheques		
Local Kwacha cheques cleared through the Clearing House	100,000.00	25,000.00
Local Cheques presented over the Counter	0.00	25,000.00
Foreign Funds Transfer		
Direct Debits	50,000.00	75,000.00
Direct Credits	100,000.00	500,000.00
Type of Payment Instrument	Old Item Value Limit (US\$)	New Item Value Limit (US\$)
Foreign Currency Denominated Cheques		
Foreign cheques cleared within Zambia	\$0.00	\$5,000.00
Foreign cheques presented over the counter	\$0.00	\$5,000.00

Table 7 highlights the financial risk thresholds against the tiered transaction limit amounts and the regulatory requirements. The full directive of this regulation is also attached as Appendix C.

Table 7: Tiered Regulation and Risks of Mobile Financial Services (Source: (BOZ, 2017))

Tiered Categories	Transaction Limit (ZMW)	DFS and MFS Risks	Regulatory Requirements
T1 - Individual	10,000	1.Sending money to the wrong mobile money account 2. Agent pin code compromised (Social Engineering)	R1 Formal ID i.e. National Registration Card (NRC), Driver's License, Passport
T2- Individual	20,000	1.Tracking of funds to reverse the wrong mobile money transactions 2. Multi-factor authentication on Agent pin code (Social Engineering) 3. Deposit of counterfeit notes at the agent booths (Remote areas) 4. Limited float of the agent depending on trust account balance	R1 R2 Requirements, Proof of residence (e.g. utility bill). Reference letter from employer/ Professional or Confirmation Letter from a reputable person such as such as civic leader, Minister of religion/Lawyer, Chief/Headman
T3 - Small Scale Farmers/Enterprises (Not Incorporated)	250,000	1.Tracking of funds to reverse the wrong mobile money transactions 2. Multi-factor authentication on Agent pin code (Social Engineering) 3. Deposit of counterfeit notes at the agent booths (Remote areas) 4. Limited float of the agent depending on trust account balance	R3 R1 Requirements, Proof of residence (e.g. utility bill). Reference letter from Co-operative or any other registered grouping Trade license showing the nature of Business such as fishing
T4 - Corporate	2,000,000	1 - 4. T1, T2, T3 5. Risks transferred and mitigated through insured transactions 6.Cyber Security Training for agents	R4 Full KYC for both DFS and MFS. The service provider is required to carry out a risk based customer due diligence.
T5 – Mobile Agents	2,000,000	Full KYC. The service provider is required to carry out a risk based customer due diligence. T1, T2, T3,T4 and T5 5. Risks transferred and mitigated through insured transactions 6.Cyber Security Training for agents	R5 Full KYC. The service provider is required to carry out a risk based customer due diligence.

3.5 Data Analysis

The data returned from the participants was analysed to enable the researcher detect any patterns and consistent trends with the data that was collected. Qualitative data was analysed using descriptive and inferential methods. The transactional data values and volumes that was collected from the study was analysed using Microsoft Power BI version 2.62.52 and Office 365 Excel 2016 software packages. Microsoft Excel was used to tabulate and sort the data and Microsoft Power BI was later used to create tables, graphs and charts.

3.6 Chapter Summary

In this chapter, the materials and methods that were used in the study were defined and the digital financial services data collection, sampling and analysis techniques were outlined. A Mixed Methods Methodology was used in this research study. A Standardized purposive sampling was used in the selection of the sample size for the baseline study.

The chapter further considered the data collection and study settings, ethical clearance and study approval and the Sampling criteria on the DFS Participants. The chapter closed with the analysis of the data returned from the participants.

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.1 Introduction

In this chapter, the research presents the findings and the discussions that were derived from the study. We also present results on the regulatory challenges of digital financial services ICT infrastructure on the Zambian market.

The chapter also compares the digital financial services challenges in Zambia with the other world bank, Findex ranked developing countries in Asia, Latin America and sub-Saharan Africa.

4.2 Interactions between the Financial Services and ICT Regulators

The feedback from the questionnaires reveals that currently, there is only a memorandum of understanding (MOU) between the financial services regulator Bank of Zambia (BOZ) and the ICT and telecommunications regulator Zambia Information and Communications Technology Authority (ZICTA).

It is not clear who has the overall regulation but the two entities regulate the financial services industry and technology regulations separately with very little collaboration and cooperation on the scale of very little, little, moderate and high. The interactions between the two regulators is on a need to know basis through the agreed memorandum of understanding. This research finding addresses objective one of the study.

4.3 Results and the Effects of Enabling Regulations on DFS

The results from the questionnaires shows that after the change of financial regulation in 2012 to allow for lower amounts to transact on the mobile platforms, customer onboarding became easier and the usage of mobile financial services increased exponentially as shown on the mobile money payments in Figure 6. The research results compared the transaction values on mobile financial services, point of sale (POS), electronic funds transfer (EFT) and cheques for a five year period. With the change in regulation in 2012, there was a need to overcome challenges of quality of service on the ICT infrastructure. The ICT regulator allowed for the sharing of the ICT infrastructure towers which resulted into better maintenance and reduced downtime and hence the overall improvement into the quality and consistency of the service.

The sharing of the ICT infrastructure also meant that there was redundancy and reliability eliminating the single points of failure.

The analysis from the questionnaires also highlights that the regulations through the directives in Appendix D by the financial services regulator (BOZ) to reduce the transaction item value limits (IVL) in 2016 from ZMW 100,000.00 to ZMW 25,000.00 also reduce the transactions volumes on the cheques. The transaction amounts on the electronic funds transfer and mobile money services were higher than the cheques and hence the rise in the general use of the other digital financial services compared to the cheque. Further, the results show a reduced use of the cheques because of the regulation which continues to discourage the cheques because of their inefficiencies such as insufficiently funded accounts where cheques bounce and inconvenience the payee. This research finding addresses objective two of the study.

Figure 6 also reveals the trend of digital financial services with a steady increase in both the value and volumes of transactions on MFS, point of sale and electronic funds transfers due to enabling regulation and collaboration between the telecommunications regulator and the financial services regulator. The same period shows the reduced use of cheques because of the reduction in the item value limits. Feedback from the questionnaires further shows that there is more collaboration, harmonization and corporation through a memorandum of understanding (MOU) between the two regulators but a lot more needs to be done. This research findings addresses objective one of the study. The data from Bank of Zambia in Table 8 exhibits the values and volumes on digital financial services transactions from 2012 to 2017. The volumes of mobile transactions is higher than the other digital financial services and have increased exponentially from under K1 billion in 2013 to over K7 billion in 2017 and the progress continues to increase. Figure 6 shows the trends of digital financial services on MFS, POS, EFT and cheques.

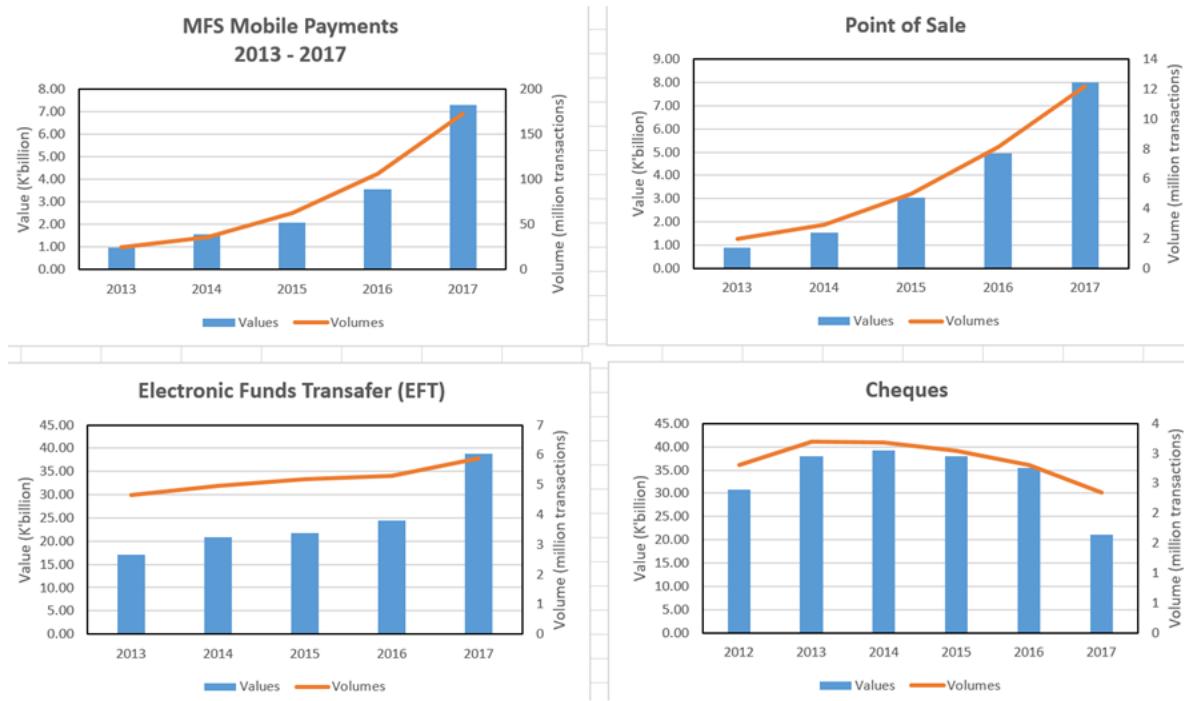


Figure 6: Trends of DFS 2012 to 2017

The volumes of transactions were highest for the mobile financial services compared to the other forms of digital financial services such as the point of sale, electronic funds transfer and the cheque. This was a result of more customer uptake and increased usage on the MFS platform that translates into more transaction volumes and a more notable exponential increase compared to all the other digital financial services.

Subsequently, comparing the volumes of transactions on the platforms above shows that mobile financial services has the highest volumes of transactions due to enabling regulations such as lowered minimum transaction amounts. There is no requirement for filling in detailed forms but only an acceptable identity card such as a national registration card (NRC) to perform a transaction. Figure 7 shows the trends of the transaction for all digital financial services by volume with mobile financial services having the highest number of transactions. The data from Bank of Zambia in Table 8 also exhibits the values and volumes on digital financial services transactions from 2012 to 2017.

Table 8: Digital Financial Services Transaction Values and Volumes (Source: BOZ, 2017)

Trends of DFS 2012 to 2017		
Mobile	Values	Volumes
2012	1,163,628,529.01	17,430,411
2013	957,288,216.42	24,412,326
2014	1,574,394,938.15	35,457,948
2015	2,069,611,070.71	62,516,656
2016	3,561,121,959.25	105,934,181
2017	7,287,745,101.44	172,429,911
Point of Sale (POS)		
2012	790,635,101.27	1,677,179
2013	885,260,596.44	1,983,089
2014	1,551,778,747.21	2,937,453
2015	3,043,386,789.06	4,996,917
2016	4,948,392,739.17	8,103,127
2017	8,008,167,972.59	12,193,060
Electronic Funds Transfer (EFS)		
2012	12,750,728,030.55	4,027,061
2013	17,104,236,164.81	4,643,599
2014	20,908,102,798.09	4,955,572
2015	21,829,181,426.19	5,171,982
2016	24,451,111,785.32	5,297,462
2017	38,863,582,478.08	5,895,397
Cheques		
2012	30,787,088,701.34	2,800,759
2013	38,010,945,886.49	3,200,202
2014	39,185,267,663.70	3,184,446
2015	37,958,885,628.06	3,045,211
2016	35,530,247,301.05	2,807,390
2017	21,075,596,096.76	2,346,707
Unpaid Cheques		
2012		
2013	265.90	22,169
2014	394.30	27,556
2015	370.80	25,259
2016	287.40	18,689
2017	168.80	16,342

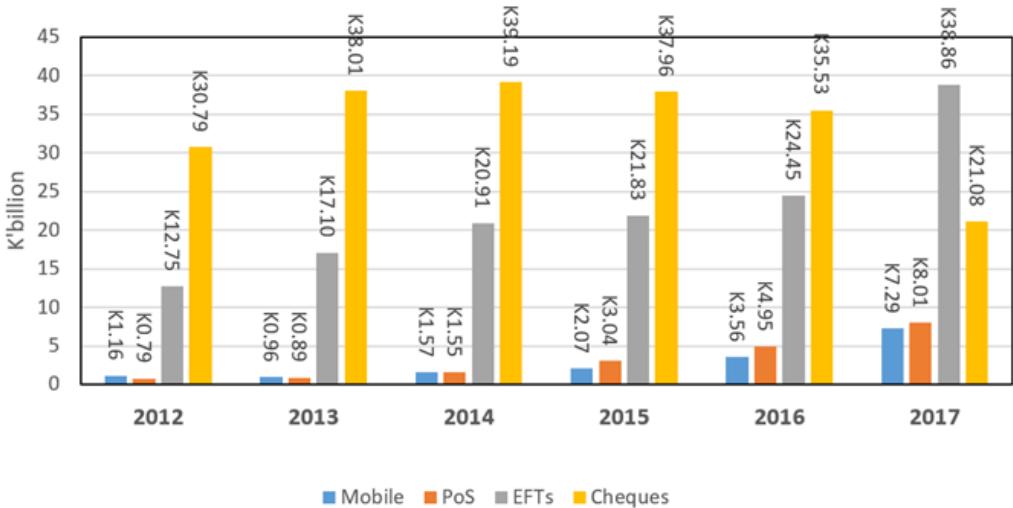


Figure 7: DFS Trends on Volumes of Transactions 2012 to 2017

Figure 8 is the combination of all the digital financial services in the graphs above which are superimposed onto a single graph. The increased customer up take and increased volumes of transactions stands out for MFS and hence the exponential trend in the graph. This trend resembles the mathematical model of the last decade in Zambia that represents the growth of GSM mobile networks compared to the stagnant growth of the fixed Public Switched Telephone Network (PSTN) as outlined in Table 9.

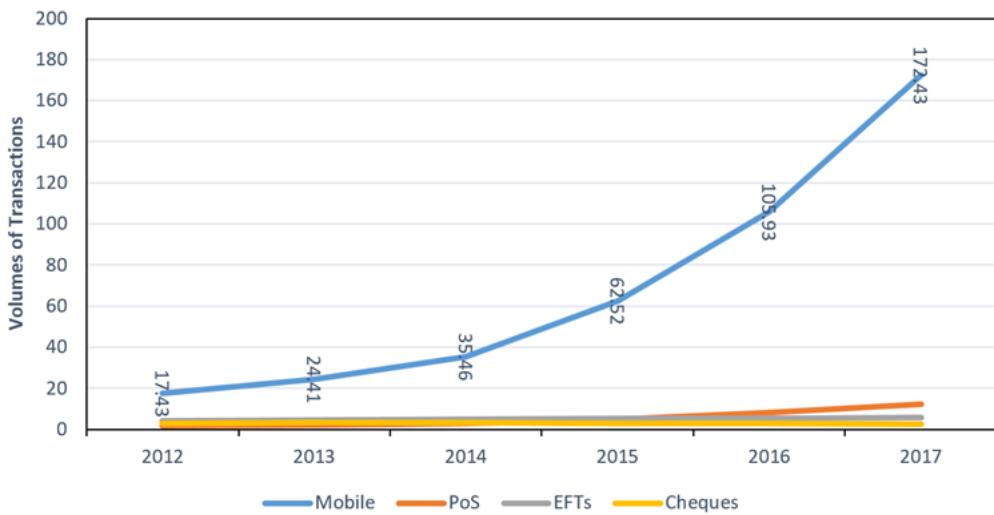


Figure 8: MFS and DFS Transaction Volumes 2012 to 2017

Table 9 exhibits the growth of the GSM mobile coverage of all the three mobile service providers by almost 40 percent from 2012 to the first quarter of 2018. This collaborates with the exponential growth of mobile financial services on the Zambian market.

Table 9: Growth of GSM Mobile coverage in Zambia (Source: (ZICTA, 2017))

Network Coverage	2010	2011	2012	2013	2014	2015	2016	2017 Q1	2018
Internet Points of Presence (Districts)	-	-	-	99	-	-	-	-	-
PSTN Area Coverage (%)	90	90	90	90	90	90	91	91	91
National Network Geographical Coverage (%)			78	78	78	78	78	78	78
National Network Geographical by Population (%)						93	93	93	93
Number of Towers								2,426	2,420
Number of 2G Sites							2,697	2,990	3,065
Number of 2G/3G Sites							2,354	2,141	2,297
Number of 4G Sites							192	254	254
Number of 2G/3G/4G Sites							254	803	877
Airtel Zambia		-	-	42.7%	42.7%	42.7%	42.7%	42.7%	79.9%
MTN Zambia		36.6%	37.5%	39.4%	31.7%	45.4%	44.1%	44.1%	81.0%
Zamtel		75.0%	75.0%	29.7%	27.0%	27.0%	27.0%	27.0%	84.0%

4.4 Effects of Tiered Regulations on MFS

The results also communicates that tiered regulation introduced by the financial services regulator allows for different levels of amounts to be transacted with different regulatory requirements applied. The scaled down regulatory requirements allow for the transaction of lower amounts of up to ZMW 10,000 which only required the use of any National Identity card with no requirements for forms to be filled. As a result, customer onboarding become simplified and this increased the usage of the service by people with low literacy levels in the remote parts of the country and led to an increase in the overall transactional volumes.

The research results further showed the relationships between the tiered approach to mobile financial services regulation and the transaction amounts. Different bands of transaction amounts are related to different risk thresholds and the analysis shows that there is a lower risk on low transactional values under K10,000 as depicted in Figure 9. The low-value transactions only attract basic regulatory requirements of only a national identity card such as passport, drivers license or a national registration card (NRC). Consequently, the lower amounts now have the highest transaction volumes because of their ease of transaction by many low income Zambians who constantly need to send and receive money for their day to day living. As the risk threshold increases, the transaction amounts also increases and the amount of regulatory requirements increases to a point where a full Know Your Customer (KYC) is needed in order to mitigate the risks. The higher Tiers T4 and T5 require more regulations and the requirements

on the mobile financial platform start to converge and become similar to the requirements on digital financial services requirements to transact on a regular bank account. This research finding addresses objective three of the study. Figure 9 shows the relationship between different bands of tiered regulation compared with risk threshold and convergence as the regulatory requirements approaches a full KYC.

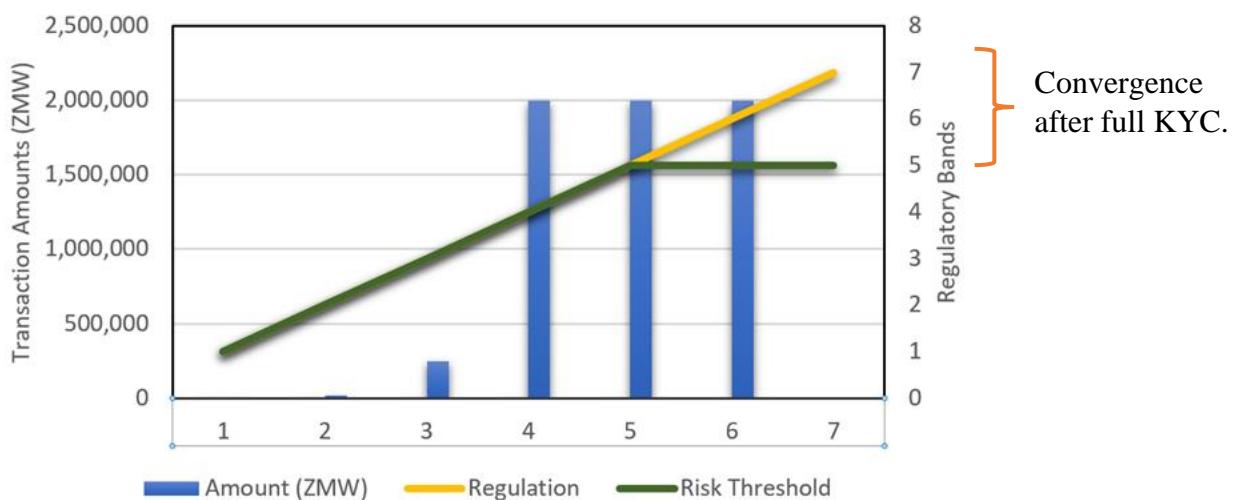


Figure 9: Tiered Regulation compared with Risk threshold

The Figure depicts the risk threshold convergence with the increase in transactional amounts and the requirements call for a full KYC which is comparable with the requirements for a regular bank account. Customers transacting with higher amounts, prefer to walk into secure premises of the bank because of better physical security than queue up at the agent booth on the side of the street to transact in large amounts above ZMW 20,000. Therefore, as the risk increases, the regulatory requirements become the same for both MFS and DFS. This convergence is depicted in Figure 9 where the risk increases with the transaction amounts and as the amounts continue to increase, the regulatory requirements becomes a full know your customer requirement which is the same for the mobile financial services and all other digital financial services.

4.5 Registration of DFS and the Challenges in Zambia

The research results highlights that when a digital financial services player wants to enter the Zambia market, they have to comply with the laws required to register the business with the Patents and Companies Registration Agency (PACRA). The DFS player is further required to register with the Bank of Zambia (BOZ) which is the financial services regulator and the Zambia Information and Communications Technology Authority (ZICTA) which is the ICT and telecommunications regulator. The ZICTA registration attracts an annual recurring fee of ZMW 30,000 and the registration fee of ZMW 12,000 as shown in Table 9.

Table 10: ZICTA Registration Fees

Item	Fee Type	Quantity	Fee (ZMW)
1	Registration	1	12,000
2	3 Digit Code (Annual)	1	30,000
	Total Fees		42,000

In addition, the BOZ registration also attracts an application fee of ZMW 1,000, an annual designation fee of ZMW 500 and director's security screening fees of ZMW 70 per director or shareholder as revealed in Table 10.

Table 11: BOZ Registration Fees

Item	Fee Type	Quantity	Fee (ZMW)
1	Application Fee	1	1,000
2	Annual Designation Fee	1	5,00
3	Security Screening Fee	Per Director/ Shareholder	70
	Total Fees		1,570

Due to this duplication in registration at both regulators, the total fees for a new DFS player at inception stands at ZMW 43,570 and annual recurring fees of ZMW 35,000. These fees are too high for an average start-up DFS participant and mainly act as regulatory blockers which hinder new innovation in the DFS space. These regulatory blockers address objective three, as it acts as a barrier to innovation and the adoption of innovative regulatory technologies for financial services. DFS success stories in Sub-Saharan countries do not attract such high fees for both regulators and hence the success cases such as M-Pesa.

4.6 Dispute Cases due to Overlapping Regulations

From the research results, the study reveals that decoupling of the mobile money operations (MMO) from the main mobile network operations (MNO) resulting into mobile money business units falling under the financial services industry and the mobile network operators falling under the ICT and the telecommunications industry. The mobile money business units are under the Ministry of Finance and National Planning whereas the mobile network is under the jurisdiction of the ICT and telecommunication regulator and their guiding laws.

The results further shows that there is currently only a memorandum of understanding (MOU) between the financial services regulator and the ICT and telecommunications regulator. The MOU allows for the sharing of data and consultations between the two institutions but there has been some dispute cases because of these overlapping jurisdiction and which institution makes the final decision. The mobile money services (MMS) and mobile network operators (MNO) laws are from different ministries and this makes it difficult to settle disputes that arise due to conflicts on both the financial services and the underlining technology. The different laws presiding over mobile money and mobile networks have added to the regulatory challenges as there have been a rise of dispute cases.

The financial services regulator oversees the finances only whereas the ICT regulator focuses on the technology on which these services operate. There are a lot of gray areas that require close collaboration and the current memorandum of understanding (MOU) between the two regulators does not suffice. The Central Bank of Zambia regulates financial institutions according to the National payment systems Act No. 1 of 2007 which did not originally address Digital financial services (DFS).

The financial systems regulator Bank of Zambia regulates financial institutions and the ICT and telecommunications regulator Zambia Information and Communications Technology Authority regulates the technology operators. The financial systems regulator falls under the ministry of finance and operates under the National Payment Systems Act of 2007, whereas telecommunications regulator falls under the Ministry of Transport and communications and is mandated by the Information and Communications Technologies (ICT) Act number 15 of 2009, Postal Services Act number 22 of 2009 and the Electronic Communications and Transactions Act number 21 of 2009.

Table 12 depicts some dispute cases which came up due to the lack of overall authority and oversight by either the financial services regulator or the ICT and telecommunications

regulator. There is no combined regulation that can clearly oversee the undertakings of both the financial transactions and the Technology on which these digital financial services operates. These disputes contribute to the regulatory challenges that are faced by the Digital financial services providers. The dispute cases range from the prohibition and sometimes unfair access to USSD platforms by the competitor operators namely Airtel mobile limited, MTN mobile money limited and ZAMTEL Kwacha. The other dispute cases are due to high license fees charged for the use of ICT national switching infrastructure which connects the core services such as the Point of Sale (POS), Electronic Funds Transfers (EFT), Direct Debit and Credit Clearing (DDACC), Automated teller machines (ATM) and the electronic Cheque clearing house. More dispute cases arise due to the unfair competitive advantage for some institutions that are provided the service at very low and non competitive rates due to some major shareholding by the Zambian government.

Table 12: Dispute case between Financial and Technology Regulators

Digital Financial Service	Regulatory Domain		Regulatory Challenge (Cases)	Final Arbitration
	ICT Regulator	Financial Regulator		
Zoona USSD Dispute	✓	✓	Case 1: Dispute with MTN MNO on the use of the USSD Infrastructure because MTN MMO is a competitive player on the mobile money platform.	Competition and Consumer protection (CCPC); FSD Zambia
ZamLink High Telcom Fees	✓	✓	Case 2: Dispute on the high license fees for ICT national switching infrastructure connecting POS, ATM, Cheque clearing house.	ICT Regulator and Financial services Regulator MOU
Zampost Swift Anti Competition	✓	✓	Case 3: Dispute on competitive advantage for Zampost because of using the national telecommunications carrier at very low or non competitive rates.	Competition and Consumer protection (CCPC); ICT Regulator and Financial services Regulator MOU
cGrate Zambia (543 Konse Konse) USSD Dispute	✓	✓	Case 4: Dispute with MTN MNO on the use of the USSD Infrastructure because MTN MMO is a competitive player on the mobile money platform.	Competition and Consumer protection (CCPC); FSD Zambia

After comparing Zambia with the other regulatory challenges in developing countries around the world, we observed the converging services in these countries (WorldBank Group, 2015). These converging services are widespread in Zambia and calls for regulation of both the mobile financial services and digital financial services. Because of their convergence, convenience and ease of use, DFS are also used for illegal and illicit activities such as Money Laundering and Financing of Terrorism activities. The Industry therefore, needs rigorous Policy, Rules and Regulations to guide the use of digital financial services. Regulation is important to allow for a Fair playing field by the Incumbents, Improved competition and quality of service, Increased investment, greater economic growth, Improved efficiency, healthy competition, consumer Protection and overall financial Inclusion.

4.7 Chapter Summary

This chapter outlines the analysed data that was collected from the survey and presented the results in form of tables, bars and charts. The researcher established that there are some regulatory blockers such as DFS duplicate registration fees for ICT regulator and financial services regulator and these need to be harmonised in order to allow for the innovative start-up companies in the DFS space that are hindered by the multiple high fees from the separate regulators. The chapter also discussed some dispute cases of overall regulation and which regulator has the final authority on the disputes.

The chapter further discusses the tiered regulation of 2012 which segmented the transactions amounts and allowed for more usage of mobile financial services (MFS) due to this enabling regulation. This regulation also facilitated for simpler customer on boarding and reduced the overall risk thresholds. The chapter finally, concludes with graphs showing the exponential growth on the MFS transactional volumes and marginal growth for the other financial service including the point of sale, electronic funds transfer and general decrease in the use of cheques.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the discussion of the results that were shown in the previous chapter are presented. The conclusion of the research is presented in the next section and the recommendations in section 5.3.

5.2 Conclusion

With 92 percent of the world's money already existing as digital cash, digital financial services form a major part of our financial lives today, especially in the developing world. The use of DFS will continue to surge as the price of mobile phones, tablets and computers become cheaper. This surge in mobile technology has presented an opportunity for operational efficiency for mobile financial services. The 40 percent growth on the GSM mobile coverage revealed in this research has also allowed for the exponential growth of mobile financial services and increased use cases even in the remote of the country. This Investigation focused on the policy and regulatory challenges of DFS ICT Infrastructure in Zambia and found that despite statistics of improved use of DFS in the country, there is still a lot more that needs to be done in order to further improve the lives of the common citizens.

The research further conclude that there is strong need to overcome the current regulatory blockers and seek sound research based regulatory enablers that allow for the continued growth of DFS and hence the strong need to understand and address the challenges of overlapping Jurisdictions, policy, rules and regulations.

The mobile channels of DFS have permitted for mass adoption of financial services because Banks do not roll out their branches and ATM networks to serve lower income customers in the remote of the country. This has resulted into the success of mobile financial services because they are accessible on mobile platforms from anywhere and anytime. They depend on the telecommunications infrastructure which is available even in remote areas. Financial access through the mobile is delivered off the back of largely existing infrastructure and hence at a lower cost than traditional Banking.

After comparing Zambia's challenges with the other Findex ranked developing countries around the world, we concluded that the digital financial services thrive in environments where there is regulatory enablement where regulators find the right balance between too strict and too lax as they apply regulations. The research also concluded that there is a strong relationship between the bands of tiered regulation and the risk threshold on the transactions and this relationship eventually leads to the convergence of mobile financial services and digital financial services. This convergence is due to the regulatory requirements which approach a full know your customer (KYC) as the transaction amounts become high and the risk of transactions increases.

The findings of the research also brought out challenges of digital financial services registration process from both the ICT regulator and the financial services regulator which stands in the way as a regulatory blocker. The research goes on to conclude that there is strong need to overcome these current regulatory blockers and seek sound research and risk based regulatory enablers that allows for the continued growth of DFS. The research further established that the basic regulatory enablers that have produced positive results in the Findex ranked developing countries have adapted the watch and learn approach which is also called the Sandbox approach to regulation. This a controlled test environment for new innovations that introduces fast evolving technologies on the market. Furthermore, the research concludes that this is the best approach to regulation and both the financial systems and ICT regulators should adopt.

In addition, the research also concludes that since regulation is moving at a slower rate than the rapid technology evolution, an increase in regulatory openness to innovation leads to an increase in the use and adoption of DFS. The rapid technology evolution calls for the financial services and ICT regulators to continue with regular interactions and collaboration. This research recommends for the converting of the current memorandum of understanding (MOU) between financial services regulator Bank of Zambia (BOZ) and ICT regulator Zambia Information and Communications Technology Authority (ZICTA) into combined legislation. The proposed legislation should be guided by an inter-ministerial working group comprised of the ministry of finance and national which oversees the financial service regulation, the ministry of communications and transport that oversees the ICT regulation and the Competition and Consumer protection commission. The Country therefore needs enabling and strong Policies and Regulations to guide the use of DFS for improved products, improved quality of

service (QOS), Increased investment, greater economic growth and positively impact and improve the lives of the common citizens in Zambia.

5.3 Recommendations

This research puts forward the following recommendations to overcome regulatory challenges of digital financial services ICT Infrastructure in Zambia. These recommendations will improve the efficiency and innovation on the DFS platform and will allow for these services to continue improving the lives of the poor and will allow for overall financial inclusion.

Below are the recommendations to overcome policy and regulatory challenges of digital financial services (DFS) and allow for regulatory enablers which will facilitate DFS to continue having an even greater impact on the lives of the common Zambians:

1. The Ministry of finance (MOF) and the Ministry of Communications and Transport (MCT) through financial services regulator Bank of Zambia, telecommunications regulator and the competition and consumer protection commission (CCPC) to come up with an inter-ministerial payments council or a working group that will work towards the implementation of combined regulation and industry standards to overcame independent regulations.
2. The ICT and telecommunications regulator (ZICTA) to implement regulations that will encourage the fair use and access to shared infrastructure such as USSD by all DFS players, mobile telecommunications operators and agents that operate on these platforms.
3. The financial services regulator (BOZ) and ICT regulator (ZICTA) to adopt Sandbox approach to regulation and use of research and risk based approach to regulation
4. The Zambian Government to adopts the proposed framework from this study in order to address the challenges of digital financial services regulation that allows for all DFS co-opetition for players to compete and corporate for common goals.
5. The Zambian Government to promote the adoption of the use of technology enabled regulation ‘Regtech’ to enable more effective and efficient regulation that will overcome the regulatory challenges that were identified in this research.
6. The financial services regulator (BOZ) and ICT regulator (ZICTA) to turn the current regulatory challenges into opportunities that will make use of shared technology platforms on basic feature phones, Smart phones, tablets and computers.

5.4 Future Research

This research and the proposed recommendations lays a solid foundation for future research. The future works may focus on the regulatory challenges and the impact of digital financial services evolution on cryptocurrencies such as Bitcoin, Bitcoin Cash, Ripple, Monero, Ethereum and the Block Chain Technology.

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APPENDICES

APPENDIX A: Data Collection Permission and Approval

L&D
Mgt L&D
FJA
26/06/18

Draft memo to
NAFU, BR & BCR
to ask if they
are ready to
disclose.
P.K.
26/06/18

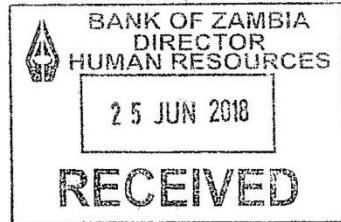
ADHR & CTE
FJA
26/06/18

THE UNIVERSITY OF ZAMBIA SCHOOL OF ENGINEERING OFFICE OF THE DEAN

Great East Road Campus, P.O. Box 32379, Lusaka 10101, Tel: (+260) 211-293 762 - 291 929 - 290 962
Fax: (+260) 211-293 793 - 290 962 Email: deaoe-eng@unza.zm, info-eeng@unza.zm Website: www.unza.zm

June 25, 2018

The Deputy Governor Administration
Bank of Zambia, Bank Square
Cairo Road
P.O Box 30038
LUSAKA



Dear Sir/Madam,

RE: PERMISSION TO CONDUCT ACADEMIC RESEARCH IN YOUR ORGANISATION – MR KOMBE KAPONDA.

Mr. Kombe Kaponda (Student number: 2016146036) is a Postgraduate Student in the School of Engineering at University of Zambia. Having completed the prerequisite of the Master's coursework program in the Master of Engineering in Information Communication Technology (ICT) Policy, Management and Regulation, he needs to undertake research work as part of his Dissertation for a Masters of Engineering degree.

Mr. Kaponda is conducting a research entitled "*An investigation into the Policy and Regulatory challenges of Digital Financial System's ICT infrastructure in Zambia.*"

In reference to the above, we seek your assistance to provide him with all the support that he needs to successfully accomplish his research work.

The responses you will provide will be treated confidentially and only for the purpose of the Academic research. We hope this request will meet your favourable considerations.

Yours Faithfully

Dr. E. M. Mwanaumo
Assistant Dean Postgraduate - School of Engineering



AD - PSD

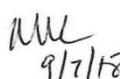
Kindly provide the necessary support we may need.


8/6/18



Mgr - PSOP

Kindly review & advise


9/7/18

HUMAN RESOURCES DEPARTMENT

MEMORANDUM

To : Director – Non Bank Financial Institutions Supervision
Director – Bank Supervision
Director – Banking, Currency and Payment Systems

Date : 5 July 2018

SUBJECT : UNIVERSITY OF ZAMBIA STUDENT REQUESTING TO CONDUCT A RESEARCH

Mr Kombe Kaponda is a member of staff from the Information and Communications Technology Department. We are in receipt of the attached letter from the University of Zambia introducing him as a student in the Master of Engineering and Information Communication Technology. As part of his Dissertation for a Masters of Engineering Degree, he needs to undertake research work. Mr Kaponda's research is entitled "*An investigation into the policy and Regulatory challenges of Digital Financial System's ICT Infrastructure in Zambia*".

Kindly advise if your department will be able to assist this student to gather data for his research.



Rekha Chifuwe Mhango(Mrs)

cc: Training File



THE UNIVERSITY OF ZAMBIA
SCHOOL OF ENGINEERING
OFFICE OF THE DEAN

Great East Road Campus | P.O. Box 32379 | Lusaka 10101 | Tel: (+260)-211-293 792 | 290 929 | 290 962
Fax: (+260)-211-293 793 | 290 962 | Email: dean-eng@unza.zm | info-eng@unza.zm | Website: www.unza.zm

June 25, 2018

The Director General
Zambia Information and Communications Technology Authority (ZICTA)
Plot 4909 Corner of Independence & United Nations Avenue
P.O. Box 36871
LUSAKA

Dear Sir/Madam,

RE: PERMISSION TO CONDUCT ACADEMIC RESEARCH IN YOUR ORGANISATION – MR KOMBE KAPONDA.

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Yours Faithfully

Dr. E. M. Mwanaumo
Assistant Dean Postgraduate - School of Engineering



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June 25, 2018

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Yours Faithfully

Dr. E. M. Mwanaumo
Assistant Dean Postgraduate - School of Engineering



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Fax: (+260)-211-293 793 | 290 962 | Email: dean-eng@unza.zm | info-eng@unza.zm | Website: www.unza.zm

June 25, 2018

The Director General
Competition & Consumer Protection Commission
4th Floor Main Post Office Building
P.O. Box: 34919
Cairo Road
LUSAKA

Dear Sir/Madam,

RE: PERMISSION TO CONDUCT ACADEMIC RESEARCH IN YOUR ORGANISATION – MR KOMBE KAPONDA.

Mr. Kombe Kaponda (Student number: 2016146036) is a Postgraduate Student in the School of Engineering at University of Zambia. Having completed the prerequisite of the Master's coursework program in the Master of Engineering in Information Communication Technology (ICT) Policy, Management and Regulation, he needs to undertake research work as part of his Dissertation for a Masters of Engineering degree.

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Yours Faithfully

Dr. E. M. Mwanaumo
Assistant Dean Postgraduate - School of Engineering



Excellence in Teaching, Research and Community Service

APPENDIX B: Ethical Waiver and Approval of Study



THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road | P.O. Box 32379 | Lusaka 10101 | Tel: +260-211-290 258/291 777
Fax: +260-1-290 258/253 952 | Email: director@drgs.unza.zm | Website: www.unza.zm

Approval of Study

25th January, 2019

REF. NO. HSSEREC: 2018-NOVEMBER-005

Mr. Kombe Kaponda
Plot 90/396A Teagles Road
Makeni
Lusaka
Zambia

Dear Mr. Kaponda,

RE: "AN INVESTIGATION INTO THE POLICY AND REGULATORY CHALLENGES OF DIGITAL FINANCIAL SERVICES ICT INFRASTRUCTURE IN ZAMBIA"

Reference is made to your request for waiver of ethical approval of the study. The University of Zambia Natural and Applied Sciences Research Ethics Committee IRB has approved the study noting that there are no ethical concerns.

On behalf of The University of Zambia Natural and Applied Sciences Research Ethics Committee IRB, we would like to wish you all the success as you carry out your study. In future ensure that you submit an application for ethical approval early enough.

Yours faithfully,

Dr. Erastus Mwanaumo
CHAIRPERSON
THE UNIVERSITY OF ZAMBIA NATURAL AND APPLIED SCIENCES RESEARCH ETHICS COMMITTEE IRB

cc: Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies

Excellence in Teaching, Research and Community Service

APPENDIX C Revision of Transaction and Balance Limits for Money Transfer Businesses and Electronic Money Issuers



Bank Of Zambia

OFFICE OF THE DEPUTY GOVERNOR - OPERATIONS

BOZ/EXEC/DGO/bcps/bp

October 11, 2016

PSB Circular No. : 01/2016

To : Money Transfer Businesses and Electronic Money Issuers

REVISION OF TRANSACTION AND BALANCE LIMITS FOR MONEY TRANSFER BUSINESSES AND ELECTRONIC MONEY ISSUERS

Pursuant to Section 43 of the National Payment Systems Act of 2007 and Section 15 of the National Payment Systems Directives on Electronic Money Issuance 2015, the Bank of Zambia would like to advise of the upward revisions to the transaction and balance limits for electronic money issuers and money transfer businesses. These upward adjustments are intended to encourage greater use of digital financial services by members of the public.

Limits are given in the attached schedule 1 and apply as follows:

1. Money remittances businesses shall use limits in Tiers 1 and 2 for sending and receiving by customers;
2. Electronic money issuers shall use limits in Tiers 1 and 2 as wallet sizes and allowable daily funds transfer limit; and
3. Electronic money issuers shall use limits in the other tiers as wallet sizes and allowable daily funds transfer limit in those categories.

All money transfer services providers and electronic money issuers are hereby required to comply with the stated limits and Know Your Customer (KYC) requirements. Failure to comply with this circular will attract penalties and other actions in line with Section 43 of the National Payment Systems Act No. 1 of 2007

This circular repeals Circular No. PSB 1/ 2014 and takes effect on November 1, 2016.


Bwalya K. E. Ng'andu (Dr)
DEPUTY GOVERNOR – OPERATIONS

Cc Governor
Senior Director – Supervisory Policy
Director – Bank Supervision
Director – Banking Currency and Payment Systems
Director – Non-Bank Financial Institution Supervision

SCHEDULE 1: TRANSACTION AND BALANCE LIMITS

Type of Customer/Client	Limit Per Transaction Per Day ('K)	Maximum Balance ('K)	Holding	Required KYC
Individual Tier 1	10,000	10,000	Customer to provide formal identification document for verification i.e.	
			i. National Registration Card; ii. Passport; iii. Driver's License.	
Individual Tier 2	20,000	20,000	Any of the above (in Tier 1) KYC plus:	
			i. Proof of residence; ii. Reference from an employer/professional; or iii. Confirmation in writing from a reputable person such as civic leader, headmaster, or traditional ruler etc.	
			Copies to be retained by service provider.	
Small Scale Farmers/ Enterprises (not incorporated)	250,000	250,000		i. Formal ID document as in Tier 1 plus; ii. Reference letter/document from a Co-operative or any other registered grouping such as men's or women's group; or iii. Trade license showing nature of business such fishing, carpentry etc.
Corporate	2,000,000	2,000,000	Full KYC. Service provider is required to carry out a risk based customer due diligence.	
Agent	2,000,000	2,000,000	Full KYC. Service provider is required to carry out a risk based customer due diligence.	

APPENDIX D: Revision of Item Value Limits on Cheques and Electronic Funds Transfers



BOZ/EXEC/DGO/bcps/bp

October 14, 2016

CB Circular No. : 06/2016

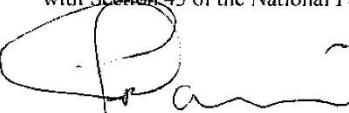
To : All Heads of Commercial Banks

REVISION OF ITEM VALUE LIMITS ON CHEQUES AND ELECTRONIC FUNDS TRANSFERS

In exercise of its powers contained in Section 5 (3) of the National Payment Systems Act 2007, the Bank of Zambia would like to advise all commercial banks on the revisions to the Item Value Limits (IVL) on cheques and electronic funds transfers as reflected in the schedule. The decision is aimed at promoting the use of electronic payment methods.

In the implementation of the new limits, that splitting of cheques to circumvent the prescribed limits is prohibited as it violates the spirit of this directive. Split cheques will attract a penalty fee on the paying Bank of 25% of the value of the split cheques up to a maximum of two hundred thousand penalty units as stipulated in Section 43 of the National Payment Systems Act of 2007. This fee will be paid to the Zambia Electronic Clearing House Limited (ZECHL) and will be collected on a monthly basis through the paying bank's settlement account held at the Bank of Zambia. These limits shall take effect 180 days from the date of this Circular. CB Circular 03/2008 is therefore repealed.

Failure to comply with the above requirements could in addition attract penalties in line with Section 43 of the National Payment Systems Act of 2007.


Bwalya K. E. Ng'andu (Dr)
DEPUTY GOVERNOR – OPERATIONS

Cc Governor
Senior Director – Supervisory Policy
Director – Banking, Currency and Payment Systems
Director – Bank Supervision
Director – Non-Bank Financial Institutions Supervision
Chief Executive Officer – Zambia Electronic Clearing House Limited

Schedule

Type of Payment Instrument	Old Item Value Limit	New Item Value Limit
Local Currency Denominated Cheques		
Local Kwacha cheques cleared through the Clearing House	K100, 000.00	K25, 000.00
Local cheques presented over the Counter	K0.00	K25, 000.00
Foreign Currency Denominated Cheques		
Foreign cheques cleared within Zambia	US\$0.00	US\$5, 000.00
Foreign cheques presented over the Counter	US\$0.00	US\$5, 000.00
Electronic Funds Transfer		
Direct Debits	K50, 000.00	K75, 000.00
Direct Credits	K100, 000.00	K500, 000.00

APPENDIX E: DFS Payment Systems Providers

#	Digital Financial Services DFS Operators (USSD MNO Platform)	Service Provided
1	Airtel Mobile Commerce Zambia LTD	Mobile Payment Services And Money Transmission Service
2	AB Bank	RIA International Transfers (Money Transmission Services)
3	Access Bank	Western Union International Money Transfer (Money Transmission Services)
4	Bayport	Mobile Payments Solutions (MPS) Money Transfer (Money Transmission Services)
5	Brookfield LTD T/A Genesis Global Finance	World Link International Money Transfer (Money Transmission Services)
6	Broadpay Zambia Limited	Payment Services
7	cGrate Zambia Limited (5,4,3 Konse, Konse)	Payment Services
8	CFB Money Transfer Limited	Money Gram International Money Transfer (Money Transmission Services)
9	Cactus Financial Services	Western Union International Money Transfer (Money Transmission Services)
10	Ecobank	Western Union International And Rapid Transfer Money Transfer (Money Transmission Services)
11	FX Africa Bureau de Change	Prepaid Payment Cards
12	Finance Bank Zambia	Money Gram International Money Transfer (Money Transmission Services)
13	First Capital Bank	RIA International Transfers (Money Transmission Services)
14	Investrust	Money Gram International Money Transfer (Money Transmission Services)
15	Intermarket Bank Limited now Zambia Industrial Commercial Bank [ZICB]	Money Gram International Money Transfer (Money Transmission Services)
16	Kazang Spargris Zambia LTD	Mobile Money
17	MTN Mobile Money LTD	Mobile Payment Services And Money Transmission Services
18	Money Express LTD	Cash4Africa Local Money Transfer (Money Transmission Services)
19	Money Link Zambia LTD	Money Line UK International (Money Transmission Services)
20	Mobi Kash Zambia LTD	Mobile Commerce
21	Mukuru money transfers	Money Transfer Services

22	Madison Finance	Western Union International Money Transfer (Money Transmission Services)
23	National Savings and Credit Bank	Proprietary Money Transfer (Money Transmission Services)
24	Necor Zambia LTD	Cash4Africa Local Money Tranfer (Money Transmission Services)
25	Nettcash Mobile Payments Zambia Limited	E-Money Issuance
26	PostDotNet	Western Union International Money Transfer (Money Transmission Services)
27	Runnymede	Coinster International Money Transfer (Money Transmission Services)
28	SmartPay	Mobile Payment Services
29	Standard Chartered Bank	Western Union International Money Transfer (Money Transmission Services)
30		
31	Stanbic Bank	Money Gram International Money Transfer (Money Transmission Services)
32	Touch4Pay Zambia Limited	Payment Services
33	United Bank of Africa	Money Gram International Money Transfer (Money Transmission Services)
34	UAE Exchange Money Transfer services LTD	Money Transmission Services
35	Vending Technologies Zambia Limited	Payment Services
36	Zoona	Mobile Payment Services And Money Transmission Services
37	Zamtel Kwacha	Mobile Payment Services And Money Transmission Services
38	Zambia National Building Society	Proprietary Money Transfer (Money Transmission Services)
39	Zampost	Western Union International Money Transfer (Money Transmission Services)
40	ZANACO	Money Gram International Money Transfer (Money Transmission Services)

APPENDIX F: Data Collection Questionnaires



THE UNIVERSITY OF ZAMBIA SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Questionnaire for Financial Services Regulator Bank of Zambia (BOZ)

To Whom It May Concern

I am a postgraduate student at the University of Zambia carrying out a research on “**An investigation into the Policy and Regulatory challenges of Digital Financial Services ICT infrastructure in Zambia**”.

As a financial services regulator in the Country, you have been selected to participate in this research as your input is very vital for the outcome of this research. As per the letter of introduction from UNZA, the information you will provide is purely for academic use and will be treated with the highest degree of confidentiality. You are therefore required to be as objective as possible in your responses and you are not required to disclose your identity.

We thank you for the invaluable contribution to this important research.

Sincerely,

Kombe Kaponda

+260-966-889855

Dr. Simon Tembo - Research Supervisor

+260-971-003326

Instructions:

1. Answer all questions
2. Tick or cross the correct answers where they are provided
3. Write answers for the other questions in the spaces provided.

Please indicate your response/answer to each question or statement by ticking or filling in the appropriate blank spaces provided.

Section A: The Regulatory Domains

Does the Bank of Zambia regulation allow for the use of Mobile Banking?

Yes [] No []

Does the Bank of Zambia authorize the use of nonbank retail agents as the cash in or cash out point and principal customer interface?

Yes [] No []

Does the Bank of Zambia regulation allow for the issuance of Electronic-Money?

Yes [] No []

What are the requirements to operate digital financial services and that are the fees and licences required?

.....
.....
.....
.....

Does the Bank of Zambia regulation allow for effective consumer protection to address the risks involved in electronic payments?

Yes [] No []

Does the Bank of Zambia regulation allow for Inclusive payment system regulation and effective payment system oversight?

Yes [] No []

Is there Bank of Zambia Policies governing competition among financial service providers which allow for incentives for pioneers to get into the Digital Financial Services (DFS)?

Yes [] No []

How much information exchange is between Bank of Zambia (BOZ) and Zambia Information and Communications Technology Authority (ZICTA)?

Non? **Yes [] No []**

Very Little? **Yes [] No []**

Little? **Yes [] No []**

Moderate? **Yes [] No []**

Very High? Yes [] No []

If **No**, what is the regulation can improve this information exchange?

.....
.....
.....
.....

How much information exchange is between Bank of Zambia and the ICT and Telecommunications regulator?

.....
.....
.....
.....

What changes in the regulation is affecting digital financial services for the last 5 years?

.....
.....
.....
.....

Are there any regulations that impacts consumer financial risks? If YES, how are consumers affected? **Yes [] No []**

.....
.....
.....
.....

What regulation, if any, governs the promotion of competition and/or the prohibition of anti-competitive measures relevant to the banking and telecommunication sectors?

Yes [] No []

.....
.....
.....
.....

Does the regulation clearly state the role of financial and telecommunications regulators in promoting and enforcing competition in the respective sectors? Which regulator has the overall Authority?

Yes [] No []

.....
.....
.....
.....

Have any practices in the financial services and telecommunications sectors ever been found by an official body to be anti-competitive? If so, what was the practice and what was the outcome?

Yes [] **No** []

.....
.....
.....
.....

Are any practices of the financial services and telecommunication sectors currently under official, publicly-disclosed investigation by competition authorities? If so, which and list cases?

Yes [] **No** []

.....
.....
.....
.....

With respect to financial services, has the jurisdiction of competition regulators vis-à- vis financial regulators been clearly defined? Are any legal changes needed to address this issue?

Yes [] **No** []

.....
.....
.....
.....

Do you have any concerns about anti-competitive practices among e-money issuers and mobile network operators? If so, how will you address these concerns?

Yes [] **No** []

.....
.....
.....
.....

Are you aware of, or do you already apply, the World Bank/ BIS General Principles for International Remittances? If you do not already apply them, do you have plans to comment, respond and/or apply them?

Yes [] **No** []

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What regulation, if any, governs rights to the sharing, use and storage of financial information regarding consumers (collectively data privacy regulation) by banks, mobile network operators or other commercial organizations?

Yes [] **No** []

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How does data privacy regulation affect the ability of financial providers or mobile telephone operators to transfer information relating to their clients to:

Domestic third parties?

Foreign third parties?

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How does data privacy regulation address the use of credit information by credit bureaus?

Yes [] **No** []

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Does data privacy regulation allow the collection of positive credit information by credit bureaus? If yes, from what sources?

Yes [] **No** []

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Does data privacy regulation require customers to authorize the collection, sharing and use of personal information by financial service providers and credit bureaus?

Yes [] **No** []

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What is the impact of your data privacy regulation on financial inclusion?

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Does the data privacy regulation unduly restrict foreign or domestic money transfers and if so, how could these restrictions be ameliorated?

Yes [] **No** []

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Is there any regulation that seem to block digital financial services growth and If so, what have been the corrective measures for the last 5 years?

Yes [] **No** []

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Do you regulate Mobile Money? If so, what regulation currently governs Mobile Money operations?

Yes [] **No** []

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Who is responsible for policymaking and enforcement on mobile money?

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How and Who controls the processes for ensuring adequate integrity, security and confidentiality of electronic money?

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Section B:

What regulation governs outsourcing by banks and nonbanks for the provision of Digital financial services?

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What does the regulation generally require for setup of a DFS operation in the country?

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Who is responsible for policy making and enforcement of DFS?

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Does the agency operating Digital financial services require the prior authorization from Bank of Zambia?

Yes [] **No** []

If **Yes**, what is the authorization process and is such authorization required in all cases and Fees are paid?

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What operational requirements (such as equipment specifications, **transactional limits**, security measures) does the regulation require of agents to perform any given service?

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Does the regulation require transactions by agents to be settled within a specified timeframe?

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Is data privacy and bank secrecy regulation applicable to Digital Financial Service?

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Is price transparency regulation applicable to Digital Financial Service?

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Section C

How widespread is the use of Digital Financial Service by banks and nonbanks for the delivery of financial services in Zambia?

Very Common [] **Common** [] **Not Common** []

What types of retail establishments typically serve Digital Financial Service?

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Is current regulation considered adequate for increasing access to banking services such as withdrawals, deposits, transfers, savings, loans and foreign remittances?

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What in the current regulation (or supervisory process) must be changed in order to increase access to Digital Financial Service?

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Are there any jurisdictions in which Digital Financial Services agents are explicitly allowed to take deposits or provide cash for withdrawals on behalf of banks?

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What type of financial institutions and nonbanks would be allowed to use Digital Financial Services for the delivery of financial services?

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Is there a need for additional regulation to be introduced? Yes [] No []

If regulation is to be introduced, what is the timeframe and process?

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What regulation, if any, governs money laundering and/or the financing of terrorism?

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What does the regulation generally require?

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To whom or to what functions does it apply?

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.....

Is the country a member of the Financial Action Task Force (FATF) or a regional FATF-style body? If so, which? Yes [] No []

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Is there any intention to change the regulation regarding CDD/KYC for low value accounts or one-time payments or remittances? If so, what changes are being considered and how are they received by officials? What is the proposed timeframe? Yes [] No []

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.....

If there is no electronic-money regulation, is there any intention of future regulation? If so, when? Yes [] No []



UNIVERSITY OF ZAMBIA
SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Questionnaire for ICT and Telecommunications Regulator

Zambia Information and Communications Technology Authority (ZICTA)

To Whom It May Concern

I am a postgraduate student at the University of Zambia carrying out a research on "**An investigation into the Policy and Regulatory challenges of Digital Financial Services ICT infrastructure in Zambia**".

As the Countries Telecommunications Regulator, you have been selected to participate in this research as your input is very vital for the outcome of this research. As per the letter of introduction from UNZA, the information you will provide is purely for academic use and will be treated with the highest degree of confidentiality. You are therefore required to be as objective as possible in your responses and you are not required to disclose your identity.

We thank you for the invaluable contribution to this important research.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kombe Kaponda".

Kombe Kaponda
+260-966-889855

Dr. Simon Tembo - Research Supervisor
+260-971-003326

Instructions:

1. Answer all questions
2. Tick or cross the correct answers where they are provided
3. Write answers for the other questions in the spaces provided.

Please indicate your response/answer to each question or statement by ticking or filling in the appropriate blank spaces provided.

Section A**TELECOMMUNICATIONS OR MOBILE NETWORK OPERATOR (MNO) REGULATION**

At the core of any Digital Financial Services Banking models is the convergence of telecommunication and banking services. Mobile network operators (MNO) may act as simply communication service providers (an electronic channel between the bank and the customer) or as financial service providers, if banking and telecom regulation permit. The diagnostic team should have a complete picture of the current state of the mobile phone sector (regulation, supervision, players, competition, penetration, prices, growth potential, etc.) and the level of interest from MNOs in providing financial services, both through partnerships with banks and in a nonbank-based scheme. Attention should be paid to the likelihood of conflicts between MNOs and banks if MNOs enter the banking business.

Do telecommunications or mobile network operators have their own regulation?

Yes [] **No** []

What regulation governs telecommunications or mobile network operators?

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What does the regulation generally require?

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What laws and who is responsible for policymaking and enforcement of regulations on ICT and Telecommunications infrastructure?

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Does the regulation limit the ability of mobile network operators to Offer value-added services such as e-commerce services? If so, what restrictions or conditions are imposed?

Yes [] **No** []

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.....

How much information exchange is between Bank of Zambia (BOZ) and Zambia Information and Communications Technology Authority (ZICTA)?

Non? **Yes** [] **No** []

Very Little? **Yes** [] **No** []

Little? **Yes** [] **No** []

Moderate? **Yes** [] **No** []

Very High? **Yes** [] **No** []

If **No**, what is the regulation can improve this information exchange?

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How much information exchange is between Bank of Zambia and the ICT and Telecommunications regulator?

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Does the current regulation allow for MNO joint ventures with any financial service provider? If so, what restrictions or conditions are imposed?

Yes [] **No** []

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Is there any information sharing with the financial services regulator and how much collaboration exists?

Yes [] **No** []

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Are MNOs permitted to offer prepaid airtime transfers from one individual to another (peer-to-peer prepaid airtime transfer)? If so, can transferred airtime balances be converted to e-money?

Yes [] **No** []

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Who regulates the USSD platforms and which regulation governs the equal use of the infrastructure?

Yes [] **No** []

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Do regulators monitor the completion and contention of USSD platforms? How do you ensure an equal playing field? **Yes** [] **No** []

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Do regulators have the power to require interoperability and interfere in pricing of USSD platform usage?

Yes [] **No** []

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How many service providers currently operate USSD and which other service providers use USSD for their operations?

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What is the market share of each provider MNO?

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How many post-paid and prepaid subscribers are there?

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Are mobile telephone calls, text messages and handsets affordable for low-income customers? **Yes** [] **No** []

What barriers do low-income customers face in accessing mobile phone services?

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Do you have any specific concerns about telecom companies directly or indirectly entering financial services?

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Have you had discussions with financial regulators over any unclear areas of overlapping regulatory domains?

Yes [] **No** []

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Will there be any changes in your policy regarding the Value Added Services by telecom companies? If so, what are they and what is the timeframe?

Yes [] **No** []

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Have you had any specific experience in approaching the financial services regulator for guidance with respect to value added services? If so, what happened?

Yes [] **No** []

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What financial services are being provided via your mobile network? How are they provided?

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Do you foresee any legislative or other barriers to providing financial services via the mobile network in the last 5 years? What measures are in place to mitigate these barriers?

Yes [] **No** []

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Are there particular barriers in ICT and Telecommunications regulation for low-income customers to access mobile financial services? If so, how do you intent to overcame these barriers.

Yes [] **No** []

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Is there a general policy by regulators on increasing financial access to low-income segments of the population? If so, describe its main elements. Who are its main supporters and opponents? How important is this issue politically?

Yes [] **No** []

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Do regulators envisage changing or introducing new regulation impacting financial access in the next 5 years? If so, what are the main elements of the regulation and who are its main supporters and opponents?

Yes [] **No** []

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What have been the main barriers to financial inclusion in the last 5 years? How will these be addressed?

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Do banks or other entities offering low income banking services report regulatory obstacles which affect their ability to offer these services? If so, what are they?

Yes [] **No** []

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Thanking you for your cooperation.



UNIVERSITY OF ZAMBIA
SCHOOL OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Questionnaire for Zambia Competition and Consumer Protection Commission

To Whom it may Concern

I am a postgraduate student at the University of Zambia carrying out a research on “**An investigation into the Policy and Regulatory challenges of Digital Financial Services ICT infrastructure in Zambia**”.

As a researcher, we are aware that consumer protection is one of the tenets of competition and consumer protection law in Zambia. Considering the fact that consumer protection intervenes to impose safeguards in the favour of consumers of digital financial service and aims to ensure a balance of satisfaction between and traders and consumers.

In view of the above, the Zambia Competition and Consumer Protection Commission has been selected to participate in this research as your input is very vital for the outcome of this research. As per the letter of introduction from UNZA, the information you will provide is purely for academic use and will be treated with the highest degree of confidentiality. You are therefore required to be as objective as possible in your responses and you are not required to disclose your identity.

We thank you for the invaluable contribution to this important research.

Sincerely,

Kombe Kaponda

+260-966-889855

Dr. Simon Tembo - Research Supervisor

+260-971-00332

Instructions:

1. Answer all questions
2. Tick or cross the correct answers where they are provided
3. Write answers for the other questions in the spaces provided.

Please indicate your response/answer to each question or statement by ticking or filling in the appropriate blank spaces provided.

Section A:

What is the consumer protection regulation, if any, which governs bank and nonbank digital financial services providers (particularly account opening and operation, deposits and withdrawals, and the sending or receiving of payments/remittances)?

Yes [] No [] N/A []

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What does the regulation generally require and do consumers report any unfair business practices on digital financial services?

Yes [] No [] N/A []

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Who is responsible for policy making and enforcement and who is the go-between for business and consumers?

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Are there specific consumer protection rules applicable to the use of Digital Financial Services by banks and nonbanks? If so, describe.

Yes [] No [] N/A []

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Are there specific consumer protection rules applicable to electronic financial transactions? If so, describe:

Yes [] No [] N/A []

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What information must be disclosed to the consumer at the time of opening an account or making a one-off payment/remittance using Digital Financial Services?

Yes [] **No** [] **N/A** []

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Are there specific consumer protection rules applicable to the usage of the USSD infrastructure for mobile financial services operators? If so, describe. Who is responsible for enforcement of these rules?

Yes [] **No** [] **N/A** []

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Are there any consumer conflicts on the use of the USSD infrastructure by mobile financial services providers and who has the overall authority for shared use of this infrastructure?

Yes [] **No** [] **N/A** []

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How has the commission dealt with USSD infrastructure dispute cases and how does consumer protection regulation address these conflicts?

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.....

Have you received any complaints with respect to aspects of Digital Financial Services banking? If so, describe. How were such complaints resolved? How long did resolution take?

Yes [] **No** [] **N/A** []

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Do you have any specific concerns (such as lack of consumer literacy or consumer education) with respect to the use of mobile network operators or other nonbanks in providing financial services?

Yes [] **No** [] **N/A** []

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.....

Do you have any specific concerns with respect to the use of retailers as agents in providing digital financial services?

Yes [] **No** [] **N/A** []

How adequate is consumer protection regulation for basic banking services and electronic payments with or without the use of retail agents?

Yes [] **No** [] **N/A** []

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How do you monitor agent compliance with consumer protection regulation when using agents? How do you resolve agent noncompliance?

Yes [] **No** [] **N/A** []

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What are the most common consumer protection related complaints and how are they usually resolved? How long does resolution take?

Yes [] **No** [] **N/A** []

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What is the regulation, if any, which governs the operation of payment systems and is there any interactions with the financial service regulator and ICT and telecommunications regulator?

Yes [] **No** [] **N/A** []

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Is there a national policy statement with respect to the development of Digital Financial services and fair completion and usage of ICT and telecommunications infrastructure?

Yes [] **No** [] **N/A** []

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Is there a differentiation of treatment in licensing or supervision between financial institutions and non-financial institutions providing payment services?

Yes [] **No** [] **N/A** []

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Do financial regulators have the power to require or enforce interoperability of retail payment systems? If so, under what conditions?

Yes [] **No** [] **N/A** []

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Are there any competition complaints from Digital financial services operators? How have these complaints been addressed?

Yes [] **No** [] **N/A** []

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How many complaint cases on mobile financial services have you had in the last 5 years?
How have these cases been addressed.?

1 - 100 [] **More than 100** [] **N/A** []

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How much collaboration is between the competition and consumer protection commission, financial services regulator and the ICT and telecommunications regulator? What is the frequency of the meetings in a month?

1 - 10 [] **More than 10** [] **N/A** []

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Do you believe the use of electronic means of payment have the potential to increase access to financial services by lower-income clients? If so, describe how. What can be done to meet such potential?

Yes [] **No** [] **N/A** []

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.....

Is there any and how much interoperability and competition exists between Digital financial services providers?

Yes [] **No** [] **N/A** []

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If the lack of interoperability is a barrier to expanding access to financial services and retail agent networks, how can this barrier be removed?

Yes [] **No** [] **N/A** []

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What changes in the regulation affecting retail payment systems do you foresee in the next 3 years?

Yes [] **No** [] **N/A** []

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What barriers limit the ability for digital financial services providers to compete and cooperate? How can such barriers be removed?

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If there is a lack of interoperability between the service providers, what accounts for such lack? How can this be resolved?

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Is there any regulation and what regulation, if any, governs the promotion of competition and/or the prohibition of anti-competitive measures relevant to the digital financial services?

Yes [] **No** [] **N/A** []

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.....

Does the regulation clearly state the role of financial and telecommunications regulators in promoting and enforcing competition in the respective sectors?

Yes [] **No** [] **N/A** []

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Have any practices in the financial services and telecommunications sectors ever been found by an official body to be anti-competitive? If so, what was the practice and what was the outcome?

Yes [] **No** [] **N/A** []

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.....

Are any practices of the financial services and telecommunication sectors currently under official, publicly-disclosed investigation by competition authorities? If so, which?

Yes [] **No** [] **N/A** []

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.....
With respect to financial services, has the jurisdiction of competition regulators vis-à-vis financial regulators been clearly defined? If not, does this situation affect the ability of competition authorities to adequately oversee and take measures against anti-competitive behaviour in the financial sector? Are any legal changes needed to address this issue?

Yes [] **No** [] **N/A** []

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.....

Do you have any concerns about anti-competitive practices among e-money issuers and mobile network operators? If so, how will you address these concerns?

Yes [] **No** [] **N/A** []

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.....

Are you aware of, or do you already apply, the World Bank/ BIS General Principles for International Remittances? If you do not already apply them, do you have plans to comment, respond and/or apply them?

Yes [] **No** [] **N/A** []

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.....

What regulation, if any, governs rights to the sharing, use, storage and transmission of financial information regarding consumers' banks, mobile network operators or other digital financial services providers?

Yes [] **No** [] **N/A** []

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.....

What is the impact of your data privacy regulation on digital financial services access and what consumer protection regulation applies?

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Have you ever contacted regulators with any concerns with regard to foreign exchange regulation? If not, why not? If so, what was the outcome?

Yes [] **No** [] **N/A** []

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What regulation governs mobile financial services competition and are there any consumer disputes?

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Who is responsible for policymaking and enforcement?

Yes [] **No** [] **N/A** []

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Thanking you for your cooperation.

APPENDIX G: Digital Financial Services Operator Questionnaire



UNIVERSITY OF ZAMBIA SCHOOL OF ENGINEERING DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Instructions:

1. Answer all questions
2. Tick or cross the correct answers where they are provided
3. Write answers for the other questions in the spaces provided.

Please indicate your response/answer to each question or statement by ticking or filling in the appropriate blank spaces provided.

I. DFS PAYMENT SYSTEM OR PAYMENT SYSTEM BUSINESS					
Position of applicant (Please tick in the appropriate box)			<input type="checkbox"/> Chief Executive Officer <input type="checkbox"/> Director		
Full name of the organisation operating the system					
Full name of payment system/payment system business					
II. PERSONAL PARTICULARS					
1. Please provide below your personal particulars:					
Name		Sex (Please tick in the appropriate box)			<input type="checkbox"/> Male <input type="checkbox"/> Female
Nationality		Date of birth		Place of birth	
District		Village		Chief	
Marital status		NRC/Passport No.			

	Contact numbers					
Residential address	Home					
	Office					
	Mobile					
	Fax					
	Email					
For non-Zambian applicants, please provide the following additional details						
Passport No		Expiry date				
Nationality		Country of residence				
Are you in possession of a work permit? (Please tick in the appropriate box)			<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
If in possession of a work permit please provide the following details						
Immigration Permit No	Date of grant of work permit	Expiry date of work permit				
If not in possession of a work permit please provide us with the following						
Have you applied for work permit? (Please tick in the appropriate box)			<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
If work permit applied for, please indicate the date of application for work permit						
If work permit has not been applied for, please indicate the reason(s) for not applying						

III. DIRECTORSHIP AND SHAREHOLDING				
1. Are you a director or shareholder in any other corporation? if you are, please provide the following details				
Name of corporation and place of incorporation	Nature of business	Directorship (executive/nonexecutive)	Date of appointment (mm/yy)	Percentage shareholding in corporation (if any)

IV. TYPE OF DFS BUSINESS				
If the answer to any of the following questions is in the affirmative, please attach annexes and supporting documents, where appropriate, giving all relevant particulars.				
1. Within the past 10 years (Please tick in the appropriate box);				
(a) have you been involved in the operation of DFS or any other similar business?				
<input type="checkbox"/> Yes				<input type="checkbox"/> No
(b) have you been refused the right or restricted to carry on any trade, business or profession for which a specific licence, registration or other authorization is required by law in any jurisdiction?				
<input type="checkbox"/> Yes				<input type="checkbox"/> No

(c) has a prohibition order under any Act administered by the Bank of Zambia ever been issued against you or have you been prohibited from operating in other jurisdiction by any financial services regulatory authority?

Yes		No
-----	--	----

(d) Does your business use the USSD infrastructure?

Yes		No
-----	--	----

(e) Do you have free access and fair use of the USSD platform?

Yes		No
-----	--	----

(f) Do you have any dispute cases on the use of USSD platform with the mobile network operator that provides the infrastructure?

Yes		No
-----	--	----

(g) Do you have any other third party ICT Technologies used with your payment solution? If yes state the provider details?

Yes		No
-----	--	----

(h) Did your organisation pay fees to more than one regulator ?

Yes		No
-----	--	----

(i) has any body corporate, partnership or unincorporated institution with which you were associated as a director or executive officer, in Zambia or elsewhere, been wound up, made subject to an administration order, otherwise made any compromise or arrangement with its creditors or ceased trading, either while you were associated with it or within one year after you ceased to be associated with it, or has anything analogous to any of these events occurred under the laws of any other jurisdiction during the period?

Yes		No
-----	--	----

(j) have you, been dismissed from any office, employment, or subject to disciplinary proceedings by your employer or barred from entry to any profession or occupation, in Zambia or elsewhere?

Yes		No
-----	--	----

(k) have you been disqualified from acting as a director or disqualified from acting in any managerial capacity, in Zambia or elsewhere?

Yes		No
-----	--	----

(l) have you been an officer found liable for an offence committed by a body corporate as a result of the offence having proved to have been committed with the consent or connivance of, or neglect attributable to, the officer, in Zambia or elsewhere?

Yes		No
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(m) have you been unable to settle any of your financial obligations in Zambia or elsewhere?		
<input type="checkbox"/> Yes		<input type="checkbox"/> No
(n) have you rescheduled or restructured any of your debts in Zambia or elsewhere?		
<input type="checkbox"/> Yes		<input type="checkbox"/> No
(o) have you been subject to any judgment debt passed against you in Zambia or elsewhere?		
<input type="checkbox"/> Yes		<input type="checkbox"/> No

LIST OF PUBLICATIONS

1. K. Kaponda, S. Tembo, “Evaluation of Policy and Regulatory Challenges of DFS ICT Ecosystem in Zambia”, **Social Science Research Network (SSRN)**, 2018, (Published). Available on URL: <http://ssrn.com/abstract=3262369>

2. K. Kaponda, S. Tembo, “Investigation into the Policy and Regulatory Challenges of Digital Financial Services ICT Environment in Zambia”, **International Journal of Innovative Science Engineering and Technology (IJISET)**, 2018, (Published). Available on URL:
http://ijiset.com/vol5/v5s9/IJISET_V5_I09_23.pdf