Mobile Payment Security Governance Framework for Mobile Network Operators in Zimbabwe

By

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ABSTRACT

"Technological process is like an axe in the hands of a pathological criminal." (Einstein 2015).The non-existent mobile payment security governance framework for Mobile Network Operators (MNOs) is directly or otherwise, causing constant challenges to mobile payment systems (MPS) subscribers who include systems and service providers, and operators and general clients in Zimbabwe. Consequently, there is perceived yet undetermined lack of clientele trust, confidence and convenience among MPS subscribers; suspected lack of accountability, transparency, fairness and good governance resulting from insufficient legal, policy and regulatory guidelines. However, there is no sufficient metric to measure the quality of security governance in institutions. Emerging frontiers that advance MPS clientelism ensue. For the purpose of this study, the regulator for MPS governance is limited but not restricted to the Postal Telecommunications Regulatory Authority of Zimbabwe (POTRAZ). The target operators include NetOne, Telecel and Econet. The target MPS providers include banks. The study population includes but is not exclusive of the banked and unbanked MPS clients.

Anecdotal evidence indicates that counterfeits of the MPS governance framework for MNOs in Zimbabwe are affecting the corporate images of banks and clients in many ways. Clients are the key investors; inversely they are the most affected. The non-existent MPS governance framework is suspected to be undermining the very fabric of MPS actual systems use which includes its computability, compatibility, acceptability, applicability, reliability and viability. These counterfeits fundamentally buttress clientele trust, confidence and convenience. As trust shrinks, so raises the claim for clientelism. By and large, the capacity and autonomy of the MPS governance framework for MNOs in Zimbabwe are put on the radar, and interrogated in the clientele domain. In order to mitigate the indifference of the MPS governance framework on customers, a grounded client centric model is proposed for implementation.

This study interrogates the legal, policy, regulatory and technological challenges created by the MPS governance framework for MNOs in Zimbabwe. The purpose of the study is to develop and enhance the beneficial participation of clients in MPS governance. The option to cross examine MNOs is informed by the view that MPS actual cyber and social systems transactions evolve around MNOs. Subsequently, this study tests the hypothesis that an enabling and proficient control MPS governance framework for MNOs influences MPS best practice which is intrinsically connected with or incidental to the customers' perceived demand for clientele trust, confidence and conveniences in MPS actual cyber and social systems use. In order to effectively interrogate the capacity and autonomy of the MPS legal, policy, regulatory and technological terrain, show cause and facilitate the development and enhancement of clients' full participation; this study sources grounded qualitative data from MPS clients, operators, service providers and the regulator. The grounded case oriented perspective presents compelling grounded qualitative data for academic and expert reviews. Resulting from the academic and expert reviews, an enabling and proficient control MPS governance framework for MNOs in Zimbabwe is proposed. Conclusions, recommendations and areas for further research are submitted for future considerations.

DECLARATION

I, Tauya Mugwagwa, hereby declare that I am the sole author of this thesis .I authorize Midlands State University to lend this thesis to other Institutions or individuals for the purpose of scholarly research.

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Student Signature   Date

Tauya Mugwagwa

APPROVAL

This dissertation entitled, "**Mobile Payment Security Governance Framework for Mobile Network Operators in Zimbabwe"** meets the regulation governing the award of the degree of **MSc. Information Systems Management** of the Midlands State University and is approved for its contribution to the knowledge base and theory for future research.

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Supervisor Signature

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Mr F. Madzikanda

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"I can do all things through Christ who strengthens me" (Philippians 4: 13)

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ACRONYMS

AML...Anti-money laundering
CTA...Cash Transfer Agent
EFT..Electronic Funds Transfer
ID...Identification
KYC..Know Your Customer
ML..Money Laundering
MFS...Mobile Financial Systems and Services
MNO...Mobile Network Operator
MPS...Mobile Payment Systems and Services
NFC...Near Field Communication
OTA..Over the Air
PIN...Person Identification Number
POTRAZ..........................Postal and Telecommunications Regulatory Authority of Zimbabwe
POS...Point of Sale
RBZ...Reserve Bank of Zimbabwe
SIM...Subscriber Identity Module
SMS...Short Message Services
USSD...Unstructured Supplementary Service Data

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

Worldwide mobile phone usage

The International Telecommunication Union (ITU) estimates that there are seven billion clients with direct access or using mobile phones in the world (ITU, May 2014). By the end of 2014, an average of 635 million clients was directly or indirectly registered with mobile telephone operations in Africa (The Guardian, 2014). Estimates of 11 million clients are directly or otherwise registered with MNOs in Zimbabwe (Potraz, 2014). Africa's subscriber base constitutes 7% of the global mobile market (ITU, 2007). Overly, it is projected to rise to 930 million by 2019 (Ericsson Report, 2014) given the availability of user friendly, durable and cost effective smart phones that conveniently provide personalised entertainment, grouped communication on health, educational information, market and production needs.

Approximately one billion clients use Mobile Financial Services (MFS) in the world (ITU, 2014). An average of 530 million clients is subscribed with MFS in Africa (Ford, 2014). The Postal and Telecommunications Regulatory Authority of Zimbabwe (Potraz) observes that estimates of 8 million clients are directly subscribed with MFS in Zimbabwe (Potraz, 2015).

The mobile phone industry is one of the fastest growing "new face of banking" (Banda, 2011) showing remarkable potential to investors, operators and regulators in Zimbabwe. However, there are embedded legal, policy, operational, technological gaps and omissions in the MPS governance framework for MNOs in Zimbabwe. The perceptions impute that the existing MPS governance frame relatively emphasizes accountability, transparency and good corporate governance. This relativity has expressed undetermined potential in undermining the benchmarks of MPS usefulness, ease to use, satisfaction, behavioural intention to use it or the acceptability, applicability, reliability and viability of its actual systems use.

Consequently, a renewed client centric trajectory in MPS is proposed to turnaround MPS governance frameworks and facilitates a sustainable socio-economic and technological development of MPS. The state cum government corporate governance blueprint entitled,

"Corporate Governance Framework for State Enterprises and Parastatals," (2010); the economic blueprint entitled, "Zimbabwe Agenda for Sustainable Socio-Economic Transformation (Zim. Asset) Plan 2013-2018," (2014); the private sector "National Code on Corporate Governance: Zimbabwe (2014)"; "Zimbabwe's Client Service Charter Compendium 2015: A guide to understanding government services and standards"; and Machiavellian philosophy that aptly states, *"Whosoever desires constant success must change his conduct with times,"* inform this study that interrogates the macro, top-bottom, state capacity approaches used to conciliate clients and seeks to develop and enhance an enabling and proficient clientelism for a control MPS governance framework for MNOs.

Governance and MNOs

The theory and practice of governance is a significant value which is broadly used and commonly misunderstood, misinterpreted or underrated yet any institution's legal standing, status or corporate image is defined and sustained by its governance framework. Mel Gill (2002) identifies nine different types of governance models that need to be hybridized in any governance context if they have to be effective. The operational governance model governs the work of an organization. The collective governance model prevails where boards work as a team to prescribe the organization's work ethos. The management governance model is used to govern the operations of organizations through functional committees. The constituent representative governance model is an approach used by openly elected officials.

The traditional governance model is employed where the boards superintendent organizational operations along functional structures like human, finance and programs committees. The result-based governance model is used in policy making. The policy governance model is used to superintendent policies by outlining organizational aim, methods and management parameters. The advisory board governance model is constituted by selected directors who give advice or rubber-stamp the executive's recommendations. Gill (2002) summarised the stated definitions of governance and concluded that governance is *"the processes, structures and organizational traditions that determine how power is exercised, how stakeholders have their say, how decisions are taken and how decision-makers are held to account."* However, for Woodrow Wilson (1887) and this research study;

> *".......governance is about the performance of agents in carrying out the wishes of principles set. The government is an organization which can do its functions*

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better or worse; governance is thus about execution, or what has traditionally
fallen within the domain of public administration, as opposed to politics............"

Many times, governance frames are contentious watchman tools that institutionalize constitutional, legal, policy and regulatory instruments. Ideally, governance frameworks are need-driven and sector specific formulations that derive from international conventions, declarations, national constitution and laws. A standard national policy (conservative, guided, liberal incremental or revolutionary) is a people-driven artefact formulated on the basis of valued existing constitution, laws and national aspirations. Institutions, Protraz, in this study develop institutional MPS regulations that benchmark MNO operations or/and workmanship.

Governance and POTRAZ

This researcher suspects that Potraz is pursuing enterprise security governance, *"a company's strategy to reduce risk by protecting systems and information, as well as its execution of that strategy."* (Rouse, 2015). This overlooks MPS clientelism, being the *"reciprocity between client and patron"* (Fukuyama, 2013). The omission of MPS clientelism forms the basis of this study inquiry since it is topical in MPS business practice.

In governance, institutional policies and regulations; though people, worker, client-driven or oriented should ultimately represent the national constitution, laws and policies. In the main, governance policies are institutional and varied. Governance policies express this way because of historical, social, economic and political ideologies. In this study, MPS governance focuses on (1) MPS procedural measures; (2) MPS capacity measures; (3) output measures and (4) measures of bureaucratic autonomy for MPS clients (Fukuyama, 2013).

Notwithstanding, technology-based governance frames and policies, when interfaced with a utilitarian paradigm shift enhance development, improves market shares in business, and rights consciousness among clients and other support fronts. Nonetheless, it is trivial to develop lasting technology-based governance frameworks and policies because technological innovations take various forms of dynamic evolutions during and after their development.

Strides have been made to renew the culture of corporate governance in Parastatals and private sector in the last fifteen years in Zimbabwe. The Kariba Workshop on the Administration and Governance of Parastatals (2001) is one of the initiatives proposed to stimulate Zimbabwean parastatals towards growing a culture of good corporate governance.

> *"...........Government, with the support of State Enterprises and Parastatals and other stakeholders, was able to traverse the winding road leading to this Corporate Governance Framework.........."* .

The "Corporate Governance Framework for State Enterprises and Parastatals," (2010) sought *"to establish an operating environment that is cognisant of changing socio-economic environment"*. It was viewed to be a turnaround or rebranding plan since *"investment flows favour regions characterised by good Corporate Governance practices"*. The framework was based on the four pillars of corporate governance that include responsibility, accountability, fairness and transparency. This research study undertaking revisits the four pillars in the context of MPS clientelism with the goal and aim of suggesting a responsible, fair, accountable, and transparent MPS systems and service provisions to MPS clients.

The private sector added its own voice to the need for a renewed culture of good corporate governance came up with an all-embracing "National Code on Corporate Governance: Zimbabwe (2014)". Among other things, this private sector document on governance was an;

> *"initiative to tackle, holistically, the problems of corporate failures and scandals... by crafting a national code of corporate governance.....to instil discipline in the business sector, raise the bar on corporate governance above legal stipulations......The code covered all sectors of the economy and the process had to be all-inclusive and in particular take into account gender balance and corporate social responsibility as guided by the three-Ps- people, planet and profit..."* p.8.

The private sector document argues for the evolution of the culture of good corporate governance that undertakes three stages of evolution namely; the *"apply or explain"* "indirect coercion", *"comply or explain"* or *"comply or else."* The evolution relates to the ways by which governance frames will be taken into legislation. The approaches and governance "pillars" are consistent with this study's strategic recommendations for an enabling and proficient control MPS governance framework for MNOs that is dictated by MPS clientelism.

Zimbabwe's Client Service Charter Compendium 2015 is the first state cum government-driven, not people cum business-driven client centric blueprint in the history of Zimbabwe.

The Role of the Ministry of ICT

The Ministry of Information Communication Technology, Postal and Courier Services that presides over MPS institutions on behalf of government express the need for full participation of clients in the development of an information society through the exploitation of the potential of ICTPCS for sustainable socio-economic development (p. 75-76). Notwithstanding, parts of the mandate of the government ministry towards ICT clients are to:

- ❖ develop appropriate policies and strategies that enhance provision of ICT, telecommunications, postal and courier services;

- ❖ spearhead the development of appropriate regulatory frameworks that facilitate the promotion of information communication technology, telecommunications, postal and courier services;

- ❖ champion, promote and coordinate national ICT, telecommunications, postal and courier **research and development** of cost effective software, hardware and infrastructure so that it reaches best international standards;

- ❖ develop supportive and enabling communications infrastructure to ensure equitable access to ICTs by all citizens including disadvantaged groups and rural communities;

- ❖ introduce and enforce stringent quality of service and standards in the provision of ICTs;

This research study particulates the ICT research and governance issues connected with or incidental to the ministerial mandates and advances a client centric thrust by focusing on MPS governance framework for MNOs in Zimbabwe with the goal of developing and enhancing an enabling and proficient control MPS governance framework for MNOs employing client centric imputations. The researcher, being a MPS client and seasoned MPS professional is convinced that MPS business acumens lack if roles clients are not included.

Nationally, the MPS governance gaps and omissions are strongly suspected to stem from non-existent laws, policies and regulatory guidelines of Zimbabwe's MPS governance framework for MNOs. The MPS governance framework is informed and directed by the government which mandates its regulatory authority, Potraz to superintend over MPS

systems and services. In a desktop review article, Mugwati et al. (2013: 483) outline a structural analysis of the general composition and regulation of Zimbabwe's MFS sector. The differences between MFS cyber security and social security are not elaborate. The review did not place reasonable focus on the client centric cyber systems and social analysis of the regulation of Zimbabwe's MFS sector that this research study does. The article observed that;

> *"A major issue in regulation, especially as financial institutions become more complex and diversified, relates to the structure of regulatory bodies and. Whether regulation and supervision should be conducted on the basis of multiplicity of specialist agencies or by a single regulatory authority"*

Taxonomy towards MPS

The bias towards MPS cyber systems as the key determinant to the MPS actual systems use has overshadowed the fundamental role of clients and related governance issues in the past decade. In line with the oversight, Vaidya (2011) observes that MPS have emerged from being basic devices used for voice and short messages services (SMS) to an illustrious set of multimedia hub for MPS providing dynamic networking innovations in the past decade. The MPS devices and innovations are supported by different hardware appliances that include computers and desktop tools, transmission gadgets, handsets and software applications that range from talking, instant messaging, watching television, videos, pictures, playing music, emails, navigating and others. Software applications are rapidly outpacing governance laws.

The introduction of new and intelligent smart phones has converse outcomes on MPS clients. Smart phones have significantly contributed to the actual systems use of mobile phone applications in the provision of actual social systems use like their social usefulness, ease to use and behavioural intention to use mobile phones. The exclusive focus on MPS actual systems use has alienated the fundamental roles of clients in MPS governance frameworks resulting in perceived decline or clientele indifferences to MPS usefulness. By and large, these outcomes translate into lose of clientele trust, confidence and convenience in MPS.

In the main, the perceived estrangement of the roles of clients in MPS cyber systems coupled with non-existent MPS governance frameworks on actual systems use obviously embed anxiety on clients who fail to conveniently access payments. Commonly, some of the disgruntled clients resort to trial and error methods to circumvent prescribed methods. In part,

this contributes towards the rise of cyber financial crime, hackers, money laundering and other double dealings. This also leads to the regulators to criminalise clients in defence of perceived MPS mis-governance and subsequent laxity in MPS governance standards in actual systems use.

The 'conjunctive' connection of smart phones to internet services and MNOs has introduced tapped and untapped MPS technology-based pathways for enterprising open platforms that capacitate business entities, corporate individuals and ordinary MPS subscribers in diverse ways. It is generally conceived that this diversity accelerates socio-economic development and enhances the application of mobile phones in varieties of broad band systems and services. However, a Potraz report for the quarter ending December 2014, reports that the 'conjunctive' use of smart phones pose challenges and mixed feelings against the MPS actual systems use with a number of clients complaining on *"disappearing airtime."* The Acting Director General for Potraz, Baxton Siweru once responded to such clientele complaints;

> *"A smart phone is an intelligent device as it keeps communicating with the network in the background updating some of the applications, so if it is not properly configured you will find that you put $1 or $2 and it gets chewed up due to the applications updates. But I can assure everyone that act as we receive the complaints..." (The Herald, 22 April 2015, p. B1).*

In the context of the prevailing global economic and business trends, different communications entities are merging to provide a single reliable, effective, proficient and secure service. In Zimbabwe, the subject business acumens and orientations are gradually manifesting in MPS where the banking sector and MNOs are merging to provide MPS services to the banked and unbanked subscribers. Consequently, mobile phones are accustomed to making financial transactions and social communications through MPS providers and operators. The interface between operators and provider is key issue in MPS clientelism. As such, the subject relationship, read in the context of clientelism will be interrogated when profiling the role of clients in MPS governance for MNOs in Zimbabwe.

Emergence of MPS is Zimbabwe

In an effort to maximise the competitiveness of MPS services in Zimbabwe, the banking sector and MNOs are progressively employing varied communication channels to harness

and enhance business operations. The initiatives and innovations resulted in the introduction of MPS by NetOne in early 2009, followed by Econet Wireless Zimbabwe in 2010.Noteworthy; the MPS for NetOne had initial hurdles. The rise of a new paradigm experiences resistance which is not good for emerging business enterprises. Even Machiavelli observed that, *"Nothing is more difficult than to introduce a new order..."* Nevertheless, it is predicted that 80% of sub Saharan African regional population will be using MPS while 75% of the population will be using 3G/4G by 2019 in the context of twentyfold growth in mobile data traffic and twofold growth in mobile voice traffic (Ericsson ConsumerLab, 2013).

MFS are growing in lips and bounce in terms of technological systems and services; visibility and utility minus clientele accessibility and accountability though they are marketed as platforms that offer a utilitarian financial value to banked and unbanked, subscribed and unsubscribed investors. Hanke (2008) intimated that MPS have potential to stimulate the Zimbabwean economic from hyper inflation to grow if due governance, systems security and policy considerations are put in place. In a complementary way with Gordhan (2011) who argues for a safer MFS sector to serve South Africa, Hanke insists on the need for regular legal and policy reviews of MFS to facilitate, ensure and accelerate economic recovery. This study focuses on the need for increased clients' beneficial participation in MPS governance frames as an indispensible booster to investor and public trust, confidence and convenience.

Observations made in Mlambo's (2011) survey of the organizational development of NetOne and Kabweza's (2011) survey on the organizational development of Econet Wireless Zimbabwe not the phenomenal growth in MPS that has scaled up in the past seven years after Econet Wireless Zimbabwe introduced EcoCash. Thereafter, NetOne introduced One Wallet while Telcel introduced TeleCash in MFS. There are assorted hardware appliances and novel software applications used to grow MNOs. Robust technological innovations are providing MFS that include money transfers, cash in, and cash out, peer to peer transfers and airtime top up. Generally, these systems and services are expediently called mobile transfer schemes. There is notable, if not exclusive focus on MPS cyber systems use than clients. This research study aims at developing and enhancing clients' full participation in MPS governance frames.

In their desktop review of mobile infrastructure and processes among business organisations, Kufandirimbwa et al. (2013) noted that money transfer schemes have developed new mobile financial infrastructure, processes and vibrant next generation of electronic payment systems

and services that include mobile payments. Earlier, Merritt (2010) had observed that transfer systems and services are shifting from the conventional methods to wireless carriers which are able to be used to compete for consumer market share on the basis of technological ubiquity and low tariffs. Generally, Potraz and Reserve Bank of Zimbabwe need to be capacitated, innovative, diversify and coordinate regulatory activities by sharing information, knowledge, and monitor and evaluate risk management issues that constantly crop up.

Biriwasha (2012) proposes that it is in the interest of Zimbabwe's MPS subscribers, systems and service providers and other stakeholders to invest in MFS that are efficient, secure and effective. Notwithstanding, local researchers have used armchair and participatory top-bottom methods in their studies. Without taking away anything away from such studies, it has to be noted that their studies focused on actual systems use employing desktop research and organizational analyzes to interrogate MPS governance at the expense of fieldwork based social and client centric analyzes of the same. The omissions necessitate this research study.

Realising this shortcoming, this study proposes an enabling and proficient control MPS governance framework for MNOs to facilitate the protection of MPS subscribers by enhancing existing MPS frameworks. To this end, the study will argue for the need for periodic legal, policy, regulatory and governance framework reviews of MNOs to keep abreast with rapid technological innovations thus limiting MPS challenges that inconvenience MPS subscribers, systems and service providers. The fading and disenfranchised face of clients in MPS governance is a topical question in progressive marketing scholarships. The submerged role of clients is what this study seeks to rediscover, renew and enhance in MPS governance.

An enabling and proficient control MPS governance framework for MNOs needs to be established by Potraz and its subsidiary regulatory boards. This establishment has unexplored potential to facilitate and guarantee strict supervision, enforcement of standard operational parameters and encourage the installation of proficient MFS, promulgation of legally binding services, formulation of policies and MPS Clientele Charter. S. di Castri (2013) argues that;

> *"An enabling policy and regulatory framework creates an open and level playing field*
> *that fosters competition and innovation, leverages the value proposition of both banks*
> *and nonbank providers, attracts investments, and allows providers to focus on refining*
> *operations and promoting customer adoption"*

1.2 AREA OF INVESTIGATION

Introduction

According to Ferraro (2012) to investigate (*vestigare in Latin*) is to find tracks, traces and vestiges of an issue. Commonly, the area of investigation is the place where varied client centric tracks, traces or vestiges in MPS governance framework manifest, can be identified, poked and pried. The study area interrogates the place for clients in MPS governance frame for MNOs in Zimbabwe. Generally, focus will be on governance frames. However, particular attention will be on enterprise security governance. The organizational and operational component in MNOs will be cross-examined. Based on the stated and silence study propositions, the study will have to cross examine MPS cyber and social security to determine, develop or enhance their clientele sensitivity. The pursued standpoint is shared among MFS institutions and clients in Zimbabwe. Mugwati et al. (2013: 287) observes that;

> *"Regulation and supervising of the sector in Zimbabwe has also been difficult due to high intervention from the government. Decisions made by inexperienced government officials have always override decisions made by experts in the sector and in the majority of the cases these decisions have been disastrous to both the sector and in the economy at large".*

This study exclusively interrogates the impact of the governance framework on MPS subscribers, systems and service providers, regulators and other stakeholders. The study will not investigate the impact such has on the MPS unsubscribed clients because they have an indirect influence to MPS governance. Other researchers can focus on this study omission. The broad objective for this study is to develop and enhance an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. The specific objective is to develop an enabling and proficient control MPS governance frame that is client centric. Presumably, this will radically and comprehensively enhance MPS governance in Zimbabwe.

Towards the Methodology

The preferred study methodologies have potential to provide a pragmatic and proficient solution, called an artefact in design science work-outs to the challenges faced by MPS subscribers, MNOs and other stakeholders when transacting or administering payment transactions through MPS. The design science work-outs will facilitate in enhancing MPS actual cyber systems use that are client centric. It is envisaged that the qualitative outcomes

that will emerge in this study will have a double cause and effect. Qualitative outcomes will express their viability and reliability by facilitating in safeguarding MNOs, banks and MPS subscribers against threats posed by illegal users in Zimbabwe; and by comprehensively projecting and enhancing MPS clients' beneficial participation in MPS governance. Consequently, the outcomes will show potential in enhancing MPS actual social systems.

The scope of the subject area of inquiry includes but is not restricted to cross examining the MPS registration systems and services which were originally designed for telecommunications environment. Indeed, they are not technologically appropriate for standard banking requirements. Arguably, telecommunications cyber systems devices that include the hardware appliances and software applications, MPS operating systems and designs were designed and engineered for the telecommunications environment, not for MPS systems and services. During the transition process, MPS clients were disenfranchised of their full participation. This study rediscovers and renews the MPS clients' full participation.

The MPS devices, initially designed for the telecommunications environment and now being used for financial transactions lack security systems. The sudden turn of technological terrain require robust MPS actual cyber and social systems uses that are regulated by an enabling and proficient control MPS governance framework for MNOs that guarantees security and satisfaction in the banking sector and clients respectively. Herein, sensitive data about MPS transmitted via latest technologies like Over the Air (OTA) and other wireless technologies like Wi-Fi or Bluetooth need to be protected from interception, hacking or manipulation by third parties. MPS risk and security management issues become a complementary area of investigation during the process of interrogating MPS governance frames in this study.

Main Areas of Investigation

Realizing that there is lack of adequate knowledge and information about MFS among MPS banked and unbanked clients, the area of investigation cross examines MPS risk and security awareness education about MPS laws, policies and governance framework for MNOs, MPS systems and service delivery. It is noteworthy that MPS risk and security awareness education is prioritised as an area of investigation given its perceived potential in facilitating and enhancing a cogent client centric model in MPS governance and policy guidelines.

The rationale for prioritising risk and security information management in this study, in part emanates from the fact that what used to be branch banking points are now managed by dears

of different networks. This poses MPS governance challenges since the existing MPS governance framework for MNOs does not adequately conceive of the constitutional, legal, policy, regulatory and governance frame complexities linked to or associated with the fast emerging operational environment of regulators, operators, systems and service providers.

MPS governance framework for MNOs is not only a key enabler but driver in sustaining the public trust, confidence and convenience of mobile phone subscribers, business sector, regulators, systems and service providers in Zimbabwe. This is the perceived area of investigation with potential to provide clarifications on the standard requirements for sound MPS governance framework controls for MNOs that enhance the beneficial participation of clients. Clarifications on standard security requirements or/and strategic awareness education for the general public, if rigorously pursued and policed by the regulators on MPS providers will promote public trust, confidence and convenience of MPS across Zimbabwe. As such, interrogating the MPS governance frames as the key enabler and driver in MNO operations is an important study area with potential to facilitate the development a client centric model.

The subject study area conceives that an inclusive, pragmatic and proficient control MPS governance framework for MFS actors will further reinforce public awareness and manage negative perceptions on the role of the regulators and operators. Any perceived success in this regard, has potential to make the investing public proactive in preventing or reporting MPS anomalies. Consequently, quick rectification of challenges linked to or associated with MPS transactions will be achieved for the benefit of regulators, operators and convenience of MPS subscribers, systems and service providers and other stakeholders. Presumably, mutual trust, confidence and convenience in MPS governance produce or yield profound client centricism.

The area of investigation is of the view that further research need to be undertaken to ascertain and interface the extent to which the key drivers like the regulators and enablers like clients lag behind in terms of developing practical, legal, governance regimes, security, policy and MNO operational guidelines that are responsive to the fast evolving telecommunications innovations. This is a core issue in this study's area of investigation.

In the current Zimbabwean telecommunications scenario, it is generally hard if not impossible for major actors to gainfully harness or meaningfully monitor and evaluate the activities of key drivers and players as there are no standard guidelines. This study seeks to close the gap between MPS and operational guidelines by highlighting the need to

promulgate constitutional, legal and governance frameworks with potential to transform Zimbabwe's MPS landscape and create enabling operational conditions in the telecommunication sector that prioritise MPS subscribers, systems and service providers and stakeholders. Given the significance this observation has on developing and enhancing a client centric perspective in Zimbabwe, it beckons as an area of investigation in this study.

In short, the MPS governance frame for MNOs and banks may soon be rendered obsolete if the constitutional, legal, policy, regulatory and payment security governance indifference persist in Zimbabwe. Client will obviously suffer the most. This study prioritises the subject indifference as an area of investigation. The choice for making the foresaid a priority area of investigation is informed by the historical fact that Europe realised the need for the establishment and implementation of harmonised European high-level recommendations on MFS governance frames and security of mobile payments. Expert reviews show that this client centric initiative is significantly contributing towards mitigating MFS fraud and enhancing consumer trust, confidence and convenience (European Forum, 2013). This study will domesticate European MFS experiences to cultivate a home-grown client centric model.

1.3 SCOPE OF INVESTIGATION

The scope of investigation defines and even specifies the technical and social boundaries of this study's area of investigation. The basis for any scope of investigation is to spick and spans the area of investigation that may be over inclusive. This study's scope is threefold:

Firstly, the governance scope of investigation will explore ways of hybridizing enterprise security governance and the operational, collective, management, traditional, results-based, policy and advisory board models to adopt MPS clientelism – developing and enhancing the enabling and proficient control MPS governance for MNOs that is client centric. The researcher will exclusively explore how to enhance the application of the four *"pillars"* of governance: accountability, transparency, fairness, and good governance to appraise the beneficial participation of MFS clients in the proposed MPS governance framework.

Secondly, the social scope of investigation will express in rediscovering, renewing and enhancing a client centric model in MPS governance frames for MNOs in Zimbabwe. This scope will prioritise clients' behaviour towards MPS. This is the actual social systems use of MPS. Expediently, this is the socio-computational scope of MPS systems and services.

Thirdly, the technical scope of investigation will express in reaffirming, developing and enhancing a client centric technological model in MPS governance in Zimbabwe. This scope will prioritize and analyse computers, transmission appliances, applications, and supportive technological innovations. This scope is the actual cyber systems use in MPS systems and services. Expediently, this is the computational scope of MPS systems and services.

Main Areas of Focus

One dimension of the scope of investigation expresses where telecommunications systems and services expediently converge with banking systems and services in MFS. The challenge is that MPS is not a standalone or exclusive facility. The convergence zone includes but is not limited to the use of mobile phones to transact mobile banking activities. This involves telecommunications systems. MPS subscribers are indirectly excluded from or not acknowledged in the operational partnership between telecommunications and mobile banking systems and services. What makes the operational partnership too exclusive is the constitution, policies, regulations that do not provide for MPS governance frames for MNOs that is customer centric. In part, it is on the basis of this omission that this study develops.

Against such a background, MPS subscribers can register using pseudo names, falsify registration information or register as many times without being dictated. Therewith, subscriber registration and transactional procedures among operators and service providers experience connectivity or data log management challenges. This poses a payment security risk, makes cross network transactions and recourse against any cross network triviality hard and time consuming. The viability of MPS services translates into loses of clientele trust.

In the scope of the study, unregistered, deregistered or unsubscribed clients using MPS are not directly included. In fact, it is the beneficial participation of the muted MPS subscriber, the proactive operators, and services and systems providers in the subject operational zone that concerns this researcher. As such, this researcher argues for an enabling and proficient control MPS governance framework for MNOs that protects and confers equivalent recognition to all mobile payment actors on an equal basis in Zimbabwe (Dailynews, 2014).

Zimbabwe has not yet crafted an MPS clientele charter, policies, standard MPS recourse guidelines or regulatory procedures to be followed by customers who encounter transactional challenges. Regrettably, MFS providers, regulators, operators and subscribers stand unguided given the non-existent client centric MPS governance instruments in payment service

delivery. Undetermined numbers of clients are prejudiced daily. Insignificant numbers, probably the elite make formal complaints with Potraz, the regulator. The significant numbers' knowledge about the existence, functions of Potraz in the context of MPS governance laws, policies and regulations is negligible. The need for an enabling and proficient client centric MPS governance frames and awareness education become apparent.

Given the absence of MPS governance guidelines, a number of clients cannot seek legal recourse on *"disappearing money and airtime"* because of absence of comprehensive constitution, laws, policies and regulatory guidelines to follow when redressing MPS transactional challenges emanating from human frailties and cross network applications.

Granted that Zimbabwe mobile financial laws, policies, regulatory guidelines or security governance frameworks for MNOs do not offer remedy for the cited scenario; MPS transactional challenges not restricted to financial prejudices, lose of public trust, confidence and convenience in MPS are negatively affecting MPS subscribed, banked and unbanked clients. A comprehensive client centric model has potential to protect MPS clients if implemented. A progressive clientelism philosophy has prospects to grow from this milieu.

There is need to research, present figures and patterns showcasing how MPS subscribers have/are reacting to the inconveniences caused by the non-existence of a client centric MPS governance framework for MNOs in Zimbabwe. Without pre-emptying the existence of other reasons, end users of MFS have repeatedly unsubscribed, render their mobile lines, lines of credit redundant or make occasional and conditional choices in their financial investments with mobile operators NetOne, Econet Wireless Zimbabwe, Telecel and banks. The other reasons that contribute to clientele imputations towards MPS services are beyond the scope of this study. Other researchers in MPS governance can investigate the outstanding issues.

What is contestable and subject to the scope of this study is to determine the magnitude of the occasional and conditional choices that express the prevalence of MPS governance failures in payment services. Quantitative data is relevant and relatively available. It is the qualitative client centric impressions characterising this grey study area that is under researched. Many times, customer relations with business are interrogated using grounded qualitative designs.

The methodological preference and absence of a client-driven MPS model has drawn the attention of this budding researcher. Anecdotal evidence evince that the suspected and

growing lack of public trust, confidence and convenience in MPS emanates from the MPS governance framework for MNOs. This supplants the scope necessitating this interrogation.

The research problem essentially stems from lack of a standard and proficient MPS governance framework for MNOs or/and elaborate operating guidelines for regulators, MNO, MPS providers that promote the establishment and stringent enforcement of security on MPS. As a result, the underrated security exposure and risk in providing financial systems and services in Zimbabwe is what this study exploits and brings to the attention of the academia.

1.4 STATEMENT OF THE PROBLEM

There is suspected corporate neglect in MPS governance frames for MNOs in Zimbabwe. Indeed, there is undetermined yet dwindling public trust, confidence and convenience among MPS providers and clients regarding the proficiency of the MPS actual systems use. Between the regulators' corporate neglect and MPS clients lay a grey area with underestimated scalable parallels that are caused by the non-existent MPS governance framework for MNOs.

This study exploits the underestimated scalable parallels by reviewing the MPS governance framework for MNOs in Zimbabwe and advancing MPS clientelism. Pursuant of this, this study interrogates the current Potraz legal and regulatory provisions for the MPS governance framework and facilitates in scaling its capacity to address clientele challenges and enhance the valued existing laws, policies and regulatory guidelines for the benefit of the MPS banked and unbanked clients, systems and service providers and operators alike.

To the best of our knowledge, insignificant strides have been made to identify, appreciate and advance exclusive clientele principles in MPS governance framework for MNOs in Zimbabwe. There is scanty information on the need for clientelism in MPS governance framework in Zimbabwe. However, scholarship on MFS governance frameworks is abundant in developed countries. Scholarship on MPS governance frames in developed markets has been necessitated by consumer lobby groups whose membership is technologically advanced. This study learns from other emerging MFS markets to craft a home-grown MPS clientelism.

MPS users in the developed markets can legally resist or easily disinvest in uncompetitive mobile operators. Coupled with stiff competition for clients in MPS and strict corporate governance supervision and enforcement on MNOs, this has contributed towards greater transparency, accountability and good governance among regulators, systems and service

providers and clientele autonomy that has earned the MPS banked and unbanked clients trust, confidence and convenience in MPS schemes and services. This study contributes to MPS governance framework scholarship by translating and domesticating best practices observed in developed MPS markets to the Zimbabwean MPS governance and policy landscape.

Cognisant of the need to domesticate international Conventions, declarations and protocols on MPS governance frameworks and formulate an informed clientele charter on MPS governance framework for MNOs in Zimbabwe, this study proposes to craft an enabling and proficient control MPS governance framework for MNOs in Zimbabwe The proposed MPS will be a home-grown initiative, client sensitive and MPS end user driven.

1.5 GOAL OF THE STUDY

❖ To develop an enabling and proficient control MPS governance framework for MNOs in Zimbabwe.

1.6 MAIN OBJECTIVE

To develop an enabling and proficient control MPS governance framework for MPS clientelism in Zimbabwe.

1.6.1 Sub-objectives
1.   To outline the subscriber registration processes for MPS.
2.   To describe the social relationships among regulators, operators and clients.
3.   To describe the role of operators and banking sector in service delivery.

1.7 HYPOTHESIS

1. An enabling and proficient control MPS governance frame for MNOs influences clientele trust, confidence and convenience in Zimbabwe.

1.8 MAIN RESEARCH QUESTION

1. How can Potraz enhance an end user friendly MPS governance framework?

1.8.1 Sub-research questions
1.   Does Zimbabwe have adequate legal, policy and regulatory mobile payment frames?
2.   How are MNOs, providers and clients registered in MPS?
3.   How are clients protected in MPS?

1.9 RESEARCH ASSUMPTIONS

1. MPS regulators need a proficient control MPS governance frame for MNOs.
2. The existing MPS governance frame for MNOs prejudices clients during transactions.
3. There is lack of public trust, confidence and convenience in Zimbabwe's MPS.
4. MNOs hardware, software appliances and applications affect MPS governance frame.
5. Lack of ITC compliance standards affects MPS governance for MNOs.

1.10 THEORETICAL FRAMEWORK

"A theoretical framework is a frame of reference for observations, definitions of concepts, research designs, interpretations...." (LoBiondo-Wood & Haber, 1998: 141). This study uses a grounded case oriented standpoint that inductively expands on selected corpus of data used in the developed and emerging MPS markets. Fig 1 presents Little's (2011) theoretical frame that divides MPS into the developed and emerging markets. This study applies Little's frame as an entry point towards achieving the research goal. Firstly, this study is going to selectively contextualise the developed markets' MFS cyber security models into its research strategy. The study will identify and propose specific technological artefacts to be invested into Zimbabwe's MPS cyber systems use in order to enhance it and meet clientele requirements. Secondly, this study will domesticate MPS social security models from selected emerging MPS markets into the Zimbabwean scenario. MPS emerging markets are preferred because Zimbabwe shares commonalities with emerging MPS markets in historical, cultural and socio-economic terms than those used in developed MPS markets.
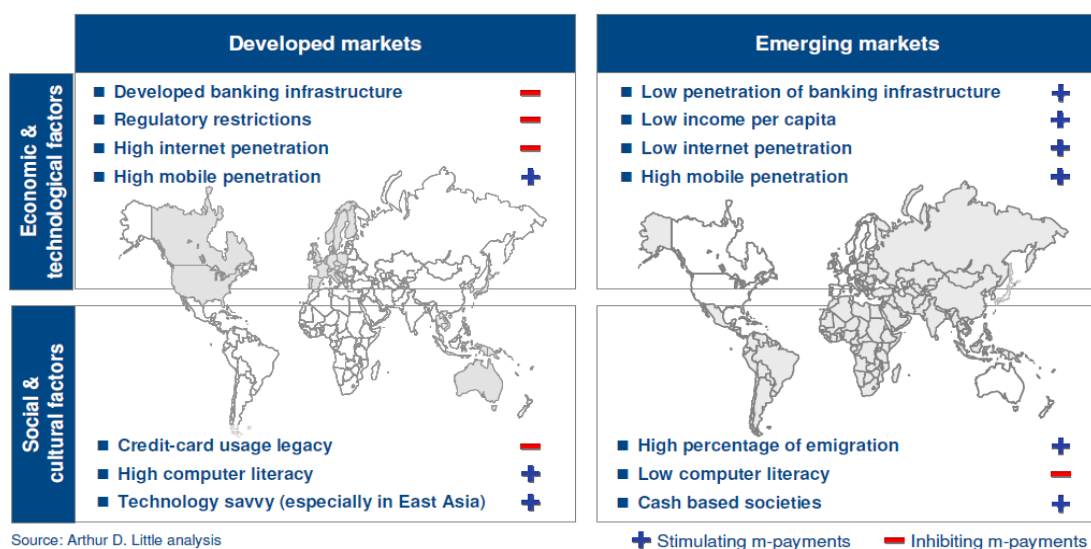
Fig 1.1 A model on developed and emerging MPS markets (Little, 2011)
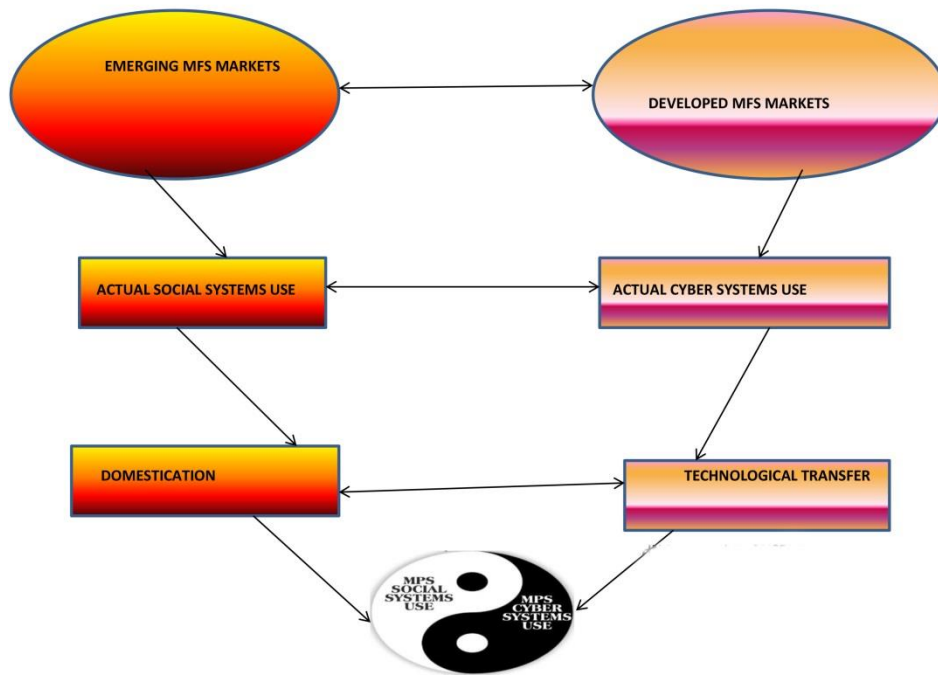
Fig 1.2 Adopted theoretical frame

Thirdly, this study will factor in Stalfors and Nykvist's (2011) theoretical frame to advance
the adoption of MPS customer power in the formulation of a MPS governance frame.
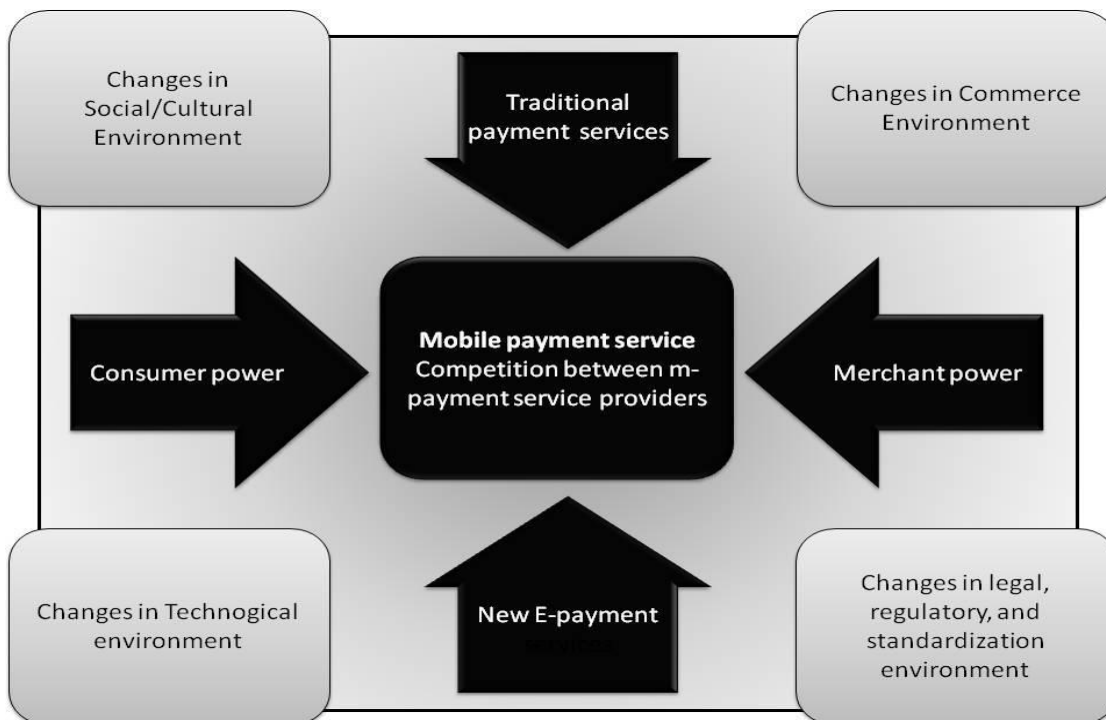
Fig 1.3 Factors affecting the adoption of MPS (Stalfors and Nykvist, 2011)

1.11 CONCEPTUAL FRAMEWORK

"*A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas*". Indeed, it is a structure of assumptions and principles that holds together the ideas comprising a broad concept to allow one to assume a style of *"thinking across dimensions"* (Gartner, 1985, p. 696). MPS governance is a comparative *"new venture creation"* that needs a grounded conceptual frame *"to assemble ongoing interdependent actions* (of MPS clients) *into sensible sequences that generate sensible outcomes"* (Weick, 1979, p. 3) that yields a MPS governance frame for MNOs.

The conceptual frame will revolve around coordinated MPS hardware and software applications that MNOs own and service. Banks provide financial services that include but are not limited to cash in and cash out, airtime top and peer to peer transfers. *"The ultimate objective in the development of* (user friendly) *payment systems is to ensure that financial services are affordable, safe, secure, accessible, and convenient to consumers"* (Gono 2013). Fig 1.0 presents the proposed harmonised relationship between the banks and MNOs. This will be used to argue for a client centric MPS model in MPS governance framework.
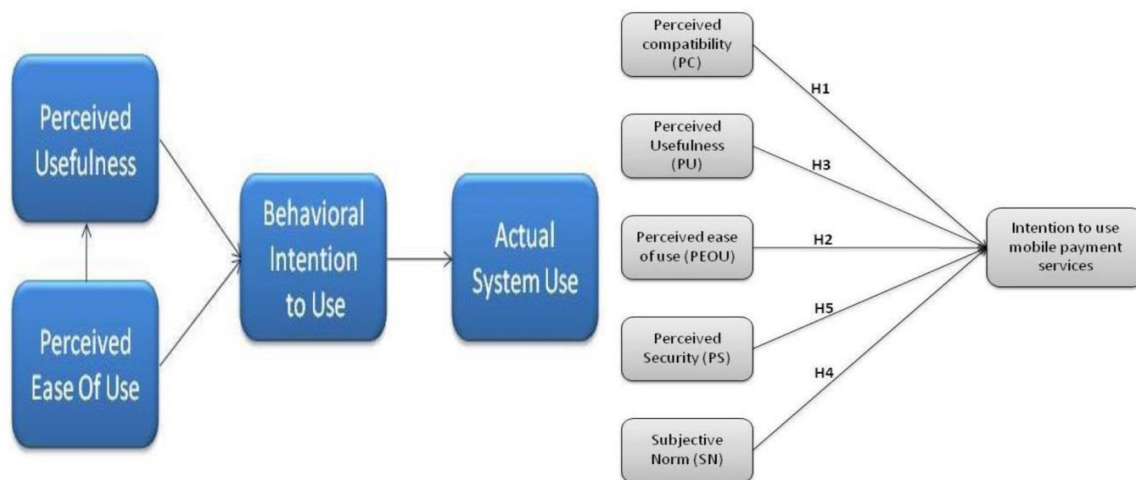
Fig 1.4 Technology Acceptance Models: Davis et al., (1989) and Venkatesh et al., (2003)

The Technology Acceptance Model; as a design science adjunct will be employed as a conceptual frame to facilitate in prioritising a client centric MPS in the development of an enabling and proficient MPS governance framework for MNOs. Fig 5 presents how the conceptual matrix will be used to identify and benchmark the perceived actual social systems and conceived actual cyber systems causes, scale and determine the levels of suspected lack of clientele trust, confidence and convenience embedded in MPS infrastructure in Zimbabwe.
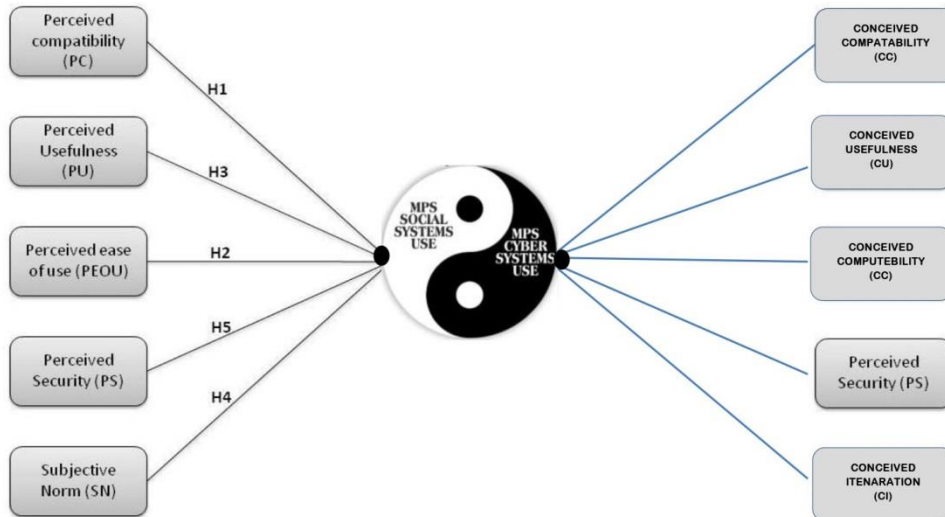
Fig 1.5 Adopted Conceptual frame on the Technology Acceptance Model

In order to generate sensible outcomes from this study, it is important to showcase the practical relevance, applicability and reliability of the suggested conceptual frame. The rationale for presenting how the conceptual frame is going to be applied is informed by the fact that MPS is a new venture creation whose concepts and application need to be precise, clearly spelt and defined to ensure rigor, limit vagueness or making the concept run short of clarity. The presentation will highlight how the researcher will think across the dimensions of developing and enhancing an enabling and proficient clientelism in the MPS governance frame showcase the interdependence of activities that show potential in earning the study goal. Eventually, this would yield full participation of clients in the MPS governance, conciliation between actual cyber and social systems use in MPS infrastructure.

Fig 6 below presents the interplay among facets of the conceptual application. It presents the interdependence among the sections of the concepts. The concepts are strongly linked and knitted to the goal, objectives, hypothesis and assumptions of this study. Notwithstanding the diagram shows the practical convergence of this study's goal, objectives, hypothesis and assumptions by prioritizing clientelism in MPS governance frame for MNOs in Zimbabwe.
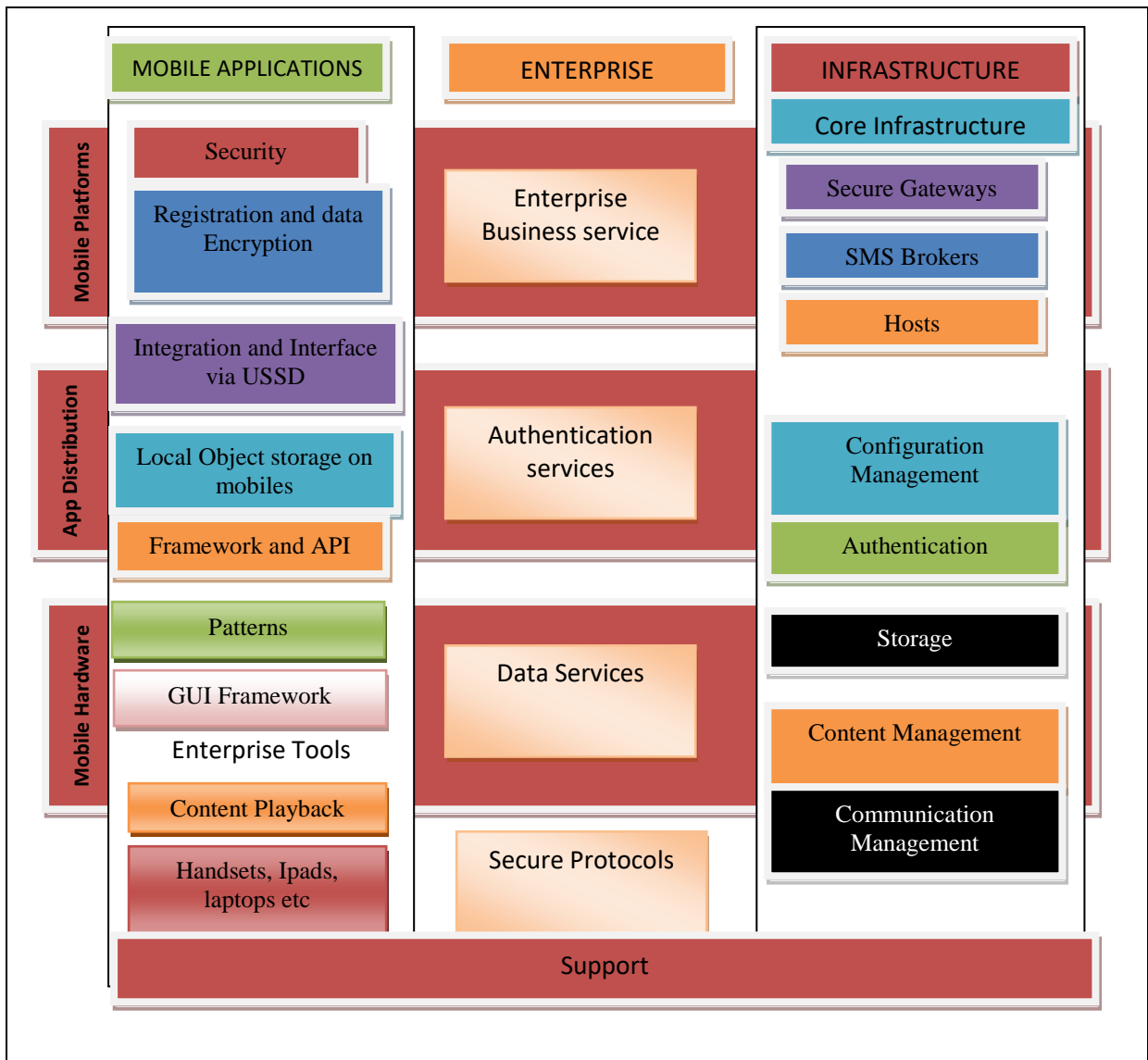
Fig 1.6 Conceptual framework.

1.12 LIMITATIONS OF THE STUDY

Limitations of the study include constrains that the researcher met with during the course of the study. The researcher works for NetOne and one professional limitation regards the nature of his work in relation to other systems and service providers. Other systems and service providers were sceptical thus misunderstood the researcher's academic pursuit with network systems and service provision espionage or spying on behalf of NetOne hence reluctant to partake in the study as respondents. The researcher had to take time to explain to potential questionnaire respondents on the non partisan utility nature of the study.

The issue of prolonged advocacy for possible questionnaire respondents hinges on the time factor which was a major limitation of this study causing unparalleled challenges. The researcher was expected to work normal working hours at NetOne suffice for exceptional cases where the need for the researcher's study was felt by the human resources department. In order to effectively respond to this challenge, the researcher crafted a tight schedule that accommodated and even compromised his family responsibilities and leisure time. This has seen the researcher managing to meet submission targets and complete his work on time and working harmoniously with his supervisor. However, this required a lot of mobility.

Dispatching questionnaires to various locations and individuals of unrelated backgrounds and workmanship posed a transport challenge. Some MPS subscribers demanded that the researcher administers the questionnaire at a bar hall, church place, golf course or attend a social gathering. Nonetheless, the researcher availed himself on time and was never particular about meeting places.

The choice made or suggested by the possible respondent became the choice of the researcher. However, some respondents, due to the influence of alcohol or social event decided to opt out of the interview after administering several questions. Upon withdrawing, the researcher had to rush for other appointments with other possible respondents to avoid being caught up with the joys social events offer to invited guests.

The hectic schedules designed for possible respondents caused insurmountable financial drain on the part of the researcher. The researcher exhausted his finances and even compromised his paternal responsibilities for the sake of completing this study. Finances were a major setback during the course of this research. Money was required for the purchase of fuel, paying reciprocation tokens, printing questionnaires and making phone calls. The researcher got support from his wife, friend and developed a strict budget that resulted in him meeting his schedules set by his supervisor and submitting his dissertation on time.

1.13 DELIMITATIONS OF THE RESEARCH STUDY

Delimitations are the specific or exclusive issues or areas that were subject to an investigation in this study. The delimitations of this study include but are not restricted to MPS subscribed and unsubscribed clients; banked and unbanked urban MPS clients. The choice for urban

respondents hinged on the assumption that the urban clients represent or influence rural clients given the rapid urban–rural migration and economic crises are causing in Zimbabwe. The researcher administered questionnaires to selected professionals working in MNOs' systems and services departments. Selected employees at Potraz were interviewed in order to capture in suite or/and suggestive responses from the telecommunication regulator on MPS governance framework, laws, policies and regulations for MNOs in Zimbabwe.

Although most of the developed countries have adopted home-grown MPS governance frameworks, Zimbabwe does not have any. This study is delimited to the contracts and SLA agreements used between MNO, banks and regulators in Zimbabwe. Since this researcher seeks to come up with MFS governance frames that address challenges that are experienced, the study is delimited to the MPS governance frame for MNOs in Zimbabwe.

The research outcomes showcase the potential an enabling and proficient control MPS governance framework has in mitigating a plethora of challenges emanating from the use of MFS when transacting payments within Zimbabwe. As such, this study is delimited to governance framework for MNOs in MFS transactions done only in Zimbabwe. MPS governance framework for MNOs for cross border transactions is not analysed.

The definition of MPS is delimited to a payment for products or services between two parties for which a mobile device, such as a mobile phone, plays a key role in the realization of the payment (ISACA white paper 2011).Mobile payments can take several forms. The 7th SEPA Progress Report (2010) presents a generic definition of MPS as a payment for which the payments data and instruction are transmitted and/or confirmed via mobile communication.

MPS is also delimited to data transmission technology through a MFS device between the customer and his/her payment service provider in the course of an online or in one typical use case of mobile payments. The initiation of the payment takes place through a wireless communication between the customer's mobile device and merchant's payment terminal *(*European Forum 2013).

The scope of this research will be delimited to three categories of mobile payments namely:

   I.   Contactless payments (OTA),

  II.   Payments using mobile application usually downloaded to the mobile device and

III.   Payments made using the Mobile Operator's channels (SMS, USSD). This includes digital and mobile wallets.

IV.

The use of mobile phone as an access to the internet is not covered in this study. This will be covered on internet banking guided by electronic banking rules. MFS in Zimbabwe is delimited to the various components required to deliver MPS to the banking and non-banking community (Ratha. Sanket & Vijayalakshmi, 2009).

This research is to delimit the requirements for the MPS from payments through the MPS devices like card payments (to include registration and activation of the SIMCard and the Subscriber information for use in mobile wallet), Cash transfer, credit transfer and direct debits, airtime top up, airtime transfer, Card payment (POS). POS technologies that transform MPS into physical card payment acceptance like the EcoCard.

International MPS governance provisions are not included in this study. Otherwise this study cannot cover everything on MPS governance framework for MNOs in Zimbabwe. Other researchers can study the omitted MPS in future if need arises. In short, this study is delimited to all payments are done via the MFS devices which are done through MFS like One Wallet, EcoCash and TeleCash used by NetOne, Econet and Telcel respectively. This does not include cash payments and Check payments done via the internet banking.

1.14 VALUE OF STUDY

Scholarly research publications and literature on how MPS subscribers to the mobile financial services are prejudiced of their hard earned cash when their transactions fail to get to the intended destination are replete on the superhighway and libraries. MPS subscribers get financially prejudiced in mobile financial transactions because there are non-existent stringent laws, policy frameworks and regulatory guidelines in MPS governance frameworks for MNOs to be used in supervision and enforcement of compensation for the affected.

This study presents a methodological paradigm shift. It applies the participatory bottom-up and fieldwork approaches in facilitating improvements to the MPS governance framework. Herein, the subscribers' opinions are used to influence regulatory, policy and legal amendments in MPS governance framework. The widely used participatory top-bottom and armchair approaches are purposefully ignored in pursuit of the perceived or suspected

priorities of end-users who happen to be the muted investors. Home-grown, client based or end-user frames will add an intellectual thread to global scholarship own its own right.

Computation, hardware and software challenges faced by MFS operators and providers are many times slow to dictate operational defects in MPS transactions resulting in subscribers loosing trust, faith, confidence and convenience in mobile financial services. Indeed, this is denting the corporate image of service providers, individuals and the very intellectual property rights that led to the inception of MFS and MPS in clientele business or industry.

The corporate malpractices unfolding in MFS need to be interrogated and addressed. There is need for increased topical researches on MPS governance framework that prioritise MPS subscribers and systems and service providers. Knowledge that will be generated by this study will present informed perspectives from end-users that can be proactively used to engage regulators, MNOs, MPS systems and service providers with evidence-based data supporting the need to revamp the MPS governance framework for MNOs in Zimbabwe.

No doubt, this research will contribute to the growing board of knowledge and scholarship on cyber financial innovations (Hevner 2004) in its own right. The research recommendations will facilitate in the promotion of MPS that safeguard mobile subscribers, banks and MNOs. Besides the security of mobile payments, this study will significantly contribute to risk management, cyber and social security practices and scholarship on mobile payments.

One of the goals of this study is to interrogate common knowledge and clientele rights issues that are taken for granted by MFS and MPS providers, MNOs and subscribers. Consequently, the study processes and outcomes will have potential in enhancing consumer trust and confidence in MFS and MPS. The local client responses from this research study will recommend functional, theoretical and conceptual knowledge bases for possible use in MFS. The research will provide information on how and when to improve security issues being a relatively explored method of mitigating fraud, cyber crime like hacking and provide a control governance framework for MFS in Zimbabwe. In addition, this study will explore strategies to be used to satisfy the most important but emerging frontier in MPS – the subscribers by reviewing customer awareness education, communication and outline minimum requirements for the voice of subscribers in the mobile payment service chain.

1.15 ETHICAL CONSIDERATIONS

The researcher got a research clearance letter from the Midlands State University and the Ministry of Postal and Courier Services. Upon getting permission to undertake the subject research study, the researcher used the letters to get permission to solicit for data from the target institutions like Potraz, Reserve Bank of Zimbabwe and MNOs such as NetOne, Telcel and Econet Wireless Zimbabwe, MFS, MPS and MNOs that include banks.

The researcher got informed consent from Potraz, MNOs, MFS providers and MPS subscribers who wilfully responded to the questionnaires. The researcher assured every respondent that the questionnaire responses will be treated in confidentiality. Every respondent was told that he/she was free to answer the questionnaire on condition of anonymity or withdraw from participating before, during and after the course of the interview. These liberties were granted when possible respondents requested such.

The respondents had the choice of writing their real or pseudo names on the questionnaires. They were given the choice of completing the whole questionnaire or withdrawing while responding or whenever they felt that they no longer wanted to participate. Respondents were informed about their right to have access to information gathered and react to it. Mobile phones were used for this purpose. As such, the researcher gave and got constant feedbacks from research participants and disinterested respondents throughout the course of the study. Vulnerable participants, particularly the urban poor who could be subjected to influence from service providers and MNOs were guaranteed of the security of their MPS lines during and after the study. Vulnerable participants were reassured of such protection and requested to report any anomaly in their MPS lines suspected to be victimisation resulting from their participation. The researcher randomly phoned informants to check if there were such threats. This research study had an inherent conflict of interest since this researcher is an employee of NetOne. Realising this conflict of interest, the researcher made it clear from the onset that he is employed by NetOne in the letter for permission to solicit data from the other MNOs. Most of the questionnaires were directly administered by the researcher to other MNOs employees to avoid the deception that third party interviewers could employ when gathering data.

This questionnaire shows potential on operational beneficiation in terms of MPS governance frame outcomes for MNOs in Zimbabwe. Indeed, the questionnaire was a rare open platform

for subscribers and service providers to express their views on MPS for academic analyses. NetOne was more than willing to facilitate in the study by giving the researcher amble study time. Other MNOs like Econet and Telcel were hesitant during the initial stages for fear of suspected or unexpressed mobile network espionage but later expressed keenness on this study because of its perceived utility in improving MPS for subscribes and stakeholders.

Tokens of appreciation were paid as reciprocity fees to respondents who sacrificed their time to learn and enhance their understanding of the questionnaire content and later answered the questionnaire as a reciprocity fee. Generally, this is not new; the payment of a token of appreciation to respondents is an acceptable reciprocity practice observed the world over. This researcher made sure that the token value would not influence the way respondents answered the questionnaire. Respondents were told that the token of appreciation had nothing to do with their opinions that had to be presented on the questionnaire. They were free to express their opinions out of interest and not in relation to the token of appreciation.

1.16 CONCLUSION

In the foregoing chapter, the researcher gave an introduction and background to the this study by highlighting the global, regional and national magnitude in the use of mobile phones and the perceived or suspected dwindling public trust, confidence and convenience in their use in Zimbabwe primarily caused by a relatively obsolete, if not dysfunctional MPS governance framework for MNOs that are not in the interest of MPS clients or and consumer protection. The need for improved MPS governance framework has been argued. A call for the review of the constitution, laws, policies; regulatory guidelines for operators, systems and service providers was made. Furthermore, this chapter highlighted the research topic, background, area of investigation, goal, main objectives, questions and assumption of this study, statement of the problem, theoretical and conceptual frameworks.

The limitations of the study highlighted the shortcomings the researcher faced resulting from his personal and work environment. The delimitations have highlighted the boundaries of the researcher's study while the scholarship value of this study has expressed the contributions of this study to local and global scholarship. The ethical considerations associated with this study have been explained to showcase that the research was aware and careful about avoiding the violation of the participants' rights while undertaking the study.

1.17 LIST OF CHAPTERS

Chapter 1 presents a detailed introduction and background to the research project. Chapter 2 presents review of literature that outlines scholarship, technological and governance gaps and omissions which prompted, justified and acknowledges the place for this study inquiry. Chapter 3 notes that the choice of methodology and methods is a contestable terrain. It goes further to outline the qualitative methodology and research matrix employed in this study. The identity and processional application of data collection methods, interpolative instruments and analytical tools are then outlined. Chapter 4 presents qualitative data gathered during fieldwork. Chapter 5 analyzes and evaluates the qualitative data gathered during fieldwork and adopts an analytical framework that yields the construction of an enabling and proficient mobile payment security governance framework for MNOs in Zimbabwe. It outlines the conclusions, recommendations and suggests areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1. INTRODUCTION

There are wide and informing literature and superhighway blogs focusing on issues connected with or incidental to MFS and MPS governance frameworks. Of late, there has been isolated focus on customer centred MPS approaches in emerging MPs markets. This indifference is potentially causative to business decline and smacks of scholarly prejudice or disinterest on matters that concern clients in MPS governance. Clients form the backbone of MPS business. Generally, they determine the success or failure of any business venture. Dittus and Klein (2011) observe that MPS governance frameworks in developed countries have been shaped by many factors including MPS governance laws, policies and regulatory frameworks, rapidly increasing mobile phone penetration, public and market demands for financial inclusion and the need for faster and more economic means of payments. MPS are growing in lips and bounce across the world though client's role is constantly overlooked.

However, Vaidya (2011) examines the growing sense of monetary insecurity experienced during the economic, financial and fiscal crises experienced in the developed world and highlighted that these precedence raised security concerns in the MFS sector. Furthermore, Ahmad (2006) outlines the potential e-market, e-governance pose on the money market if not securitized, need to monitor cyber transactional flows of certain currencies, and fear that cyber money can be hacked to fund terrorism has witnessed intense investment in the development of MFS governance frameworks for MPS and their securitization.

Desai (2014) analysed global MFS, security risks, trends and countermeasures, and noted that without adequate MPS governance frames, the generality of regulators allow situations where the operators run the risk payment systems that have code obfuscation, insecure local device database storage, insecure app permissions and mobile payment app reputation. For Dickson et al. (1980), the key security risks associated with MPS include fraudulent transactions, weak cryptography, mobile application server threats, mobile payment applications' database threats and SIM Card application (USSD/DSTK) attacks. Jenkins (2008) predicts that the challenges may increase given the developments and innovations being introduced in MFS.

Whereas reasonable cyber systems analyses have been advanced, the concern this study is based on advancing a client centric social ecology and social analysis in MFS and PMS.

Mobile payment systems and service shortcomings contribute to the operators' systems non-functionality and high-profile litany of media accusations. Wishart (2006) regrets that information on MPS challenges is not availed to the investing public by MNOs during their registration process and awareness education campaigns. The public, who are not conversant with the technical side of mobile network operations, lose trust, faith, confidence and convenience when faced with transfer challenges. This study interrogates MNOs' awareness education campaigns programs and brings to light the technical challenges of Zimbabwe's MFS and MPS to the academia and public domain.

This study interrogates the extent to which the MFS are regulated by the existing MPS governance frames in Zimbabwe. Biriwasha (2012) observes that the supervisory role of the regulator and legal inadequacy and policy effectiveness to superintend over the mechanics of MNOs systems need to be critiqued. This will be a way to check and balance the feasibility of the existing MPS governance framework for MNOs in Zimbabwe and to qualify or discredit suggestions made by Kabweza (2011) and Mlambo (2011) that Zimbabwe's MFS are causative to lack of public trust, faith, confidence and convenience in MPS.

Earlier, Bangens and Soderberg (2008) noted the value of an cross examining the role of the subscribed, unsubscribed, banked and unbanked customers in third world economies particularly on the impact of MPS on the unbanked. This study will be an agenda setting study in the academia and a mechanism to drive mobile financial scholarship towards recognizing the role of MPS subscribers, review progress and discuss governance solutions in MFS governance framework for MNOs in Zimbabwe as a way of addressing clientele dissatisfaction in MPS and enhance the operational modalities of MNOs in service delivery. Khiaonarong (2014) observes that MFS are cyber innovations got accepted throughout the world as an emerging and robust payment method in advanced and emerging economies. Developed countries have domesticated international MFS practices. They have formulated MFS governance frameworks to regulate MPS but a lot need to be done on risk management. The challenges posed by the obsolete MPS governance framework for MNOs in Zimbabwe, economic and fiscal crises that affect MNOs operations can be mitigated by domesticating

the Global North experiences and responses. This study crafts an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. This will add to the growing board of knowledge on MPS governance framework in Zimbabwe and Africa at large.

2.2 PAYMENT SECURITY GOVERNANCE FRAMEWORK FOR MNOs IN THE GLOBAL CONTEXT

Globally, MFS authorities face recurrent challenges regarding the protection of subscribers, mobile payment systems and services. In the main, MFS are increasingly exposing the shortcomings of existing MPS governance frameworks, policies and regulations.

Gradually, MFS are causing and influencing financial reforms and generally strengthens national risk control and governance frameworks, policies and regulations as the case with Europe, Hong Kong and Kenya domain. A case study of China shows that her central bank has become so rigorous in regulating and enforcing MPS governance frames to the extent of temporarily suspending mobile payment services due to perceived or suspected financial and information security concerns that infringe on public interest and investment.

In countries like United Kingdom, United States of America and other European countries, the use of MPS is subject to stiff competition from banks since most of their citizens have bank accounts with Visa Cards, debit cards, Credit cards and other forms of payments cards. Notwithstanding, Must et al. (2010) argues that bank related MFS and MPS are not as significant as they are in sub Saharan African region where there is a notable decline in banking due to high bank interests that corrode public investment. Banda (2011) concluded that MNO related MPS are rapidly growing and popular in sub Saharan African region.

In contradistinction, the rapid growth and popularity has been unmatched with sustainable legal, policy and regulatory innovations. The resultant scalable parallels and inconsistencies have significantly compromised valued existing MPS governance framework. In turn, there has been perceived or suspected loose of public trust, faith, confidence and convenience in MPS. This study interrogates the Zimbabwean scenario with the aim of proposing an enabling and proficient control MPS governance framework that has potential to ensure clientele trust, faith, confidence and convenience in payment delivery services.

Khiaonarong (2014) analysed the Zambian MFS governance experiences and concluded that the MFS licence was revoked owing to its failure to comply with regulatory authorities, sustain public trust, confidence, faith in and convenience of business operations. The cited cases are being experienced in Zimbabwe. However, Potraz being the Zimbabwean regulator authority seems to have ignored or delayed in undertaking MFS reforms and upgrading MPS governance structures. Consequently, Potraz has not closed MFS or MPS despite public outcry regarding lack of accountability, transparency and good corporate governance of the financial scheme and the shortcomings of the MPS governance framework. In fact, the regulatory authority has dovetailed temporary MFS regulations for MNOs by formulating contracts for MPS providers that hardly recognised the role of the subscribers. It is, in part this omission that this study investigates to amplify risk levels and possible remedies.

This study is encouraged by the fact that a number of countries have increasingly seen the need to assess levels of risk associated with obsolete MPS governance frames and are implementing remedial programs that seek to address the counterfeits of obsolete MFS governance frames. Strides have been made by central banks throughout the world to formulate enabling and proficient control MPS policies and regulations. Diverse MFS and MPS governance frames and regulatory guidelines have been developed in various countries. MPS governance frameworks have been modified to suit each and every country's requirements. Against this progressive background, this study takes the initiative to break the ice in the Zimbabwean MPS governance context to research and present compelling data and analyses on the need for a client centric MPS governance framework for MNOs in Zimbabwe. If the merits of this study are considered in policy making, this will go a long way towards developing a robust client based ethos for MPS governance for MNOs in Zimbabwe. Khiaonarong (2014) details recent regulatory developments that include the Central Bank of Brazil Law 12865 of 2013, which provides legal and policy provisions on mobile payments, the Bank of Uganda Mobile Money Guidelines of 2013, the Central Bank of Sri Lanka Mobile Payments Guidelines for bank-led and custodian account based mobile payment services of 2011, the Afghanistan Bank Money Service Providers Regulation of 2008, the Reserve Bank of India Operative Guidelines for Bank Mobile Payments and the Central Bank of Egypt Regulations Governing Provision of Payment Orders through Mobile Phones. Central banks in Africa, Asia-Pacific and Latin America have introduced similar rules.

Khiaonarong concluded that these developments are not exhaustive because of their operational bias that overlooks the client centric nature of the MFS governance. It is this salient observation that Khiaonarong makes about the insensitive of MPS governance frameworks to subscribers which this researcher interrogates this in the Zimbabwean context. The observations made in Khiaonarong's cross sectional survey of MFS governance are domesticated in this study resulting in the formulation of an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. The proposed control MPS framework for MNOs in Zimbabwe will be client or end user driven. The proposal gives limited scope on technological and systems gaps that also give rise to the challenges that are compromising the MFS governance laws, policies, regulations and guidelines. This limitation in the content of the subject study should serve to encourage future researchers to explore the omissions of this study and even relate the omitted to countries in sub Saharan Africa.

The majority of citizens in sub Saharan countries are too poor to afford or sustain bank accounts and bank cards. In some cases, the distance between banks and the potential banking public is enormous particularly in the rural areas where >70% of Zimbabwe's population resides. Banks are not of utilitarian importance in sub Saharan Africa. The challenge faced by the MFS and MPS governance frameworks, policies and regulations is that they are obsolete. In many cases the frameworks are informed and directed by draft provisions, contractual obligations that will be effected in 2015 (PSR CP14/1 UK 2014). This research study exploits and feeds into the prevailing window period to provide informed and compelling frames and data to Potraz. This will encourage Potraz to be pro-subscriber in its future regulations.

2.3 MOBILE PAYMENT SECURITY GOVERNACE FRAMEWORK IN ZIMBABWE

Zimbabwe does not have a legally binding MFS and MPS governance framework for mobile money as noted on the 15th March 2014 by the Bankers' Association of Zimbabwe, president George Guvamatanga in parliament. He observed:

> *"What is of concern with the emergence of mobile money (banking on telephones) is that it is operating without any legal framework and anyone who decides to launch their product can just do so,". "We do not have laws for deposit protection and we have seen mobile networks coming up with banking products without a proper legal framework. What we are simply telling*

> *lawmakers is to ensure that the people they represent are protected by the law and as we speak there is no law"* (Dailynews, 2014).

The government is responsible for overseeing the cost and tariffs used to transfer money. This executive power was invoked on mobile money transfer cost when it directed the regulators, the Reserve Bank of Zimbabwe and Potraz to review money transfer schemes and come out with recommendations. Operators are just charging prices will nil (Herald 2014). It is against this pronouncement in Parliament by the president of the Bankers' Association of Zimbabwe that this researcher cross examines and provides evidence based information regarding the environment prevailing in the mobile payment security governance framework for MNOs in Zimbabwe.

Furthermore, this researcher proposes an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. The outcomes of the study, if seriously taken on board will significantly mitigate the challenges linked to but not limited to the loose of public trust, confidence, faith in and convenience among subscribers, systems and service providers in MFS schemes offered in Zimbabwe. This makes a business, academic and economic sense because the business sector and the national economic will ultimately benefit.

Given the legally inconsistent environment for MFS in Zimbabwe, most banks have been resisting mobile banking and only to start engage Mobile Network Operators late last year, 2014.The reason for the resistance was on bankinfosecurity that does not protect the banking public and is not adequately captured in the MPS governance framework in Zimbabwe. Such banks include Cabs, ZB, ABC holdings and POSB (Herald, 2014).

The Chief Finance manager with ABC Holdings, Mr. Beki Moyo went on to explain that technology was ahead of the existing MPS governance framework, policies, regulations and guidelines governing the banking sector. There is need for such regulations and guidelines to pave way for more banks into the mobile payments as this targets all the unbanked who has been difficult to engage in this business. This would broaden the bank's clientele and increase revenue and profits. The banks which are on mobile payments include but are not exclusive of FBC, CABS, STEWARD, KINGDOM, ZB, CBZ, BANC ABC and Stanbic bank.

2.4. STATISTICS OF MOBILE PAYMENT USERS

MNO	Payment System	Total Subscribers	Subscribers on Mobile banking
NetOne	One-wallet	3 300 000	1 500 000
Econet	Eco-Cash	8 500 000	6 000 000
Telcel	Tele-Cash	2 800 000	300 000

Table 2.0 (MNO websites)

This does not mean that the total number of subscribers add up to the number of Zimbabwean on mobile banking. One subscriber might be registered on all networks as some have lines for each and every network, hence creating duplicity and redundancy to justify adding the total. One latent reason; suspected or otherwise for the duplicity and redundancy is the payment service inconsistencies and inconveniences in service provision the networks cause on the subscribed and unsubscribed clients. What is suspected to be worsening the duplicity and redundancy challenge is the fact there is no central office to detect or align this duplicity.

Cross line transactional challenges become difficult to identify and resolve. There is no shared vision or system networking to monitor and evaluate the duplicity therein posing a security risk within and without MNO governance frameworks. This is one issue that this dissertation interrogates and employs compelling evidence based data to justify the need for an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. This proposal will be an eye opener given the potential it has in limiting the challenges posed by MNO duplicity and redundancy in its own right.

Mobile penetration rate or teledensity of mobile phones in Zimbabwe is suspected to be >106%. However, the suspected rate is undervalued by Potraz. The Acting Director General of the Postal and Telecommunications Regulatory Authority of Zimbabwe, Mr. Baxton Sirewu observed that the *"apparently impressive teledensity rate of 106 percent"*.

Many citizens do not have access to telecommunications services, especially mobile phones (Dailynews 2014). He further argues that Zimbabwe's mobile penetration has reached 106 percent, though the actual head-count of subscribers in possession of SIM cards is only 60 percent of the national population which translates to 8, 4 million people. Zimbabwe still has

a significant number of areas which have no mobile phone coverage. In areas where there is MPS coverage, some people cannot afford to buy or sustain MPS.

What adds weight to this study on the MFS governance framework is the fact that there are inadequate payment security governance laws, statutory instruments and stringent regulatory guidelines for services providers, regulators and banks to control the use of MPS. Granted, the issue of security breach can only be dealt with when it is reported. The recourse process does not apply to all network providers since each has its own unregulated operational frame.

Tenets of enterprise security governance and risk management that seek to adopt integrated frameworks have been tampered with in a number of international conventions, declarations; regional and national forums. The Treadway Commission (2004) expressed the need for heightened disquiet and hub on enterprise security and risk management that is increasingly clear. Notwithstanding, the indifference such an observation has on MPS clients, this study seeks to integrate clientelism in the discourse of enterprise governance and risk management.

A need exists *"for a robust framework to effectively identify, assess, and manage risk"* experienced by MPS clients in Zimbabwe given the decade old economic recession she is experiencing. Strides have been made as expressed in the Kariba Workshop on the Administration and Governance of Parastatals (2001), "Corporate Governance Framework for State Enterprises and Parastatals," (2010); the private sector "National Code on Corporate Governance: Zimbabwe (2014)"; "Zimbabwe's Client Service Charter Compendium 2015: A guide to understanding government services and standards";

Against such a promising MFS terrain, there have been several yet unquantified occasions where customers have been defrauded of their money. Unknown people who purport to be service providers, send unauthorised *'winning messages'* to selected subscribers. The same would ask the target subscribers to transfer few dollars to their accounts as processing fee. It is after transferring that they realise that conmen are abusing the MFS and MPS.

Faced with the highlighted network shortcomings, this study will determined the prevalence of and quantified the magnitude of the MPS gagging by undertaking a field survey and projected the extent to which such contribute towards perceived or suspected lack of public trust, confidence, faith and convenience among subscribers therein compromising the acceptability, applicability and reliability of MFS and MPS in Zimbabwe. It is proposed that

the findings and analyses will significantly contribute towards improving MPS governance and ultimately restore sanity to MFS in Zimbabwe.

In order to achieve a proficient, transparent and accountable mobile banking system and services, it is generally conceived and technologically consistent that each MNO establishes robust central banking network which proficiently provides, monitors and evaluates all banking systems and services to the subscribers. This means that the central banking network will have to be linked to other banks through Zimswitch or ZIPIT. All subscribers will assume capacity to access all other banks via the central banking network system.

For example, NetOne is serving FBC bank, Econet's Steward bank and Telecel are serving CABS bank. The banks are linked to Zimswitch and ZIPIT. Access to other banks is done via these banks. The risk is that mobile payment money can be stored in these banks if one has a bank account or can be stored in MNO's systems as airtime or stored as value money. Every transaction has to go through the bank except for airtime top up or stored value transfers.

This study suggests that the establishment of a central banking network system gives credence to effective and timeous interventions, monitoring, and evaluation of MPS and reduces security risk. The following proposal can mitigate the outlined shortcomings.

2.5. MOBILE MONEY TRANSFER ECOSYSTEMS AND SOCIAL ECOLOGY

Players	Roles	Limitations and Constraints
Mobile Network Operators	❖ Provide infrastructure and communications service. ❖ Provide agent oversight and quality control. ❖ Issue e-money (where permitted by law). ❖ Exercise leadership in drawing mobile money ecosystem together. ❖ Advise other businesses (banks, utilities, etc.) on their mobile money strategies.	❖ Regulatory limitations on providing financial services. ❖ Shareholder pressure for faster, higher returns. ❖ Strategic focus that may not include mobile money.
Financial Institutions	❖ Offer banking services via mobile. ❖ Hold float or accounts in customers' names. ❖ Handle cross-border transactions, manage foreign exchange risk. ❖ Ensure compliance with financial	❖ Narrow customer base. ❖ Lack of experience with or interest in low-income customers. ❖ Stringent regulatory requirements with

	sector regulation	significant compliance burdens.
Agents	❖ Perform cash-in and cash-out functions. ❖ Handle account opening procedures, including customer due diligence. ❖ Report suspicious transactions in accordance with the requirements. ❖ Identify potential new mobile money applications.	❖ Liquidity shortfalls. ❖ Basic business skill gaps. ❖ Lack of customer trust (in some cases). ❖ Limited ability to partner with large corporations.
Regulators	❖ Provide enabling environment for mobile money. ❖ Protect stability of financial system. ❖ Demonstrate leadership to encourage and protect behaviour change.	❖ Lack of experience with convergence of financial and telecommunications regulatory schemes. ❖ Lack of financial and technical capacity.
Subscribers	❖ Use mobile money to improve their lives.	❖ Lack of awareness. ❖ Limited financial literacy. ❖ Cultural and psychological resistance.

Table 2.1 mobile transfer ecosystem Source: Merrit 2010

2.5.1 Mobile Network Operators

The MPS ecosystems and social ecology, in particular revolves around the MNO. MNOs provide infrastructure for mobile payment systems and superintend over the functions of Agent Network. In the context of this network diversity, Merrit (2010) observes that Mobile Operators are responsible for the billing systems and handset distribution. However, MNOs in Zimbabwe lack robust technologies and related experience in MFS, payment security and risk management skills, regulatory and legal governance of payment systems.

The said shortcomings are subject to the current investigation. The purpose of the investigation being that of identifying, quantifying the magnitude of limitations and suggesting remedies to challenges linked to but not exclusive of the MPS governance framework. Progressively, this study proposes novel recommendations for MNO technologists and regulators that, if implemented can evidently ensure the development of an enabling and proficient control MPS governance framework for MNOs in Zimbabwe.

2.5.2. Financial Institutions

A financial institution is;

"An establishment that focuses on dealing with financial transaction, such as investments, loans and deposits. Conventionally, financial institutions are composed of organizations such as banks, trust companies, insurance companies and investment dealers. Almost everyone has deal with financial institution on a regular basis. Everything from depositing money to taking out loans and exchange currencies must be done through financial institutions." [www.investopedia.com/terms/f/financialinstitution.asp]

There are international, regional, continental, sub-regional and national financial institutions. For the purpose of this study, focus will be on MPS, specifically interrogating the governance framework for MNOs in Zimbabwe with the goal of developing and enhancing an enabling and proficient control MPS governance frame that is client centric. This study investigates the impact of shifting clientele demographics in mobile payment access and traffic in MFS, the growing appeal for mobile banking on clientele trust, confidence and convenience. This underscores the need to capitalize on the demographic shifts to ensure customer retention that can be earned if and only if MNOs provide proficient MPS devices that guarantee end user friendly accessibility options. This is a priority area for citizens born between 1982-1995 [Generation Y] who confidently view technology as a way of life that is trustworthy and convenient (Deloitte Centre for Banking Solutions and Harris Interactive, (2008).

In view of these customer centric pre requisites, this study suggests for consideration an evidence based risk management framework with potential to reinforce or ultimately yield assurance of standard regulatory compliance in money laundering and associated high risk financial schemes whose viability is sustained by a robust MPS governance frame for MNOs.

2.5.3. Role of Agent Network Retailers

Agent network retailers are non-bank entities. They exist in diverse forms that include village or township stores. They work like bank branches. They are responsible for subscriber registration and undertake mobile payments on behalf of the Mobile Payment Operators. Their primary role is to accept and disburse cash as *"cash in"* and *"cash out"* through the subscriber handset. By administering such transactions, agent network retailers act as branches for MNOs and automatically become an indispensible touch point sustaining the vibrancy of the operator-subscriber social ecology. It is at this point that subscribers and non

subscribers ordinarily assess the proficiency of an MPS provider; develop, withdraw or rank the public trust, faith, confidence and convenience rendered.

As intermediaries between MNOs and subscribers, agent network retailers play a pivotal role thus assume the responsibility for customer due diligence, account opening and monitor and evaluate customer compliance. In order to achieve significant penetration in unbanked markets, agent network retailers have extended their services to rural areas like Muzarabani, Tsholotsho, Mutoko, Muzarabani and others where there are no physical banks. In addition to general merchandise they enhance their business through selling airtime.

Given the indispensible and utility services offered by agent network retailers through e-wallet innovations in rural areas where >70% of the unbanked public reside and physical banks are non-available, this study targets this penetration point to interrogate the application of the non existing MPS governance framework for MNOs in Zimbabwe. It is at this penetration point that the proliferation of agent network retailers can be translated to imply certain levels public trust, faith, confidence subscribers and unsubscribed, banked and unbanked clients have in the brands offered by competing MNOs.

In the context of completion for market share within community, this study cross examines the operators' awareness education campaigns, evaluates program designs pursued by the operators' public relations offices thereafter determining the successes or failures of mobile network operators in community outreach. Other reasons that range from the MNO public standing and appeal; corporate branding of MPS, the economic status of target populations, socio-political reasons, business and industrial preferences that commonly contribute to MPS viability and public confidence has been assessed.

By and large, any laxity on the fundamentals is frequently perceived or suspected to result in lack of public trust, confidence and convenience among banked and unbanked clients by either motivating or discouraging them from registering with MPS. This is a grey area that this study investigates while giving special attention to how the MPS governance framework for MNOs which is pragmatically applied by agent network retailers at community level.

2.5.4. Regulators

Broadly, MFS and MPS governance framework regulators in Zimbabwe include the Reserve Bank of Zimbabwe and Potraz respectively. Their role is to provide risk based monitoring and evaluation. They encourage efficiency, innovation and financial inclusion. The main challenge faced by the regulators is the rate of change in technology and innovations that needs stringent monitoring, evaluation and pragmatic control.MFS and MPS governance regulators are convergence points for the banking and the telecommunication industries. Telecommunication is regulated on the basis of it being a public utility while MFS, which includes the banking sector, is regulated on the basis of its safety and capital adequacy.

This study critiques the status and application of the non-existent MPS governance framework for MNOs in Zimbabwe since this defines and regulates public utility. The rationale for interrogating the non-existing MPS governance framework stems from suspected lack of public trust, faith, confidence and convenience that the general public allege against Potraz and MNOs. This study exclusively cross examines the technological capacities of Potraz regarding her knowhow and skills levels in telecommunications financial services and risk management associated with such services.

2.6 BUSINESS MODELS

The non-existent MFS governance framework for MNOs in Zimbabwe determines the nature of MPS business models to be used. The framework also determines the hardware and software appliances and software to be used in any mobile payment business model. The models have to adhere to the legal, statutory and regulatory requirements.

However, due to the shortcomings of the non-existent mobile payment security governance framework for MNOs in Zimbabwe investment in new innovations have been staggered if not resisted by Potraz. Indeed, this has compromised public trust, faith, confidence and convenience among the clients. There is need for Potraz to make urgent legal amendments and promulgate new laws that are enabling or pragmatic to the fast changing trends in MPS governance. The valued existing MFS governance frame pays a deaf ear to the demand for rapid domestication of fast and reliable hardware and software innovations in MPS governance for MNOs.

Notwithstanding, different MPS governance frames have been introduced and implemented on the basis of private and operator specific requirements. Operator specific requirements depend on the operational climate and market share demographics which have gradually expressed or emerged in the past few decades. Some of the operator specific services are bank centric, mobile operators centric and partnership led. In all cases, the representation of the clients and possible customers is muted.

In part, this omission of clients in the governance framework is strongly suspected to be contributing to the lack of public trust, faith, confidence and convenience among the banked, unbanked, subscribed and unsubscribed clients. This study realises this shortcoming and advances evidence based customer centric perspective that employs and advocates a participatory bottom up approach in the way MPS governance framework is administered. To this end, an enabling and proficient control MPS governance framework for MNOs in Zimbabwe that is customer centric is proposed for future consideration by the operators, providers and regulators.

2.6.1. Bank Led Models

Part of the business models in MPS governance includes banks which are financial institutions that control customers and maintain relationships between the bank and banked and unbanked clients using various multimedia approaches in their awareness education campaigns. The bank provides mobile services as a channel to other existing services. In Zimbabwe, the involvement of the mobile operator is limited to domestic transfer and internal remittances conducted by the bank. However, Zimbabwe has few bank led models. The bank models are independent and do not have a standard format. The banks that have bank led models include Standard Chartered, Barclays and Stanbic bank.

Only Zimswitch has proven capacity to converge the said banks plus the rest of banks. Nonetheless, the Reserve Bank of Zimbabwe has adopted a system that monitors and evaluates intra and interbank financial transactions in line with internationally observed protocols. This study assesses the impact of non-standardised bank led models has on the non-existent MPS governance and how such a scenario affect public trust, faith, confidence and convenience on the banked and unbanked clients.

Special interest will be placed on how the unbanked and MPS unsubscribed clients' investments are regulated in banks when there is no client centric MPS governance framework. Furthermore, the study shows the potential espoused in the introduction and achievement of an enabling and proficient control MPS governance framework that this study outlines for legal, policy and regulatory considerations.

2.6.2 Mobile Network Operators

MNOs are a recent and vibrant business model that has established itself in the financial services sector. There are three MNOs in Zimbabwe. The MNOs include NetOne, Econet and Telcel. NetOne provides its services through the brand name called OneWallet. Econet provides its services through the brand name called Ecocash. Telcel provides its services through the brand name called Telcash. MNOs eliminate or limit the involvement of the financial institution. MNOs dominate the mobile money market. They are able to reach large numbers of unbanked people in remote locations. They extend mobile payment services to areas where there are no banks and landline phones given their wide coverage.

Despite their diversity, outreach capacity and potential they have to stimulate client participation in determining clients' active role, customers have limited knowledge and rights on how operators work and held accountable. Kufandirimbwa et al (2013) argue that MNOs operate using different standards and contractual obligations making it hard for client to seek legal recourse when they face challenges in depositing or withdrawing mobile payments. This makes it hard to integrate divergent mobile infrastructure and processes used by operators.

There is no cross line facility that brings together the three operators for accountability purposes. Each operator signed a memorandum of understanding with Potraz and other transnational operators like MTN, VODCOM etc. Though partnerships reduce barriers to market entry of new players, free roaming, transactional or/and transnational problems leave clients stranded and ultimately disadvantaged of their invested money (Reuters, 2008).

For example, an MTN client can require a legal recourse on payments made through a roaming network to One Wallet, a NetOne subsidiary. The point of reference is a situation where VODCOM has a software system that can be used by MTN subscribers where MTN network is non-existent. If payment transfers are made in this context, how will NetOne expedite the recourse timeously to avoid the affected client convenience and maintain confidence when there are no regulatory guidelines that bind VODCOM? This can be said about Econet or Telecel and NetOne MPS payment services.

Realising the challenges associated with the inconsistence inherent in national and transnational MPS governance frameworks and the levels at which clients are unnecessarily disadvantaged that result in them loosing trust, confidence and convenience in MPS governance framework and Potraz in particular, this study cross examines these shortcomings by ascertaining the knowledge and perceptions clients have about the operations of MNOs in Zimbabwe by interviewing and administering questionnaires on a baseline number of clients. This study then analyses the fieldwork data to establish the prevalence, magnitude of the challenges and proposes an enabling and proficient control MPS governance framework that is customer centric, transparent, fair and accountable to clients, other stakeholders within and without the boarders of Zimbabwe, and dawns the genesis of client centric developments.

2.6.3. Partnership models

Partnership models are mobile payment business enterprises that have developed in Zimbabwe as a result of the participation of telecommunication services in the MFS sector. Banks, MNOs, systems and service providers make-up the ecosystem and its underlining social ecology. They work together to provide relevant systems and services to the banked and unbanked clients. Here it is possible to capitalise on each organisation's strength ensuring compliance. This includes Visa Master Card, MNOs and banks.

This study pursues the view that greater convenience, public trust, faith and confidence can only be achieved in Zimbabwe when and only when schemes, in the format of Zimswitch are increased and made accessible to the greatest number of people. This proposal the same need and scheme to be implemented for mobile payment operators who should see the need for favourable or enabling services where clients can either cash in or cash out using any operator available given the prevalence of network disruptions caused by many factors.

A software application that facilitates in ensuring convenience and public trust in cross network use in MPS governance can be installed by Potraz. This can help in situations where, for example a NetOne subscribed client visits a location where the operator has no coverage while Econet or Telcel have. This is one example that this study explores in the proposed proficient control MPS governance framework for MNOs in Zimbabwe. The purpose this serves is to sustain the collective corporate image of MNOs in the face of periodic coverage disruptions. Supposedly, it is in protecting the collective brand of MNOs' corporate images

that public trust, faith, confidence and convenience has potential to be sustained in many known and unexplored ways.

2.6.4 Customer Registration

According to Potraz regulations, all customers should be registered (SI 95 of 2014). This can be translated to mean that prospective customers are required to produce their identification cards or passport and proof of residence during registration. Registration is can be done by MNOs, network agents or dealers of existing MNOs. Some MNOs have come up with systems to accredit their dealers. In this scenario, they are supposed to be vetted and made to sign contracts before they are given the privilege to register. Clients suspect that there is laxity on this.

Subscriber registration is mandatory in terms existing MPS governance frames observed by NetOne, Telcel and Econet in Zimbabwe. Registration details include first name, surname, ID number or passport, address, city, country of residence and date of birth. The only field which is mandatory is ID number. This is outlined in statutory instrument 95 of 2014.This study investigates other issues that are outside the context of the statutory instrument like cloning the client's phone. This will be based on the responses clients will give during the study.

This research underscores the rights of subscribers not the privileges endowed to subscribers by the statutory instrument. The rationale for emphasizing the rights of the clients requires strong authentication mechanisms which are based on the evolution of society which is rights-based. The legal and business standing of clients in MPS governance is gradually but surely an issue to reckon with in the current and future discourse of the MFS sector.

2.6.5 Mobile money registration

Mobile money registration can be done by network agents and MNOs. For one to be able to transact, one should be registered. If one is not registered, one can only receive money using cash out points. Some MNOs like Econet have different charges for registered and unregistered subscribers. The requirements for a legitimate and successful registration of a prospective client include: proof of residence and national identity card particulars or passport. Details from such documents are used to register one for a mobile phone number. Through the use of MNOs systems, prospective client's phone number is simultaneously activated into an account number for payment transactions. The charges paid by the prospective client during registration or mobile payment transactions vary among MNOs.

The ways different MNOs charge clients is a cause of concern to the general public given the suspicion that most of the unsubscribed are senior citizens – the folk that constructed the infrastructure that is now disadvantaging them during their retirement period. Questions are asked in the public domain about the reasons that necessitate different charges particularly now when there are no standard charging structures submitted by Potraz to MNOs.

This study makes an academic inquiry to discover and determine evidence on the legal, business, technological and governance complexity of the public queries and ascertains the impact the complexities have on a proficient control MPS governance framework for MNOs in Zimbabwe that has better chances to be the silver bullet to the complexities.

As more and more questions are posed in the public domain on the way MNOs are operating at low ebb, it is apparent though scientifically suspected that citizens, both the subscribed and unsubscribed are losing trust, confidence and convenience in MPS governance frames that are applied on a day to day base by MNOs in Zimbabwe. The poor and senior citizenry clients are not prioritised in struggling economies. The two social variables significantly give to the frequency in MPS use given the levels of help rendered by the working class to them. Under such circumstances, this study integrates a pro-poor strategy in the proposed enabling and proficient control MPS governance framework for MNOs in Zimbabwe. This is suggested as a unique way of giving a human face and entrenching the ideals of corporate social responsibility in MPS governance framework for MNOs in Zimbabwe and the world at large. The nobility attached to the role and inclusion of the human face makes this study a worthwhile enterprise with potential to influence key studies in MPS governance and service delivery in future. Either than just advancing the need for a human face, this study fosters the human face by placing it within the context of business ethics to MPS business practice that remains an ingenious enterprise for obtaining profit sustained by indifference to clients needs.

2.6.6 Mobile money and airtime usage

In the Global North, MNOs discovered that subscribed and unsubscribed clients want to conveniently and swiftly send money to their peers especially during times of emergencies like car breakdowns, hospitalisation or funerals. The peers exist in the form of friends, families, neighbours and community members. Thus, it was discovered that clients want to exchange cash in and cash out as way of delivering actual money.

This social platform was translated into a business opportunity by MNOs. This resulted in the development of payment schemes based on the commercialisation of airtime. Today, this is being commoditized in place of cash and barter based systems. In other countries like Kenya airtime is now being used to pay for goods and services essentially transforming and technologically advancing the utility of MPS devices in an airtime wallet.

Funding of the mobile transactions is done through topping up or establishing a stored value account. The stored value is maintained by the carrier of the mobile phone user. Debiting the account is done via to up request where the initiator's account is debited and the recipient's account is credited. Prepaid MPS markets have significantly grown in leading sub Saharan African countries to 99% in Nigeria, 98% in Kenya and 83% in South Africa in 2013 (Ericsson Mobility Report, 2014). There is a major mismatch when compared to clientelism. Some countries permit roaming prepaid users to top up their accounts using voucher from the other network operators like the relationship between NetOne and MTN South Africa. As earlier noted, MTN subscribers can use VODCOM if they are locations where MTN has no coverage. This can be purchased using international foreign currency exchange charges. In other countries like Europe airtime money is used to pay low value goods and services and posted to the customer's phone bill as post paid accounts.

There are only two technologies that support mobile payments. These are short message services (SMS) based and SIM toolkit (STK). SMS is proving to be wide used because of its simplicity, convenience and compatibility with all phones from low value handset to the latest handsets. In Zimbabwe SMS are widely used as compared to voice calls. Realising the imminent transfer of technologies regarding services rendered by MPS and the fact that Zimbabwe is not an island or cannot insulate her from applications used in other countries; this study pursues the assumption that advanced mobile technologies used in Europe and South Africa will be adopted in Zimbabwe's MFS sector in the near or distant future.

In view of the immanency and assumption, the researcher proposes evidence based enabling and proficient control MPS governance framework to accelerate the integration of mobile infrastructure and processes therein mitigating possible dysfunctionality of the relatively inadequate MPS governance frame for MNOs in Zimbabwe. This is posing increased lose of

clientele trust, confidence, convenience and MPS business at large. Proverbial wisdom claims that *"a stitch in time serves nine."* This study takes a folio from the proverbial wisdom.

2.6.7 Funding and transaction flow

The most common way of funding the phone account is through cash in transactions. The diagram below highlights a business model used by MNOs such as NetOne where the mobile user is purchasing mobile money from a network agent into the phone account. The agent acts as the intermediary between the phone user and the MNO. The agents act as branches for the Mobile Network Operator just bank branches do. They facilitate the movement of cash from mobile users and MNO in the form of cash and cash out financial transactions. The role and functions of network agents has so far posed a number of challenges to the banking public and MPS subscribers who happen to be the clients. This study cross examines the perceptions that MPS subscribers have assumed on the roles and viability of network agents.

2.6.8 Cash IN models

Mobile User	Buy more money	Provide required details (ID and cash)		Receive confirmation of credit	
					Transaction complete
Urgent	Request for ID and cash	Verify Details	Initiate Mobile Money purchase	Receive confirmation of debit	
Network			Debit Agent's mobile money A/C Credit consumer's mobile money a/c (subtract fee if applicable) advise each		
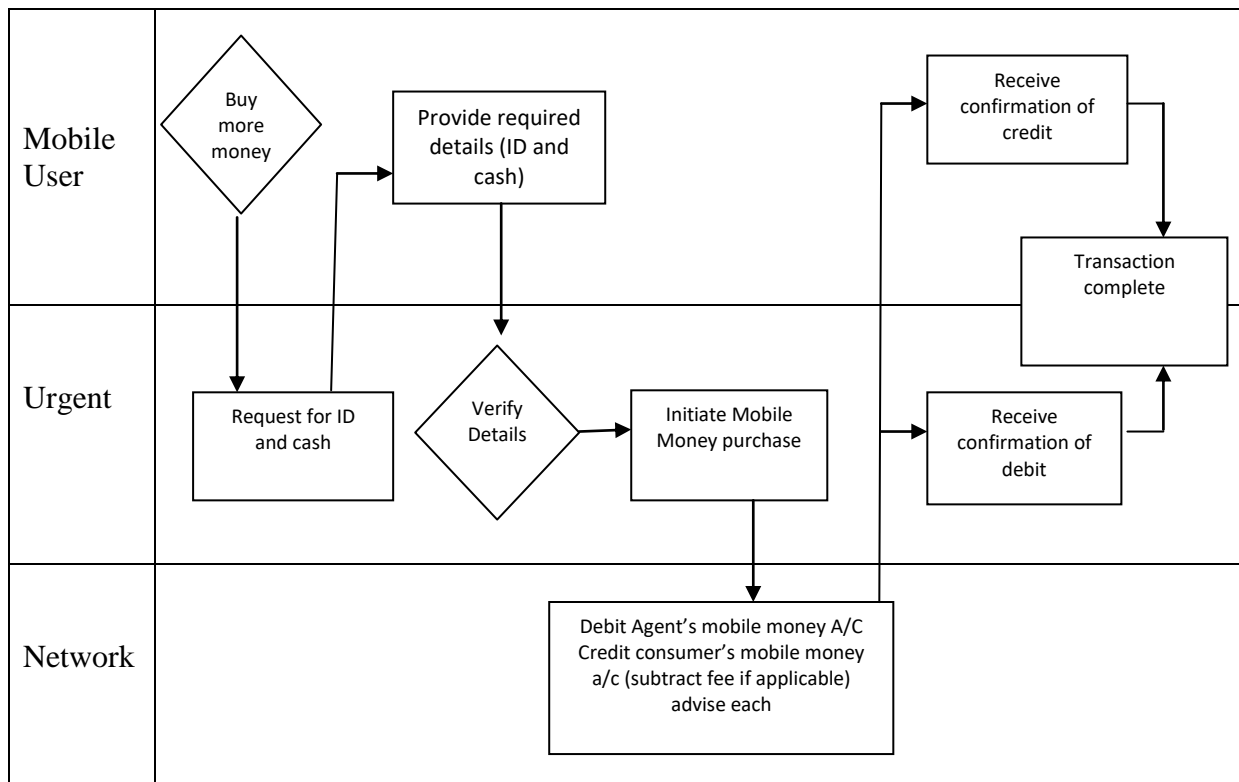
Fig 2.1 Cash in Source: KSMS, USAID, Merrit and BAH 2010

The mobile phone user purchases the airtime from the agent. ID documents are required for verification and identification. Here the Know Your Customer due diligence procedures will apply. The agent will credit the phone user's account and debit the trust account of the MNO.

The agent sends a confirmation message to the account holder and the transaction is complete. Here what has happened is the physical money by the MPS users has been converted into virtual money which can be used to transfer to other account holders.

The reverse of the above will result in cash out transaction. After verifying the identity, particulars and authenticity of the client, the agent debits the subscriber account or credits the MNO trust account. However, a number of nagging cyber and social challenges characterize this business front. This study revisits these challenges and interrogates such problems with the goal of proposing an enabling and proficient control MPS governance frame for MNOs.

2.6.9 Cash out Models
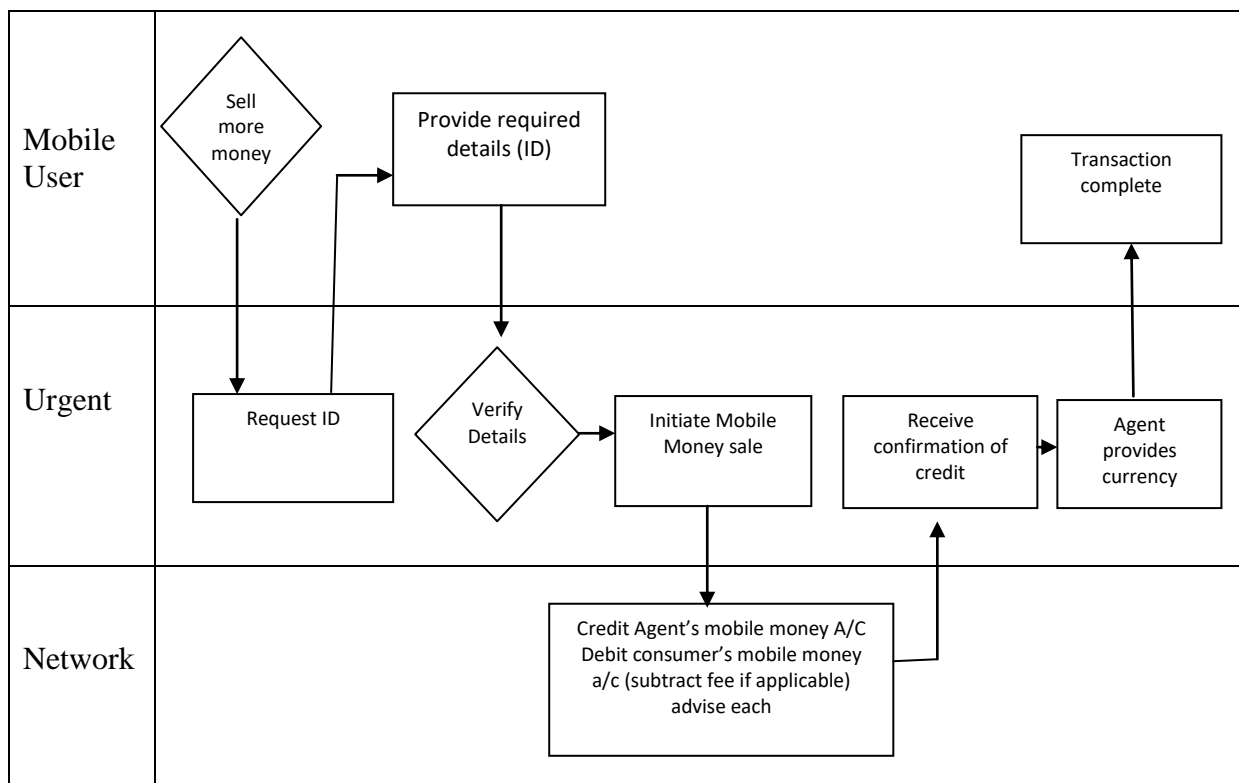
Fig 2.2 Cash out Source: KSMS, USAID, Merrit and BAH 2010

Fig 2.2 shows what happens when one is doing a peer to peer transfer. The MNO does the clearing function of both the sender and receiver. The sender sends a text message with the PIN number, phone to be credited and the amount. The MNO will debit the sender's account and credit the receiver's account. The MNO will send a message notifying the receiver about the transaction. With the message is the PIN number that's used to verify that you are the rightful owner of the number and money sent. However, the actual systems use are alleged to

be causing constant challenges that express extreme disregard of the banking and investing public. This is directly compromising social relationships between and among clients whose relevance and value to each other depend on a proficient MPS delivery systems and services. This study has identified the need for interrogating the Zimbabwean MPS scenario with the aim of enhancing service provision by prioritizing the indispensible role of MPS clients.

2.6.10 P2P Transfer

Mobile User	Sent money to receiver	Sender initiates transaction using receiver phone	Sender receives confirmation of debit	Transaction complete
Urgent				
Network	Check network availability	Receive payment instruction	Validate Sender	Debit sender account (include fee if applicable) credit receiver a/c Advise each
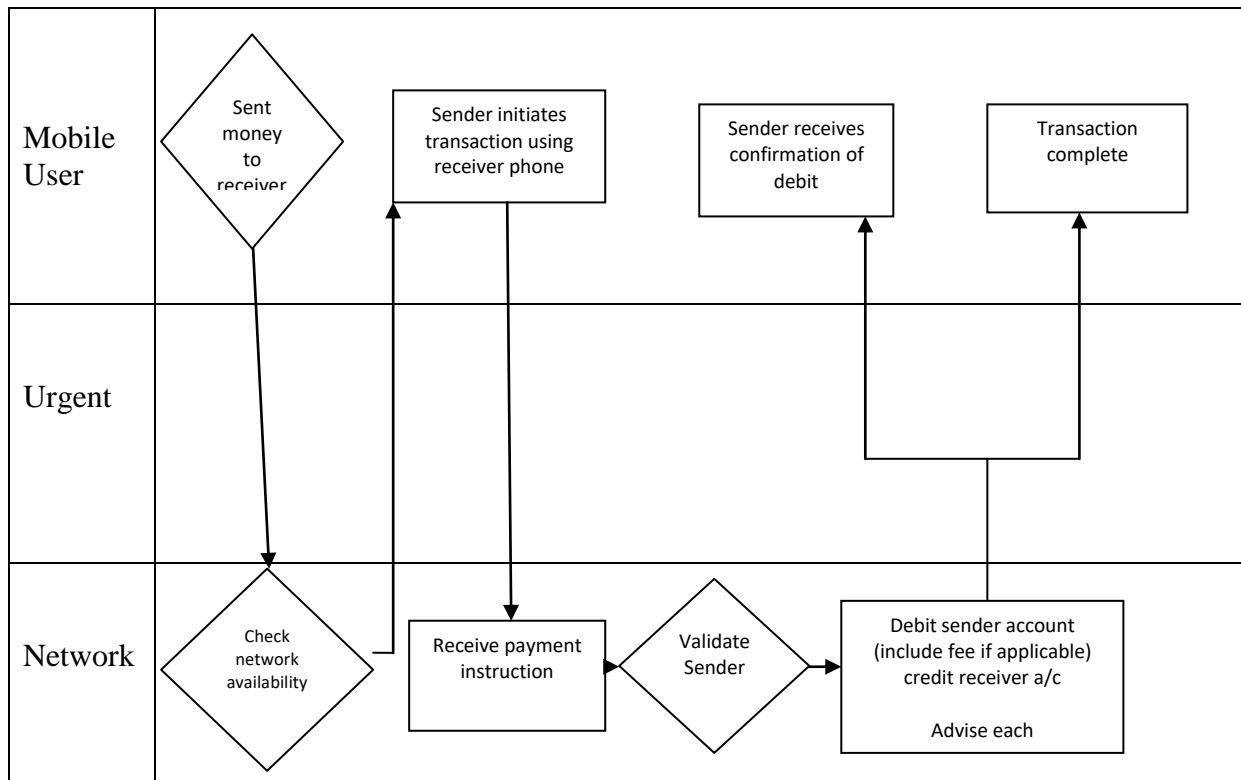
Fig 2.3 P2P Source: KSMS, USAID, Merrit and BAH 2010

2.7 MOBILE PAYMENTS SYSTEM RISK ENVIRONMENT

The mobile payment system risk environment is not different in retail payment systems like banks, shops and supermarkets. These include liquidity risk, money laundering, fraud, privacy and security, consumer protection and credit risk. In developing countries like Zimbabwe mobile money reduces the risks of carrying cash from one point another. More risks may come from the inclusion of non bank operators and the telecommunication systems playing the role of MFS which the regulators are founding difficult to control.

It is difficult to detect and monitor these transactions as telecommunication operators do not have experience in the financial institutions. Furthermore, financial institution have no control whatsoever on the telecommunication systems and there are no mobile payment

security regulator guidelines that can be used to monitor or sanction transactions. The regulators namely, Potraz and Reserve Bank of Zimbabwe need to look into the governance frame that overlooks MPS as a major challenge in sustaining public trust, confidence and convenience. More needs to be done to converge the operations of the two regulators.

Desai (2014) identifies the major risk factors to MFS as code obfuscation, insecure local device database storage, insecure app permissions and mobile payment app reputation. The security risks associated with mobile payment systems include fraudulent transactions, weak cryptography, mobile application server threats, mobile payment applications' database threats and SIM Card application (USSD/DSTK) attacks. These risk factors need rigorous and periodic checks if investor trust, faith, confidence and convenience have to be sustained. Previously, Potraz and the Reserve Bank of Zimbabwe, being the regulators used to work as distinct and competing sectors. Necessity and pragmatism made the regulators conceive the need for conjoint operation to make the obtaining environment workable for mobile payment services. This anomaly in mobile payment systems can lead to lack of public trust in mobile payment security. At its worst, the database for the operators can be stolen through cybercrime. This study cross examines the shortcomings of the MFS so as to highlight the need for more stringent regulatory guidelines in this sector that protect the interests of the investors. In view of this, this study proposes an enabling and proficient control MPS governance framework for MNO systems.

2.7.1 Money laundering

Money laundering is enshrined in an Act of Parliament, Chapter 24 of the laws of Zimbabwe. In Zimbabwe's telecommunication environment, the regulators provide for cross border network sharing. Within their cross-border regulatory jurisdiction, financial services can be exposed to unimaginable risks. The risks are associated but not restricted to the risk of money laundering within the mobile payment services.

Separation of duties between the regulators, Potraz and Reserve bank of Zimbabwe creates gaps in the regulatory system such that rogue elements may find it possible to circumvent detection by dividing a large chunk of funds into smaller ones using multiple phone numbers and account. Since there is no face to face transaction process in mobile payment services, there are possibilities that permit criminal activities on MPS users' accounts.

Different types of money laundering includes but not limited to digital value. Under such scenarios, criminals can bypass the banks and regulatory requirements by exchanging money in form of stored values. Since the telecommunications regulatory has relative knowledge in such activities, this level of cyber crime can go un-noticed. The nonbank agents may find it difficult to do due diligence and practice the KYC for their ever changing subscribers. This short-changes the subscribers resulting in them loosing trust, faith, confidence and convenience in MFS and MPS.

This study's hypothesis postulates that the noted challenges can be resolved if and only if an enabling and proficient MPS governance framework for MNOs in Zimbabwe is developed and implemented. As such, this study proposes an enabling and proficient control MPS governance framework for MNOs in Zimbabwe for scholarly, policy development and administrative considerations.

2.7.2 Customer protection

Current consumer protection regulations are for the telecommunication services and this does not cover the MFS offered by MPS. Subscribers need to be protected against faulty transmission, fraudulent transactions, identity theft and criminal activity on the agent, mobile operator and financial service provider's side. At the moment applicability of financial laws to punish offenders is very difficult as MNOs are lagging behind in enforcing regulations. If handsets are lost or cloned, the ways by which consumers can be protected remain a major challenge which contributes to the loose of public trust, confidence and convenience in MPS. This study aims to develop a client centric approach in the MPS governance framework as a way to mitigate challenges resulting from fraudulent transactions and identity theft. It proposes that the honour is on the regulators to develop and implement an enabling and proficient control mobile payment security governance framework for MNOs in Zimbabwe. The proposed framework shows potential in mitigating fraudulent transactions and identity theft if implemented. Subsequent to the development and implementation of an enabling and proficient control MPS governance framework, customer protection will be ensured. Ultimately, the weaning public trust, faith, confidence and convenience will gradually and definitively be reversed. This is the merit that this study has to achieve.

2.7.3 Credit Risk

Credit risk is rated as the most prevalent post paid challenge in global standards. Most of the post paid numbers are contract numbers which payments are settled after using the phone. Bills paid at the end of the month that is after usage. NetOne has one tenth of its customers on the post paid platform while Econet has less than one twentieth and Telcel with less than one tenth. Most of the network operators prefer prepaid usage than the post paid method.

In post paid environments the subscribers might fail to settle the bill after usage and this poses a great risk to the network operator. The option for prepaid usage is an operator driven initiative that is informed and directed by the economic crisis that the country has been experiencing. The regulators seem to have connived with the operators to the extent of ignoring pressing need for post paid schemes presented to them by genuine subscribers and network agents. The refusal to provide customer satisfaction in mobile payment has contributed, in its own right to the loose of public trust, confidence and convenience in MPS. This study cross examines the lack of aptitude, on the part of the operators to provide customer satisfaction during circumstances of real subscriber need. Credit risk, in the current governance setup is blamed on the subscriber yet it is collective responsibility based on mutual understanding and trust between the operators and subscribers. An unsustainable situation is created where the operators expressly implement business transactions with subscribers they do not trust. This researcher is of the informed opinion that if a client sensitive control MPS governance framework is developed and implemented; the operators can be capacitated to render required services to the clients.

Granted, this study proposes an enabling and proficient control MPS governance framework that protects and brokers the operator and subscriber relationship to ensure beneficial participation of clients and reciprocal trust, confidence and convenience in MFS and MPS.

2.8 CONCLUSION

In a nutshell, this review of literature has shown the greater need to formulate a MPS governance framework for MNOs in Zimbabwe that can be achieved by converging international and regional countries, domains and local clientele aspirations, wants and needs. It has been successfully argued that the acceptability, applicability and reliability of MFS and

MPS governance framework need to be client centric hence the need to domesticate international and regional initiatives to suite local and subscriber needs and wants.

Generally, the failure to formulate end user sensitive MPS governance framework has earned increasing lack of public trust, faith, confidence and convenience among the subscribed, banked and unbanked clients – biting the hand that feeds. Based on the literature reviews, major legal and policy proposals have been submitted for the key enabler being the government, key driver and regulatory authority, Potraz to technologically update the legal, policy and regulatory structures and mechanisms in line with the fast changing technological environment of MPS governance framework through robust staff development programs, legal, policy updating and encouraging the involvement of other specialist agencies in the regulation and supervision of MFS and MPS governance.

Failure to capacity built the human resource involved in regulating and supervising MNOs, MPS and MFS providers has potential to leave the regulators and supervisors behind dynamic technological advancements and effectively compromise MNO-subscriber relations.

MNO awareness education campaigns that target mobile payment end users has unsurpassed potential in stimulating subscriber confidence in MFS governance and significantly harnessing subscriber disinvestments in MPS. This has been shown to work to the detriment of key participants in the MPS governance who happen to be the customers. Pursuant of the need to acknowledge the pivotal or indispensible role customers play in MPS governance, the review of literature has highlighted that the utility of MFS have experienced consumer resistance in the form of gradual deregistration, withdrawal or indifference of subscribers that translates into considerable disinvestments.

Furthermore, the review of literature has shown that experiences from international and regional countries have shown that clientele deregistration, withdrawal or indifference leads to loose of MNO business acumen, profitability, viability and ultimately the conceivable collapse of the mobile payment security governance systems and services. The next chapter focuses on the study methodology and designs to be used by the researcher to develop an enabling and proficient control MPS governance framework for MNOs in Zimbabwe that is client centric and customer driven.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

The acceptability, applicability, reliability, viability and utility of a research methodology and design to be employed in a study is contentious issue in research planning, processes, implementation and justification of research outcomes. Many times, the researcher opts for a research methodology that meets one's intended research study goal. The chosen research methodology may not meet the requirements of the ideal research planning, processes and implementation but succeed in achieving a research study goal. The end does not justify the means. Because of the said methodological precedent, this research study will opt for two methodologies, complementary data gathering, sampling techniques and analytic methods.
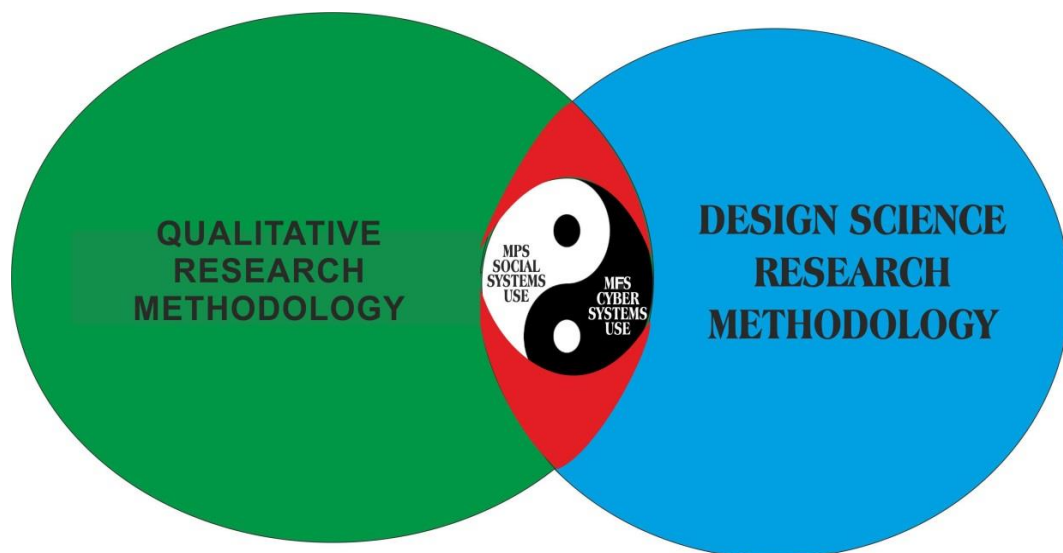
Fig 3.1 Methodology

In the main, any intended research goal is a summation of the researcher's explicit and implicit goals. The relationship between the explicit and implicit goals of any research study is relative and perhaps misunderstood or underrated by third parties. Many times, this underestimation explains the relativity of research planning, processes, implementation and ranking. Commonly, this relativity also causes conflict of interest between the researcher, supervisor on one side and the reader, armchair critique on the other side especially when the research goal is not in tandem with the armchair critique or reader's motivation and desired

orientation. In order to limit the conflict of interest, sustain reasonable balance and maximise quality outcomes in planning, processes and implementation, the researcher used two methodologies namely; the qualitative and design science research designs.

3.2 BACKGROUND TO THE METHODOLOGICAL CHOICE AND APPLICATION

The researcher is a seasoned MNO practitioner working for NetOne. Cognisant of possible or perceivable subjectivities, biases and prejudices that the researcher can harbour; the pertinent yet relative question any outsider can pose is: are the insider's preferred methodological choices ideal or are they preferred to prove self-engineered academic pursuits? The researcher will complement the design science and qualitative methodologies to limit conflict of interest, undo work related bias and prejudices, sustain objectivity, rigor and reasonable balance in research planning, processes and implementation. Nevertheless, in view of the relative question, readers would, positively or otherwise constantly query the amount of objectivity in the researcher's methodological choices. However, time and space relegates the discourse on the relativity of choosing research methodologies outside the scope of this study. Arguably, whereas the acceptance of the use of the relatively new design science methodology is progressive, the criticism of such a methodological choice are perceived to be influenced by opposing idiosyncrasies and old schools of thought like participatory top bottom because they safeguard the status quo, are tried and tested methods and uncertainty on how to handle potentially complex ITC variables that relate to MFS cyber-based emergent properties. This criticism, if not interrogated and censured can sterilise the meaningful application of the trial and error method, mute topical security concerns and investigations into robust MFS cyber innovations that typify the generality of ICT discourse or MPS in particular. Eventually, any meaningful application of newly developed ICT methodologies will be invalidated.

Cognisant of the need to productively apply the tenets of the design science methodology, the budding researcher will employs it to cross examine the impact of MPS cyber and social systems on MPS governance framework for MNOs in Zimbabwe. The choice to interrogate MNOs is informed by the fact that MNOs are generally perceived as the nerve centres of MPS. As such, the researcher complements the design science and qualitative methodologies

to develop and enhance an enabling and proficient client centric model for the MPS governance framework in Zimbabwe.

The rationale for complementing the design science and qualitative methodologies stems from the research problem – the non-existent MPS governance framework for MNOs in Zimbabwe that is double faced. On one side of it, MPS governance framework for MNOs has a direct causative effect on MFS cyber systems because it is the instrument used to monitor, evaluate and regulate the utility of the MPS actual systems use. In line with the technology acceptance model (Davis et al., 1989 and Venketesh at el., 2003), which informs this study's theoretical frame, MPS governance framework determines and regularises its acceptability, applicability, reliability, viability and utility to clients. To the best of our knowledge, the tenets of the design science methodology have an unmatched track record on developing and enhancing solutions on technology-based challenges (Vaishanai and Kuecheler, 2004/13). This is the reason why the researcher co-opted the design science methodology in this study. On the other side, MPS governance framework has a direct causative effect on MFS social systems - client protection and satisfaction. Any robust MPS governance framework influences public trust, confidence and convenience by constructively sustaining MPS' actual systems use which attracts client behavioural intentions to use MPS, appreciation of MPS usefulness and ease usage. These are key compliance variables to be observed in the technology acceptance model (Davis et al., 1989) upon which the theoretical frame of this research study is anchored. The tenets of the qualitative methodology, given their ubiquitous socio-analytic acumens and ability to facilitate in developing and enhancing solutions on social challenges have an unsurpassed track record on developing and enhancing an enabling and proficient control MPS client centric model for organizations. Granted, the researcher's choice of using the qualitative research methodology is reasonable and justifiable.

No doubt, MPS cyber systems have complex innovations and inherent hardware and software challenges. However, MPS client centricism is more than subtle and complex to be comprehensively captured when developing and enhancing an enabling and proficient control MPS governance framework for MNO if MPS adopts a zero tolerance to cyber crime and terrorism in financial risk management. Provision of detailed information to MPS clients on what it takes for zero tolerance to cyber crime and terrorism can potentially complicate MPS actual systems use and intention to use MPS thus scare away clients from using MPS

(Stalfors and Nykvist, 2011).Limiting the provision of MPS information for security reasons is untoward because this does not promote full participation of clients in MPS governance. Furthermore, international standards on MPS actual systems use may not be consistent with hardware appliances used in emerging MPS markets like Zimbabwe (Little, 2011). In view of these cyber shortcomings, complementing the design science and qualitative methodologies for the purpose of developing and enhancing an enabling and proficient control client centric MPS governance framework for MNOs in Zimbabwe is a promising proposition that will earn Zimbabwe's MFS sector immeasurable acceptability, applicability, reliability and utility within the prevailing backgrounds of lack of public trust, confidence and convenience in MPS. Verily, this justifies the reason why the researcher will employ the two methodologies. Cognisant of the need to sustain the scientific character of ITC in the prioritization of the social context of MPS governance framework for MNOs in Zimbabwe, the budding ITC-MPS researcher will prefer novel process methodologies like the qualitative participatory bottom-up approach as applied in qualitative methodologies, and retrospective and cross-iteration comparisons as applied in the science design methodology to advance a new paradigm in cyber methodologies by showcasing its client centric relevance and utility in the fast changing MPS governance framework for MNOs in Zimbabwe.

Perhaps it will be unsustainable; if not a contradiction to apply old methodologies that have promoted unusable MPS governance frameworks for MNOs to Zimbabwe's fast changing MPS sector. The sector requires regular amendment of laws, policies, constant review of governance frameworks and stringent supervision to limit public mistrust, lose of confidence and convenience that is characterising the MPS sector in Zimbabwe. The proposed entry point will be to adopting a solution to this research problem is to develop and enhance an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. The ultimate artefact will show potential in pragmatically regulating the MPS actual cyber systems use and social systems use for the preferred but not exclusive benefit of MPS clients. A great measure of MPS acceptability, applicability, reliability, accountability and viability that define the MPS actual cyber systems use, social systems use and clients' intention to use will result when and only when an enabling and proficient control MPS governance framework for MNOs in Zimbabwe is implemented. The proposed client centric MPS model will place greater emphasis on MNO laws, policies and regulatory guidelines that prioritise accountability, transparency and good corporate governance for MNOs in Zimbabwe.

Arguably, it will be through the application of the qualitative methodology, given its emphasis on grassroots contexts of the generality of clients and participatory bottom up approaches that a control client centric MPS governance framework for MNOs will be meaningfully developed and enhanced in Zimbabwe.

Subsequently, tenets of the design science research methodology such as retrospective and cross-iteration comparisons between MPS in developed markets and Zimbabwe as a merging market will facilitate in developing, enhancing, enforcing and regulating the MPS actual cyber systems appliances and applications in Zimbabwe. This research will understudy and domesticate viable MPS actual cyber and social systems appliances and applications adopted for use in developed markets by perfecting and situating client centric MPS governance frames in Zimbabwe's MNOs (Little, 2011).

Through the use of tenets of design science research designs, the researcher's lifespan knowledge and experience in MNOs' MPS cyber and social infrastructure, the researcher will propose a home-grown cyber infrastructural innovation or actual cyber systems use and social systems use that facilitate the development and enhancement of an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. The application of the design science methods like retrospective and cross-iteration comparisons in the domestication process will be complemented by qualitative designs when developing and enhancing an enabling and proficient control MPS governance framework for MNOs in Zimbabwe.

Pre test outcomes point to the perception that armchair critiques of a client centric MPS governance frame for MNOs in Zimbabwe question the omission of the quantitative methodology in this study. The critiques insist on the need for statistical justification of this study's research planning, processes and outcomes integration. Interestingly, pre test outcomes on the proposed client centric MPS governance frame for MNOs in Zimbabwe point on the need to employ the qualitative methodology that is complemented by the design science methodology.

Armchair critiques insist on the need to quantify the prevalence and magnitude of the clients' outputs in the study processes and outcomes. This researcher thinks otherwise and will consciously barracks out the measurement of the prevalence and magnitude of the research

problem for future researchers to undertake. There is scanty literature on MPS client centric initiatives making this study a ground breaking academic initiative. However, scattered deposits on measurements of prevalence and magnitude of the research problem are replete in MPS regulators', operators', service providers' offices, libraries and the superhighway.

In spite of the armchair critiques' methodological indifference, the qualitative research methodology will be given precedence in this research study. MPS subscribers have shown insignificant interest in quantitative approaches. Figures and statistics that characterise quantitative methodologies have shown potential to remove the clientele face this study seeks to recreate or renew and even scare away possible respondents whose aptitude to governance inquiries that evolve around figures and statistics is low. As such, the quantitative methodology was selectively employed given its significance in actual cyber systems use, analyzes and measurement of the prevalence and magnitude of the perceived lack of public trust, confidence and convenience in MPS that devalues the perceived actual systems use and actual social systems use's usefulness and drive to use MPS.

In an effort to identify the key elements required for the proposed client centric MPS and MPS for MNOs in Zimbabwe, multi-faceted qualitative and design science research techniques will be employed during planning, data collection, processing and analyzes. This chapter will focus on methodologies, methods and associated research tools to be employed in this research study. It will give in-depth descriptions of research processing instruments to be used during fieldwork such as interviews, questionnaires and expert review. The data analyses techniques will include but not exclusive of sifting of data, recursive abstraction, codifying data; that includes retrospective and cross-iteration comparisons of gathered data. This will be done to express the extent to which fieldwork data was rigorously generated and integrated in the over-arching client centric model processes that will yield the development and enhancement of an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. The complementary methodological methods, processes and evaluations will be used as a means to limit challenges associated with or linked to the exclusive use of one methodology on a research problem with diverse, if not conflictual emergent properties or variables. Pre tests have indicated that the use of one methodology has potential in divorcing the research goal from primary data which is the bedrock of this study.

In conclusion, this research study will broker, recreate or renew the indispensible relationships between MPS clients and MNOs. It will significantly humanise MPS services and capacitate the transformation of MNOs' public affairs and corporate social responsibility programming. As such, the study proposition for a client centric MPS will yield the development and enhancement of an enabling and proficient control MPS governance framework for MNOs in Zimbabwe that is client centric. The qualitative and design science research designs will be employed to ensure and maximise the quality of the study goal.

Given the precedence given to the development of a client centric MPS governance model, tenets of the qualitative methodology inform and direct the way tenets of the design science methodology will be used. Overly, this research study will innovatively employ participatory bottom up approaches in its research planning, processes and implementation. The underlying assumptions for focusing on the social systems and ecology of MPS governance frame will include but are not exclusive of:

❖ MPS regulators need enabling and proficient control MPS governance frames for MNOs.
❖ The existing MPS governance frame for MNOs prejudices clients during transactions.
❖ There is lack of public trust, confidence and convenience in Zimbabwe's MPS.

3.3 THE GROUNDED QUALITATIVE METHODOLOGY AND APPLICATION

This study explores the underlying perceptions, reasons, opinions, motivations on MPS usefulness, ease to use and behavioural intentions to use MPS which determines the actual MPS use (Davis et al., 1989) and as a way to provide a cyber and social solution to the lack of public trust, confidence and convenience in MPS governance frames for MNOs in Zimbabwe. The exploration will interrogate the level of interest of the regulator, operators and providers on the perceptions clients imbed about the impact of such outcomes from Zimbabwe's non-existent MPS governance framework using the qualitative methodology. O'Doherty (2014) asserts that;

> *"A qualitative research methodology is primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypothesis for potential qualitative research".*

The aim for this exploration will be to develop and enhance an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. In this regard, the nature, planning, processes and implementation of the research study will prioritise a client centric interrogation of Zimbabwe's MPS governance framework to determine the extent to which it approximates the value existing MPS actual social systems use in developed MPS markets. This will be effectively and successfully done using applicable and reliable qualitative research designs like the multiple case study and cross sectional methods since various sectorial clusters (to include the regulator, operators, providers and clients) will have to contribute, on an equal basis towards the development and enhancement of an enabling and proficient control MPS solution that ensures permanent acceptability, applicability, reliability, viability and utility of Zimbabwe's MPS governance framework.

According to Creswell (2008) the qualitative research methodology deals with ways of analysing and evaluating different meanings individuals give to the daily and social life assumed over a period of time. In this study MPS clients will be the individuals who give different meanings or perceptions to MPS governance frames in their socio-economic life that is relatively dependent on MPS service provision. The dynamic and indispensible place for MPS clients in the actual MPS social systems use will be prioritised in this research study.

The study has been undertaken over a period of twelve months and a culmination of the researcher's fifteen years working experience in MNO operational governance. Qualitative designs are renowned for meaningfully employing various philosophical assumptions, strategies of enquiry and methods of data collection, analysis and interpretation. They rely heavily on the social milieu, text and image data when gathering or interpreting data. The researcher will barrack out or *"stood one removed"* from his cumulative workplace perceptions about Zimbabwe's MPS governance frame to give precedence to fieldwork outcomes and allow collected data to speak for themselves.

The various philosophical assumptions range between individuals' interpretation of the prevailing MPS reality and subsequent subjectivity - the relationship between the researcher and the researched – the non-existent MPS governance framework for MNOs in Zimbabwe. The reality this study will unpack is the perceived decline in usefulness, ease to use and behavioural intentions to use MPS (actual social systems use) that is expressed through a growing but undetermined lack of public trust, confidence and convenience in MPS use

among MNOs. Indeed, this is compromising the acceptability, applicability, reliability, viability and utility of MPS in Zimbabwe. This is unfolding in a context where relationships between regulators and MNOs do not meaningfully recognise clients in the valued existing MPS systems governance matrix. This is affecting the critical relationship between MPS clients and MNOs and works to the detriment of best practice in MPS.

First, the ideal MPS social systems use in MPS governance framework and the prevailing social MPS systems use will be established through the use of multiple case studies and cross sectional studies of the regulators, operators, service providers and diverse clients. It will be in the context of advancing and enhancing a client centric MPS governance model that the solution to the research problem will be achieved. Second, the extent of the non-functionality of the MPS actual systems use will be established through the use of retrospective and cross-iterations comparisons of actual MPS systems use in the developed markets and those in Zimbabwe to ensure balance of inputs in the proposed MPS client centric compliance.

The qualitative research method will be employed to get an in-depth understanding of the MPS actual systems use as distinguished from the prevailing MPS systems use in governance frames from the regulator, Potraz; the operators, NetOne, Econet and Telcel and selected clients that have formally reacted to uncompetitive MPS business acumens and practices. The researcher will investigate the prevailing MPS social systems use using the qualitative research designs to ascertain and appreciate the clientele challenges. The researcher will then investigate the current MPS cyber systems use employing design science methods to ascertain and appreciate the problem linked to or associated with MPS hardware and software appliances and applications. The prevailing perceptions on MPS actual cyber systems use are;

❖ The MNO's ITC operational capacities and conditions influence their service delivery.
❖ MNOs hardware and software appliances and applications affect MPS governance frame.
❖ Lack of ITC compliance standards for MPS affects MPS governance for MNOs.

3.4 THE GROUNDED DESIGN SCIENCE METHODOLOGY

Vaishanavi and Kuecheler (2004/13) assert that;

> "*The design science methodology is an outcome based information research methodology, which offers specific guidelines for evaluation and iteration within research projects. Design science research focuses on the development*

and performance of artefacts with the explicit intention of improving the performance of the artefact".

The researcher suspected that a client centric MPS actual systems use in governance framework for MNOs in Zimbabwe is, in part a cyber systems outcome in the sense that the proficiency and efficiency or computability and compatibility of the actual cyber systems use, particularly computers and transmission dishes contribute to the acceptability, applicability, reliability, viability and utility or behavioural intention to use MPS use in Zimbabwe.

The MPS actual systems use guarantees its operational usefulness, computability, compatibility, security and ease to use applications. This translates to the acceptability, applicability, reliability, viability and utility of MPS use among clients. Given the perceived decline in MPS use and related lack of public trust, confidence and convenience, this study will propose the development and enhancement of an enabling and proficient control MPS cyber governance frame for MNOs in Zimbabwe that is client centric. This innovation will be proposed to service providers, operators and regulators as an evaluation and cross-iteration blueprint. This showcases that this study will be, in part framed along design science persuasions. Figure 3.0 presents the MPS actual cyber systems governance model that will be used in this research study.
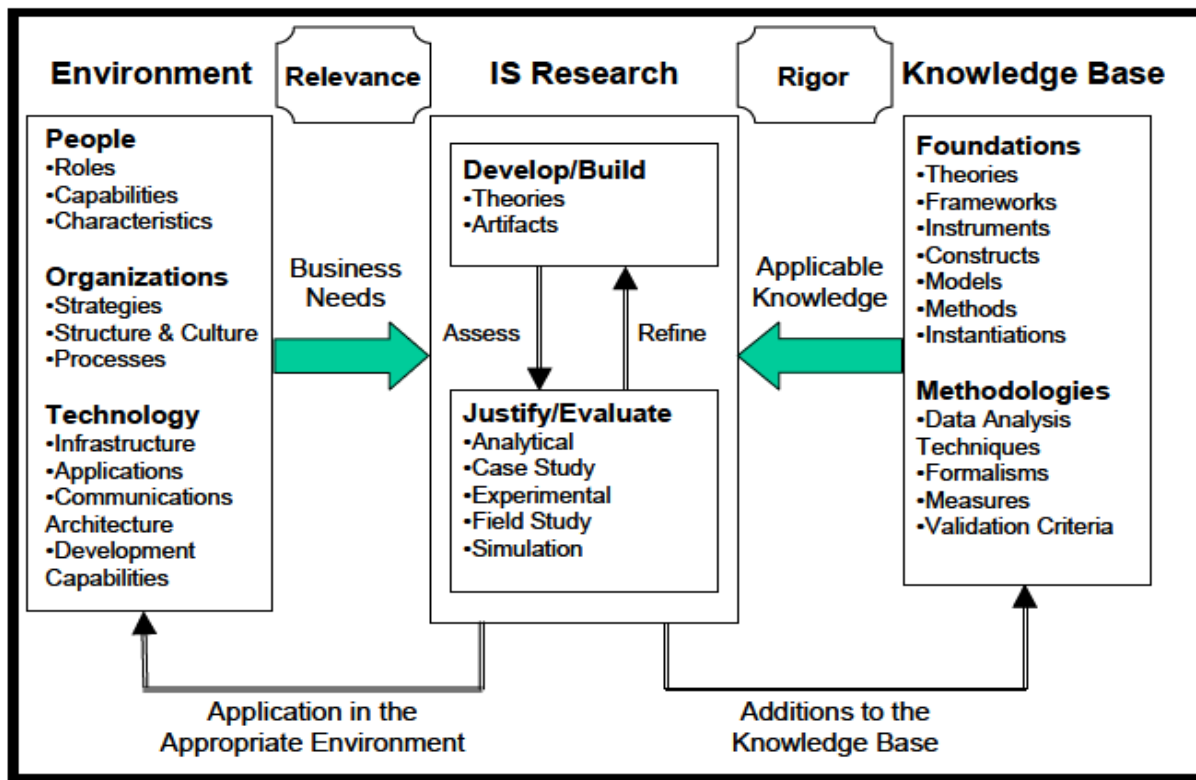
Figure 3.2 Source: Henver et al (2004)

The design science methodology will be used in this study that seeks to develop and enhance an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. This is the proposed artefact to mitigate declines in MPS actual cyber systems use and subsequent lack of public trust, confidence and convenience – behavioural intention use to MPS.

According to Henver et al. (2004) the proposed MPS solution is developed as or becomes an artefact after its development and enhancement. The development of the proposed artefact will provide an MPS clientele solution to the research problem which is twofold: client satisfaction and MPS acceptability, applicability, reliability, viability and utility. In this study the proposed artefact will the enabling and proficient control MPS governance framework for MNOs in Zimbabwe. Fig 3.2 presents a template on how the design science will be applied in this study. Explanations will put the diagram in the context of this research study.

Figure 3.3 Design Science Processes

3.5 DESIGN SCIENCE REASERCH PROCESS

3.5.1 Design science as an artefact

The first step in any design science techniques is to identify the nature of artefact ideal for development and enhancement. This is proposed to be the first step towards the development of the solution. This research study will develop, enhance and propose an enabling and proficient control MPS governance framework for MNOs as an artefact adopted from various MPS actors (regulators, operators, service providers and clients alike) and research processes that include literature review, fieldwork case study, data interpretation and analyses. The artefact will be a solution for clients, MNOs, MPS cyber systems and service providers like banks that drive the relational or reciprocal social, economic or business functions of MPS.

3.5.2 Problem Relevance

The primary objective for any design science research study is to introduce, advance knowledge acquisition and understanding that facilitates the development and implementation of technology-based solutions. The priority of any design-science study is to respond to a constituent community with a specific technology-based solution. For the generality of ICT researchers, that constituent community comprise practitioners who plan, manage, design, implement, operate and evaluate MPS actual cyber systems use.

In this study, the constituent community will be the regulators, Potraz; Mobile Network Operators, NetOne, Econet and Telcel; Mobile Network operators and service providers. The technology-based challenge this study will be investigating will be the perceived lack of acceptability, applicability, reliability, viability and utility of the MPS actual systems use in governance framework for MNOs in Zimbabwe whose counterfeits express through the growing lack of public trust, confidence and convenience of MPS subscribed, unsubscribed, banked and unbanked clients or perceived reduction in behavioural intentions to use MPS.

Through the use of design science approaches, a standard clientele solution for the technology-based (ITC) emergent properties or variables, which drives the relationships between MPS technologies and clients, will facilitate in the development and enhancement of a technology-based solutions that will be integrated into the proposed enabling and proficient control MPS governance framework for MNOs in Zimbabwe.

3.5.3 Design science evaluation

The genesis of any design-science evaluation starts with simplified conceptualizations and representations of the research problem which is the non-existent MPS governance framework for MNOs in Zimbabwe that is causative to lack of public trust, confidence and convenience in MP or behavioural intentions to use MPS. The design artefact will be proposed as an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. In view of the design science evaluation model, the utility, quality and efficacy of any artefact will be rigorously demonstrated employing well executed evaluation methods.

The proposed artefacts will be evaluated in terms of functionality, completeness, consistency, accuracy, performance, reliability, usability, applicability to MNO organizations, acceptability and relevance to end users – MPS clients. However, Johansson (2000) argues that available technology or organizational environments are in a state of change. As such, assumptions made in prior researches will be considered invalid. However, the proposed enabling and proficient control MPS governance framework, being the artefact will not an end in itself but a tested paradigm or model for future client centric applications.

Evaluation methods that will be used include observational methods, multiple case studies, cross-sectional surveys, expert reviews and content analysis that are informed by retrospective and cross-itineration comparisons. The multiplicity of evaluation methods serve to maximise the production of quality outcomes that exhibit high standards, proficiency and efficiency or greater efficacy of the artefact.

3.5.4 Research Rigor

Research rigor is the level of thoroughness or precision invested in the way research planning, processes, implementation and evaluation of the artefact will be conducted. This will require the application of rigorous or stringent methods during the construction and evaluation of the designed artefact. Nonetheless, the success of this design science model, artefact will lie in the theoretical and conceptual frameworks that inform and direct research planning, data collection, processing methods and activities.

In this study, the theoretical frame will be informed by Little's (2011) theory that distinguishes developed and emerging MPS market thus placing Zimbabwe's MPS in the emerging market category. The conceptual frame used will be informed and directed by the technology acceptance model (Davis et al., 1989 and Venkenesh et al., 2003). The qualitative

and design science methodological designs will be complemented in this research study's methodological considerations as earlier noted. The research study methods will complement multiple case studies and cross sectional studies through the application of oral and formal interviews, questionnaires, expert reviews, ecosystems and social ecological observations of MPS within MNO settings and clients within their socio-economic backgrounds respectively. Expert reviews will be employed to maintain research consistency and give a transnational scope to the acceptability, applicability, reliability, viability and utility of the proposed artefact. As such, knowledge of behavioural theories and global scholarship trends will be applied in the construction and evaluation of the subject artefact. The qualitative research methodology will facilitate in bringing in the knowledge of behavioural theories. The design science research design will facilitate in bringing in technology-based or cyber-based theories. The emphasis that the design science methods will place on research rigor is what will be required in the construction and evaluation of the proposed artefact – an enabling and proficient control MPS governance framework for MNOs in Zimbabwe.

3.5.5 Design science methods as a Search Process
Design science methods are essentially an artefact search processing itineraries that aim at discovering an effective, efficient, proficient artefact. In this study, the artefact search process employs the qualitative and design science research models to ensure rigor in the search processes that will develop and enhance an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. The artefact search process will be a problem solving endeavour. Simon (1996) argues that problem solving can be viewed as utilizing available means to reach desired ends while satisfying existing laws.

This study is of the view that the search process will generate an enabling and proficient control MPS framework for MNOs in Zimbabwe and test the efficiency or efficacy of the artefact. The researcher will be aware that the means, ends, policies and laws need to be refined and made more realistic for the proposed design artefact to become relevant and invaluable. In order to ensure certitude about the proposed efficiency or efficacy of the enabling and proficient control MPS governance artefact – the researcher will solicit expert reviews of the research outcome. Expert proposals will be integrated in the control MPS governance framework for MNOs in Zimbabwe to maximise the quality of the artefact.

3.5.6 Communication

One of the novel characteristics of the design science research model subsist in its insistence that the researcher should communicate one's findings to all individuals, organizations and sectors that provided information during the period of research. The individuals who would have participated will include MPS clients, Potraz as the regulator, MNOs as the operators and banks as service providers. The study outcomes will obviously require further dissemination of information for implementation and knowledge addition. In line with the design science research techniques, the researcher will have to communicate or dialogue with all the respondents during the course of the study, getting feedbacks and comments. It will part of this study's ethical consideration that all participating bodies and individuals will be given hard and soft copies of the study outcomes.

3.6 REASERCH DESIGN
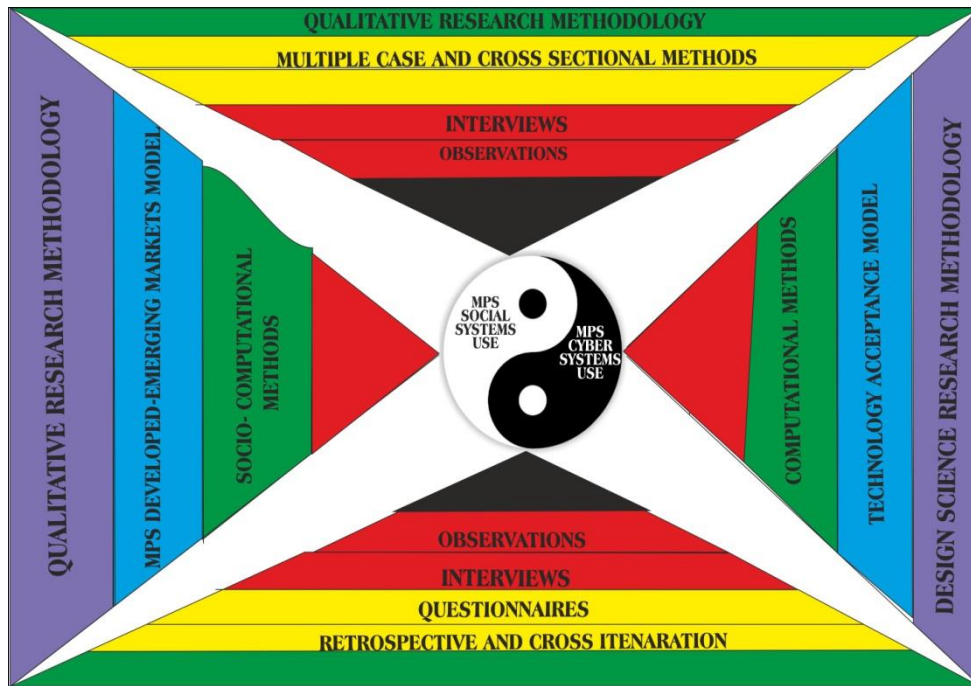
Fig 3.4 Research design

A research design is scientific structure, template, guide or blueprint that gives direction and systematizes the chosen research study. There are many research designs that can be chosen on account of their acceptability, applicability, reliability, viability and versatility if employed to achieve set aims and objectives of a research study. Creswell (2008) argues that a research design presents plans and procedures for research that span from broad assumptions to detailed methods of data collection and analysis. Any research design is anchored on chosen theoretical and conceptual frames. In this study the Little's (2011) and Stalfors and Nykvist (2011) theoretical frames will be used. The technology acceptance model by Davis et al (1989) and Venkenesh et al., (2003) will be employed.

The over-arching research designs to be used in this study are qualitative and design science methodologies. The rationale for selecting a research design depends on the nature of the problem or issue being addressed, the researcher's personal experiences and audience of the study. This study will employ the qualitative research paradigm that will place emphasis on

the multiple case studies, cross-sectional methods and expert reviews. A repeat of the case study methodology on the regulator, MNOs, MPS providers and the general public will be used to ensure the development and enhancement of an enabling and proficient control MPS governance framework for MNOs in Zimbabwe. Expert reviews and responses from the public will help in enhancing research processes and shaping the study outcomes.

3.6.1 Grounded Multiple Case studies on MPS governance framework.
Globally, multiple case study methods are considered to be enterprising, reliable and viable method in the study of governance frameworks and providing solutions. Marczyk et al. (2005) argues that a multiple case study is undertaken when the same goal of a case study is repeatedly done on different subsets as a way of providing accurate and complete descriptions of the person or case.

According to Thomas (2011)

> *"Case studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more method. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides an analytical frame – an object – within which the study is conducted and which the case illuminates and explicates".*

In this research study, the case studies on MPS governance framework for MNOs in Zimbabwe will be conducted employing qualitative and design science frames. It will be repeatedly applied on four subsets namely: the MPS regulator, Potraz; operators namely NetOne, Econet and Telcel, service providers namely banks and clients that are comprised of the subscribed, unsubscribed, banked and unbanked. The method will be used to analyse perceptions about the dwindling public trust, faith, confidence and convenience in the application of MPS governance framework for MNOs in Zimbabwe. Though this case study will be client oriented, the outcomes are expected to have inestimable potential in strengthening the acceptability, applicability, reliability and viability of MPS governance framework for MNOs in Zimbabwe.

It will be noted that the actual value range, structural proportions, contrast ratios and scientific objective properties of the target sectors will be diverse, realistic, complex and will present contextually rich situations with conflictual contents on how to deal with the MPS governance framework for MNOs in Zimbabwe that is causing lack of public trust, faith, confidence and convenience to clients. To the best of our knowledge, it is only the multiple

case study method that will pragmatically align the opinion differences and facilitate in developing an enabling and proficient control MPS governance framework for MNOs that will be client centric.

The multiple case study will be the seedbed when dealing with descriptive questions like "What is happening or has happened?" or an explanatory question - "How or why did something happen?"(Yin, 2012). The reason why multiple case studies will be chosen in this study is that they favour data gathering methods which will be natural as compared to derived data from a natural event in its ontological context (Bromley 1986). The researcher will employ surveys, interviews, observations and document analysis during the multiple case studies (O'Leary, 2004).

Yin (1994), described the multiple case-study as a design that uses five components: its research question(s), its propositions, its unit(s) of analysis, a determination of how the data are linked to the propositions, and criteria to interpret the findings. Kazdin (1982) outlines the major characteristics of multiple case studies as follows:

❖ They involve the intensive study of an individual, family, group, institution, or other level that can be conceived of as a single unit.

❖ The information is highly detailed, comprehensive, and typically reported in narrative form as opposed to the quantified scores on a dependent measure.

❖ They attempt to convey the nuances of the case, including specific contexts, extraneous influences, and special idiosyncratic details.

❖ The information they examine may be retrospective or archival.

Therefore the use of the multiple case study design will be considered to be of high importance in achieving the research's objective on MPS governance framework for MNOs in Zimbabwe. However, the multiple case studies will be complemented by cross-sectional studies given the cross sectional strata of the research subjects and short historical period the study are being undertaken.

3.6.2 Grounded Cross-Sectional studies in MPS governance framework.

The characteristics of cross sectional studies allow for the researcher to understudy a study population at a single point, look at/for numerous independent, dependent, confounding variables and emergent properties that significantly contribute to the prevalence and magnitude of the problem in a given population.

Cherry (2015) defines cross sectional studies as

"a research method often used in developmental psychology, but also utilized in many other areas including social science and education. This type of study utilizes different groups of people who differ in the variable of interest, but share other characteristics such as socioeconomic status, educational background, and ethnicity."

In view of the observations made by Lee (1994) and Schmidt et al. (2008), this study will estimate odds ratio, absolute risks and interrogate the prevalence, magnitude and extent of the impact of MPS governance framework impartially in the face of growing lack of public trust, faith, confidence and convenience. A two-thronged approach will be used during the undertaking by interrogating the impact of the MFS cyber infrastructural governance frames in relation to its social impact on the clients. This also includes the range of the public reaction to socioeconomic inconveniences caused by the MFS cyber infrastructural systems. This research will utilize different groups of people in seven different strata namely; the MPS regulators, operators, providers, clients that include the subscribed, unsubscribed, banked and unbanked who relatively differ in the variable of interest – MPS governance framework but indispensably co-exist or share a developmental aspiration of adopting an acceptable, applicable, accountable, transparent, reliable and convenient MPS in Zimbabwe.

The researcher will take caution during fieldwork data aggregations to outfox the ecological and atomistic fallacies that are generally linked with trends earned during the development of client centric models. Possibly such fallacies will express when respondents will accept that there is MPS security on the first sections of the questionnaire only to express indifference and lack of knowledge on MPS cyber systems in the other sections of the questionnaire (Trochim et al., 2006). The use of design science research design of retrospective and cross-iteration comparisons will be used to limit such gaps. Fieldwork outcomes from the subsets will be cross pollinated or hybridized during data analysis to ensure the development of the proposed enabling and proficient control MPS governance framework for MNOs.

3.6.3 Application of Sampling Methods in Grounded MPS Research
Three respondents will be selected from the MPS regulator, Potraz. Respondents will be selected from each of the three MNOs namely NetOne, EcoCash and Telcel. Three respondents will be randomly selected from each of the three MPS providers in banking namely POSB and Zim bank representing the local banks, Barclays Zimbabwe and Standard

Chartered bank representing international banks and CBZ and Stanbic banks representing regional banks.

Nine subscribed respondents will be randomly selected from each of the MNOs registers were randomly selected from diverse backgrounds including the urban, rural, semi urban, commercial farming, resettlements, Growth Points, Border entry and mining towns. In short, three respondents will be chosen from each social stratum. Nine unbanked members of the public were randomly selected from diverse backgrounds including the urban, rural, semi urban, commercial farming areas, resettlement areas, Growth Points, Border entry and mining towns. They will be selected on the basis of their regular bank use and orientation.

The baseline figures ensured balance in opinion from various sectors trading in specific MPS enterprises. The rationale for the random selection of respondents will be a way to ensure inclusion or full participation of every stratum of MPS clients affected by the MPS governance framework for MNOs in Zimbabwe. This will allow the researcher to maintain *"the actual value range, structural proportion, contrast ratios and scientific objective properties"* [Bogdan & Taylor (1987) en.m.wikipedia.org/wiki/Qualitative research] thereby upholding the data of its variety, richness and individual character when generalizing study outcomes.

3.6.4 Placing of Expert Review in Grounded MPS Research

Expert review is also known as heuristic evaluation. During expert sampling, selected fundis in this study area of client friendly control MPS governance for MNOs in Zimbabwe will be identified and asked to evaluate this study's control MPS governance framework versus other known frames or best practices in line with their vast practical or academic knowledge on the subject of research. The experts will be selected from MPS clients, Potraz, MNOs, banks, industry and universities. The selected experts will give expert opinion to advance this researcher's interests, critique this research study's viability and relevance during the research lifespan and post research lifespan to potentially open a new client centric MPS paradigm to local and international scholarship. The proposed opinions will be aligned to fieldwork outcomes as a way to place such opinions in the context of primary data, current operational spectrums and perceived future utility.

3.7 GOUNDED RESEARCH STRATEGY

Kerlinger (1986) defines a research strategy as a;

> *"Scientific research is systematic, controlled, empirical, and critical investigation of natural phenomena guided by theory and hypotheses about the presumed relations among such phenomena."*

Premised on the above assert, there is no single strategy of carrying out a research. Saunder (2009) argues that research strategies depend with what one wants to achieve. The following research strategies or steps were considered by the researcher as viable, reliable, acceptable and applicable ways to achieve the intended aim of this study. The goal of the study and objectives are outlined in chapter one. In order to maintain consistence in reading this study and appreciate the ways the research strategies will be selected, the researcher sees it necessary to recap the goal of the research study and its objectives.

3.7.1 The goal of the research study and objectives

3.7.1.1 Goal of the study
❖ To develop an enabling and proficient control MPS governance framework for MNOs in Zimbabwe.

3.7.2 Main objective
❖ To develop an enabling and proficient control MPS governance frame for a client centric MFS in Zimbabwe.

3.7.2.1 Sub-objectives
   ❖ To outline the subscriber registration processes for MPS.
   ❖ To describe the social relationships among regulators, operators and subscribers.
   ❖ To describe the role of operators and banking sector in payment service delivery.

3.7.3 Hypothesis
   ❖ A proficient MPS governance frame for MNOs influences clientele trust, confidence and convenience in MPS actual systems use.

3.7.4 Main Research Question
   ❖ How can Potraz promote an end user friendly MPS governance framework?

3.7.4.1 Sub-research questions
   ❖ Does Zimbabwe have adequate legal, policy and regulatory mobile payment frames?

❖ How are MNOs, providers and subscribers registered in MPS?

❖ How are customers protected in MFS?

3.8 RESEARCH ASSUMPTIONS

3.8.1 MPS regulators need a proficient control MPS governance frame for MNOs.

❖ The existing MPS governance frame for MNOs prejudices clients during transactions.

❖ There is lack of public trust, confidence, faith and convenience in Zimbabwe's MPS.

❖ MNOs hardware, software appliances and applications affect MPS governance frame.

❖ Lack of ITC compliance standards for MPS affects MPS governance for MNOs.

3.9 GROUNDED SAMPLING STRATEGY

This study will apply the qualitative and design science methodologies. During the course of any mixed research designs, more than one type of sampling design will be used. Field (2005) defines a sample as *"a small (but hopefully representative) collection of units from a population."*

In view with the tenets of the stakeholder sampling method, the sample frame or target population will be comprised of the regulator, Potraz; three MNOs, NetOne, Econet and Telecel that represent operators of the MPS ecosystems or the technology-based dimension of the study area; and MPS clients that include the subscribed, unsubscribed, banked and unbanked that represent the social ecological or client centric dimension of the study area. However, a possible sampling frame error, which will be relatively hard to limit is to determine the unsubscribed and unbanked because such status will be subject to the respondents' confidentiality.

Pursuant of the goal of the study that aims at developing an enabling and proficient control MPS governance framework that will be client centric, the study population or population of interest (possible respondents) will be the MPS clients whose average is 8 million. Not all possible respondents will have questionnaires administered to. Otherwise it would be a strenuous exercise – in terms of time, finances and level of study, or mammoth task for the researcher to administer questionnaires to all possible respondents.

As such, the study sample will comprise of a minimum of three respondents representing each of the seven strata namely; the regulator, Potraz; the operators, NetOne, Econet and

Telcel; providers, banks and MPS clients who will be subscribed, unsubscribed, banked and unbanked. The quota sampling will be determined by varied MFS usage dimensions that relate to MPS acceptability, applicability, reliability, viability and utility. This will ensure equal or proportionate representation of research subjects regardless of the status of their sector in MPS governance framework.

This study will prefer survey sampling methods given their strong link to the use of qualitative and design science research designs– the case study method. The purposive sampling method represents one type from a group of non-probability sampling techniques - *"a sampling technique where the samples are gathered in a process that does not give all the individuals equal chances of being selected"*(Explorable.com, 2009) will be preferred.

The purposive sampling method will be preferred because its tenets will uphold the view that respondents have to be based on the judgement of the researcher. Such tenets will give convenience to the researcher who is a full time worker and a part time student. Through the application of the non-probability sampling method, the researcher will conveniently opt for voluntary samples that will be made up of self-selected respondents and convenience samples that will be made up of respondents who are easy to reach.

Conceivably, *'out of coverage'* or *'uncovered'* elements of the study population will have no chance for selection. The researcher will take precaution to ensure that the voluntary and convenient samples will not be *"deliberately engineered to resemble the demographics of the population from which it is drawn"* (Warren, 2011). The researcher will then employ stratified sampling since his study population will be divided into seven distinct strata or groups, based on MPS usage characteristics from where a probability sample of three respondents will be selected. Three respondents will be selected from each of the seven strata to ensure opinion and numerical balance in representation. Time and budgetary limits will contribute to the researcher's reduced sample size.

3.10 GROUNDED DATA COLLECTION

Data collection is a process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypothesis, and evaluate outcomes. First, formal and open ended sets of interview questions

will be written and approved for use by the supervisor of this study. Second, formal and open ended sets of questionnaires were written and approved for use by the supervisor of this study. Third, acceptable techniques, which did not violate the rights of the observed or individual privacy rights to be used for in suite observations, will be identified.

In this research study, data collection will then be done using the various approaches which include interviews, questionnaires and in suite observations made during case studies. In all cases, approved formal and informal approaches will be used. Open ended techniques, in all cases will be preferred. This will be done to ensure that Sui generic issues are comprehensively captured or generated.

Data collection procedures and processes are the steps to be taken to get reliable data or information and safeguarding such from blatantly erroneous data. Primary data collection procedures and processes will be strictly adhered to, to ensure that data are collected in a scientific and standardized manner that maximises high-quality research and credible findings. First, the researcher will check the availability of similar data within the MPS regulators, operators, providers and civic institutions. Tenets of qualitative and design science research designs particularly the multiple case study method will inform data collection procedures and processes. In order to ensure the success of the survey methods employed in the multiple case study method, permission to administer questionnaires and conduct interviews will be requested and granted by the responsible authorities in all cases.

Dates for the questionnaire distribution and returns will be agreed between the possible respondents and researcher. The questionnaires will then be distributed and administered upon invitation by the possible respondents. Date for interviews and in suite observations will be agreed to by the responsible authorities. The researcher will have to be prepared to meet possible respondents in beer halls, golf courses and other recreational places. To avoid deception that is usually employed by hired data gatherers, the researcher will personally administer the questionnaires. The researcher will also conducted interviews in his capacity as a student and researcher.

3.10.1 Grounded Data Collection Methods

3.10.2 Interviewing method

Kvale (1996) defines interviews as,

> *"The qualitative interview seeks to describe and explain the meanings of central themes in the life world of the subjects. The main task interviewing is to understand the meaning of what the interviewees say..."*

Furthermore, McNamara (1999) observes that,

> *"Interviews are particularly useful for getting the story behind a participant's experiences. The interviewer can pursue in-depth information around the topic. Interviews may be useful as follow-up to certain respondents to questionnaires."*

The main aim for using interviews will be to get as many responses as possible. The interviews will be semi-structured. Semi-structured interviews allow respondents to give a lot of information without limit. They allow new ideas to be introduced or discussed.

However, training of possible interviewees will be done before the interviews. Different questions will be prepared to suit different environments. This will give the interviewer room to study the environment and ask questions which suit different participants. The researcher will be cognisant of the fact that there are marked differences between interviewing a senior manager and a clerk etc. Acknowledging the administrative differences, the researcher will observe protocol so as to get answers to the research topic in a friendly atmosphere.

3.10.3 Conducting Grounded Interviews

Interview questions will be constructed by the researcher for the seven subsets of interviewees. Interview choices and schedules will then be drawn and agreed between the researcher and interviewees. Interviewees will be requested to choose among face-to-face, telephone, self-completed (email and postal) interviewing techniques. A lot of care and protocol will be observed before, during and after conducting the interviews. The interviews will be held in a free and fair environment. Before the interviews, the researcher will create a rapport with the interviewees. The interviewees will then be acquainted with the research issues. During the interviews, the research will be paying particular attention to body movements, facial expressions, tone and other non verbal communication activities. The data that will be captured at the interview sites to avoid losing important points and facts.

3.10.4 Grounded Questionnaire Method

Generally, a questionnaire is a list of simple questions used to collect or record information from respondents. Poorly formulated questionnaires produce unusable responses while perfectly formulated questionnaires produce intended responses. Galton (2015) defines a questionnaire as *"a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents."*

During the process of developing qualitative questionnaires, the researcher made initial considerations regarding the respondents' willingness, reliability and responsiveness given the time limits the researcher will be racing against. A choice will be made between developing closed-ended or open-ended questionnaires. Given the nature of this study, open-ended questionnaires will be preferred and developed.

The questionnaire content, phrasing, sequence, layout and response formats were agreed between the researcher and supervisor. The questionnaires will be pre-tested on one member from each subset representing the regulator, operators, providers and clients – subscribed, unsubscribed, banked and unbanked. The final draft of the questionnaire will be developed after a thorough revision that took account of the pilot opinions. Overly, simple and straight forward questionnaires will be prepared for all subsets of respondents.

3.10.5 Grounded Data Preparation and Processing

This is a means of manipulating data into a form suitable for further analysis and processing. Since data processing activities are generally routine, tedious and time consuming, the research will be granted a short study leave to work on it. Data will be gathered from respondents from the subsets using interviews, questionnaires and observational techniques.

The gathered data will be rigorously cleaned, integrated into the research frame to evaluate and enhance data quality, assess potential for bias, measure strength of association, estimate response prevalence, assess degree of certainty, control and examine effects of emergent properties, seek further insights into the relationships observed or not and evaluate the ultimate impact (Schoenbach, 2014).

Cleaned data underwent selection, retrospective codifying and cross-iteration comparison processes before being transformed to patterns or models. Data will be allowed to speak for themselves to limit the production of self-engineered outcomes. Scales of measurement for the polytomous variables from the seven subsets will be extrapolated from each subset of the seven strata. The patterns or paradigmatic models will then be evaluated to produce the goal

of the study (DataPreparator Software, 2010).The study leave will be sought in view of the fact that poor data processing usually yields incorrect or unreliable data thus good data processing improves and earns quality outcomes.

3.10.6 Grounded Data Analysis and Interpretation

Two research designs are used to develop and enhance the client centric MPS governance frames in this study. Data on the MPS social security systems use is analysed employing the grounded qualitative research methodology. Data on the MPS cyber security systems use is analysed using the grounded design science methodology. Little's (2011) developed-emerging MPS markets model is used to explore data imputations from datasets earned from grounded multiple case and cross-sectional MPS client perceptions from five subsets of interviewees. The datasets come from Potraz, banks, MNOs, banked and unbanked MPS subscribers.

Perceptions about MPS social security systems are captured from open-ended questionnaires, recorded and face-to-face interviews, and ex situ observations. The research tools are used to reduce missing data in clientele circumstances that present diverse and conflicting data. Commonly, grounded open, axial and selective coding are preferred where diverse and conflicting grounded variables express like the locale of clientelism this study is interrogating. The initial coding process will see the researcher recording perceptual descriptions about MPS actual systems use contained in sample questionnaire responses and conceiving how each of the five datasets could be used in the study. During the first part of the process, the research will repeatedly read through all the gathered questionnaire responses to identify and link the raw data to the research question, hypothesis, theoretical, conceptual frames and methodologies. This will be done to see how best the researcher will organise the raw data, find meaning and tentatively classify the chunk of raw data expressed in the questionnaire responses. Summations of the questions in the questionnaire will be used as open codes used to conceptualise, weigh and aggregate questionnaire responses to the research question.

The first cycle coding will see the researcher pawing the sampled questionnaire responses to identify, highlight and create provisional labels from in vivo codes that relate to the research question. The in vivo codes will be reinterpreted and recorded according to their respective datasets. In the process, the researcher will engage in pawing and assigning empirically guided open codes to questionnaire responses measured against their respective grounded case oriented research question, theoretical and conceptual frames that revolve around MPS governance $(G_{1)}$,

client participation (CP$_2$), social (SS$_3$) and cyber (CS$_4$) security. Open codes adopted from summations of the questionnaire questions will be the empirical guides to facilitate in ascertaining the viability and reliability or relevance of each in vivo code to the grounded case oriented research question.

The second cycle of coding will see the researcher consolidate raw data from in vivo codes, the researcher will apply tenets of grounded activity and descriptive cognition interpretative methods to differentiate usable raw data from erroneous data. Preliminary conceptual descriptions will be inductively extracted from in vivo codes. Recorded audio and telephonic interviews will be conducted to corroborate variables and add missing data from questionnaire responses. Tried and tested focused conceptual descriptions for study use will be achieved.

The focused conceptual descriptions will be repeatedly and rigorously cross itinerated to determine their frequencies in all the datasets. Through axial coding that involves rigorous cross itineration of grounded conceptual descriptions and identifying relationships; conceptual frequencies will be established. The researcher will guard against the underlining shortcomings of axial coding that may persuade him to fast track the generation of research results by imposing his perceived study theory or research goal on frequency formulation by evaluating established grounded concepts that would have been evidently and empirically informed and directed during precedent coding considerations. The grounded frequencies will be computed in the order by which they expressed themselves in the in vivo codes. The researcher will guard against imposing his subjective order on study preferences or theory-based machinations.

Through selective coding, the researcher will cross pollinate and figure out core variables in grounded concepts that are confirmed by numerical frequencies and deduce empirically founded data patterns. It will be through rigorous integration of grounded patterns that grounded categories will be established. *"With categories we impute meanings, with coding we compute them"* (Dey, 1999: 95). Through rigorous hybridization of the grounded categories, research question and the priority grounded case oriented theory (clientelism), a grounded seminal clientele theory on MPS governance frame for MNOs in Zimbabwe will unfold. In order to consolidate the seminal clientele theory, the researcher will further cross pollinate pillars of governance with earned grounded categories and breeding the grounded outcomes with cyber and social security systems in Zimbabwe MPS. This will result in the development of an enabling and proficient control MPS governance framework for MNOs which is client

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centric. Done this way, the grounded case oriented perspective would have facilitated in achieving of the study goal - an enabling and proficient control MPS governance framework. Coding processes for MPS cyber and social security will be done simultaneously and reconciled to achieve the desired MPS clientelism employing a grounded theory of concordance. The reason for hybridizing grounded qualitative and design science methodologies, and activity and distributed cognitive methods will aim at dichotomising quantitative data, managing discrete variables and relationships to accrue as data imputations will be analysed to achieve a MPS clientele governance. This is illustrated below.
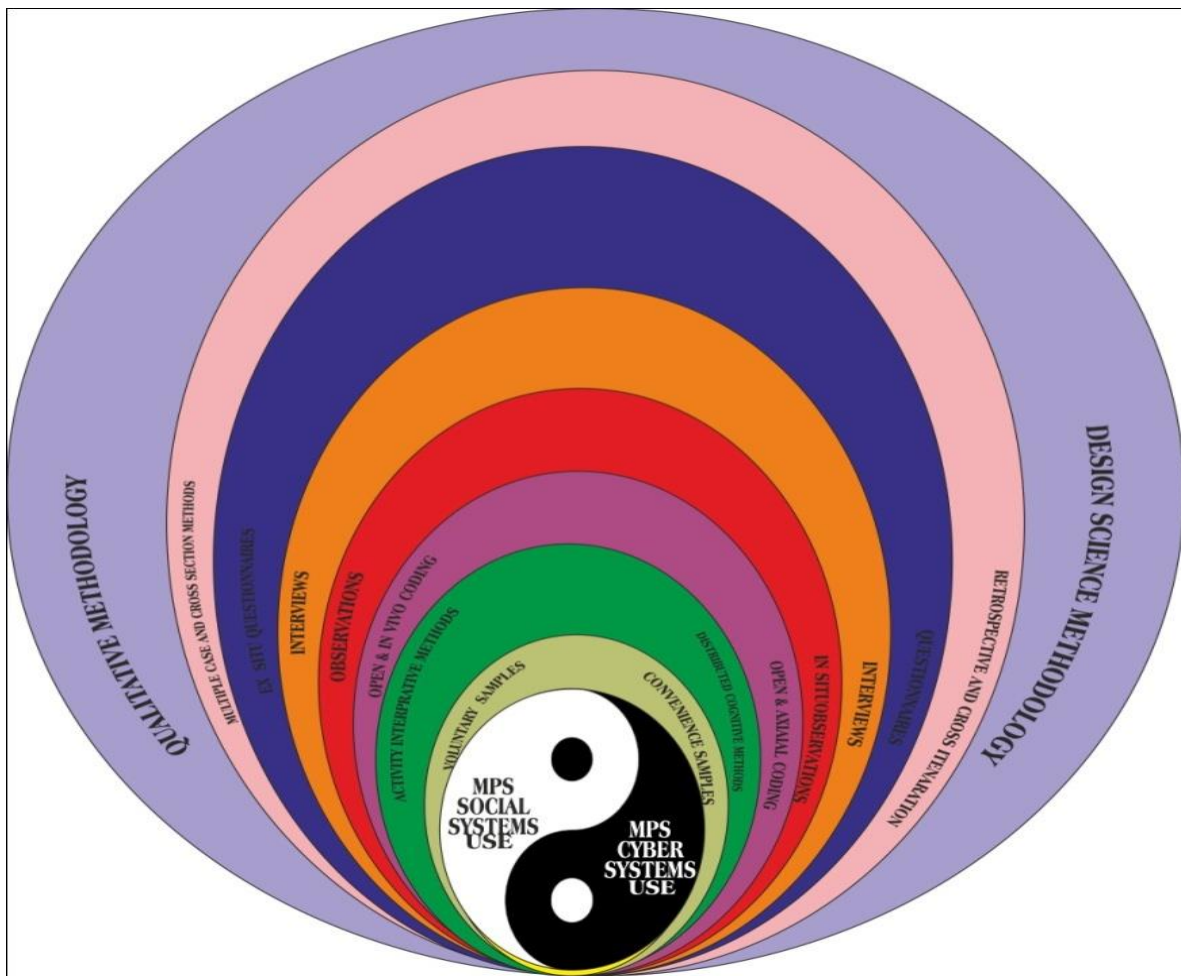
Fig 3.5 Combined research method

According to Tech, Y. and Pan, S (2009), one way of managing discrete variables in customer-centric systems development is to apply the activity interpretative frame. It has a holistic, contextual and exclusive analytical frame that can facilitate in understanding local clients' perceptions on MPS social systems use in relation to international MPS actual systems use. Its application will be understood in the context of socio-computational relationships among local

clients and MPS regulators, and clients and MNOs as in social media platforms, bloggers and open media platforms. The tenets of the activity interpretative frame are highly rated for reducing variance of discrete variables and facilitating knowledge *'perceptualization,'* convergence and integration where interaction are in rapid change as perceived in the client-MNO interface and MPS governance this study interrogates (Hashim and Jones, 2007).

In order to facilitate MPS knowledge conceptualization, convergence and assimilation on MPS actual systems use, the grounded design science methodology that will be overly informed by the Technology Acceptance Model particularly in its use of the distributed cognition interpretative frame is preferred. The subject frame is frequently viewed as the most viable interpretative approach in cognitive and computing sciences given its ability to discount non computational characterisations and facilitating the enhancement and development of formal computational categorization and rationalization of collaborative activities (hardware and software) like the clientele conceptions of the dynamic yet unsatisfactory relationships between MFS cyber systems use and governance frame subject to this study (Rogers and Ellis, 1994).

Viable tenets of grounded activity and distributed cognition interpretative frames will be complemented to facilitate this study's data analysis processes. Whereas Creswell(2008) aptly portrays that data analysis is a process of making sense out of questionnaires, interviews and observations, this study uses the postulates of Marshall and Rossman (1990: 111) stating that;

> *"Data analysis is the process of bringing order, structure and meaning to the mass of collected data. It is a messy, ambiguous, time-consuming, creative, and fascinating process. It does not proceed in a linear fashion; it is not neat. Qualitative data analysis is a search for general statements about relationships among categories of data."*

The researcher will gather data by reflecting meticulously and intimately, moving deeper and deeper into the explicit and implicit meaning of data on governance related to MPS clients' perceptions and MPS actual systems use. Some researchers are of the view that data analysis starts soon before, during and after fieldwork. Data analysis is analogously equated to the process of peeling an onion. The researcher will indulge in data analysis during all the three stages in order to have a deeper and processional understanding of the MPS clientele perceptions and conceptions on MPS governance as they relate to MPS actual systems use.

Diverse questions and answers, minefields of expected values and emergent variables will express. Potentially significant variables will be cross examined to get a comprehensive understanding of research data as it relates to the study hypothesis. In order to effectively test

the hypothesis, the researcher will give, get, interpolate or extrapolate meanings from the data. This intellectual reciprocity will yield the beneficial cross-pollination of data that will ultimately earn the goal of this study.

The study hypothesis is; *an enabling and proficient control MPS influences public trust, confidence and convenience in MPS actual systems use.* The study goal is to develop and enhance a client centric control MPS governance framework for MNOs in Zimbabwe. Data will be allowed to speak for themselves on the research question; *'how can the telecommunications regulators promote an end user friendly MPS governance framework?'*Answers and vexing questions to the research question will unfold. Conversely, fieldwork data will be presented and analysed using very simple and comprehensive designs.

In doing so, the questions the researcher will entertain regards what he wants from the data, how the data will contribute towards answering the research question or developing a clientelism in MPS actual systems use. In this case, the researcher will select relevant from erroneous data while answering the research question as well as generating an enabling and proficient theoretical governance framework for the MPS actual systems use in Zimbabwe.

3.11 CONCLUSION

In conclusion, this chapter has indicated that the researcher will complement the grounded qualitative and design science methodologies to ensure knowledge conceptualization, convergence and assimilation aimed at developing and enhancing an enabling and proficient control MPS governance framework that is client centric. The proposed client centric model can only result from the meaningful and comprehensive integration of MPS actual social and cyber systems use. The grounded qualitative methodology will be applied in the comparative context of domesticating tried and tested best practices in MPS actual social systems observed in the emerging MPS markets as outlined by Little's (2011) model. The grounded design science methodology will be applied in the comparative context of translating the Technology Acceptance model as outlined by Davis et al. (1989) to develop a client centric MPS actual cyber systems use in Zimbabwe. The main thrust will be to identify and propose certain cyber technologies to be transferred to Zimbabwe's MPS so as to enhance the existing MPS infrastructure and subsequently provide satisfactory delivery service to clients.

Furthermore, the chapter outlined the research processes required towards achieving the client centric MPS governance framework. The chapter highlights that fieldwork data will be

gathered using grounded multiple case and cross-sectional study methods on seven subsets of respondents which include Potraz, MNOs and banks, clients who include subscribed, unsubscribed, banked and unbanked customers. These research designs will be supported by the application of research inventories such as grounded open-ended questionnaires, interviews and in situ observations on the samples. Voluntary and convenient samples that will be used to get objective and formal expressions of perceptions entertained by subsets respondents regarding the clientele sensitivity of the MPS governance framework for MNOs in Zimbabwe.

Grounded data analysis will employ grounded initial, first cycle, second cycle, axial and selective coding. Through rigorous application of the coding methods, relating their outcomes to the research question and proposed enabling and proficient control MPS governance framework for MNOs in Zimbabwe; the study will earn the proposed MPS clientelism.

CHAPTER FOUR

GROUNDED DATA ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 ITRODUCTION

The rationale for analysing fieldwork data is to obtain significant and utilizable information. Herein, this is done by describing, abridging, identifying similar and dissimilar variables, and integrating the data into the study processes. In order to achieve this, this chapter describes, abridges, and identifies similar and dissimilar variables from gathered fieldwork data.

4.1.1 Initial Organization and Preparation of data.

The researcher identified the research subjects to include the regulators, MNOs, banks and Network agencies, subscribed, banked and unbanked clients. Seven subsets of possible clusters of respondents identified. The researcher decided to collect data through the use of interviews, observations and questionnaires. The researcher used the voluntary or convenient sampling methods to identify minimum of five people from each of the seven subsets of respondents to ensure rigor and dispassionate analysis of fieldwork data within the context of limited time for research and work pressures.

In each institutional case, an ordinary employee, system administrator and manager of the service were interviewed within the regulator, operator and bank. The ordinary employee presented the in situ workplace views; the administrator presented the administrative views while the manager will present views on MPS governance. For the clients, five respondents were chosen from each subset of the subscribed, unsubscribed, banked and unbanked clients who the researcher identified through the use of voluntary and convenient sampling.

Interviews, in situ observations and questionnaires were held during appointed times and agreed meeting places. Schedules were diarised, reinforced and reconfirmed through mobile phoning. Face-to-face interviews were only held when and only when the researcher saw the need for particular respondents to give extra details to their responses. In situ observations were undertaken as responses to certain sentiments expressed in questionnaire responses. They were also done to check the actual cyber systems use and infrastructure of MNOs. The interest generated by the study witnessed situations was respondents invited the researcher to visit,

observe, interview and assess their workplace environment and MPS cyber infrastructure at work. These approaches helped to ensure that no schedules were missed.

Subject	Questionnaire Distribution Matrix and Samples									
Questionnaires	Regulator	Operators			Providers		Clients			
	Potraz	NetOne	Econet	Telcel	Banks	Network Agents	Subscribed	Unsubscribed	Banked	Unbanked
Distributed	10	15	10	10	9	10			80	80
Responded	7	10	6	7	6	7			50	50
Outstanding	3	5	4	3	3	3			30	30
Response %	70%	66.6..%	60%	70%	66.6..%	70%			62.5%	62.5%
Sample	5	5	5	5	5	5			5	5
Sample %	71.43%	50%	83.3..%	71.43%	83.3..%	71.43%			10%	10%

Table 4.1 Questionnaire Distribution and Samples

4.2 DISCUSSION ON QUESTIONNAIRE DISTRIBUTION MATRIX AND SAMPLES

4.2.1 Rationale on respondent figures.

The study population represents strategic sectors in MPS governance for MNOs in Zimbabwe. The rationale for omitting Government, business enterprises and other stakeholders that include Mobile Network Operators' Boards of Directors was based on the need to delimit the study to institutions that deal with clients on a daily basis and the affected clients. This was also preferred because of the participatory bottom-up approach that informs the study's methodological choices namely the qualitative and design science methodologies. It acknowledged that essential data could have been missed. However, missing data is characteristic in most qualitative research designs. The researcher will discretely apply

reasonable imputation of missing data techniques to bring into the study any data that may be essential yet missing.

4.2.2 Rationale on the mode of distribution.

The questionnaires were directly handed to the possible interviewee by the researcher. This was done in order to avoid costs of engaging research assistances. It is widely believed that research assistants usually disguise in order to get information from respondents in violation of the ethical considerations. Since voluntary and convenient samples were used during the identification of possible respondents, the researcher took less time developing rapport with respondents. This helped the researcher reduce the lengthy time associated with establishing relationships with respondents. The use of like-minded samples helped the research carry out the study timeously.

4.2.3 Rationale for interrogating Potraz

Potraz has the hands-on experience in MPS governance framework. It is the body that government has mandated to oversee the regulation, monitoring and evaluation of MNOs. It is the supervisory arm of the government that recommends to government on what action to take about any proposal submitted to it by any MNO. Potraz is also an open platform for aggrieved MPS clients seeking redress if they are not satisfied with services rendered by MNOs. Potraz is the convergence point for line government ministries, MNO sector, banking sector and clients where all sectors are treated on an equal basis.

4.2.4 Rationale for interrogating MNOs

MNOs are the nerve centre of most MPS transactions. MNOs include NetOne, Econet Wireless and Telcel. MNOs play an indispensible and enabling role in financial transactions hence there is reason to interrogate MNOs. This interrogation will benefit the regulators, MPS service providers and clients who are the primary beneficiaries of this study. Given the said position of MNOs in MPS, there is justification to interrogate MNOs since the study goal is to develop and enhance an enabling and proficient control MPS governance framework that is client centric.

4.2.5 Rationale for interrogating banks

The role of the banking sector cannot be underestimated. The widely known business of the banks is handle public finances in varieties of ways. The majorities of cases in Cash-in and cash-out of MPS investments are transacted by banks. As such, banks play a pivotal role in

MPS. Banked and unbanked clients get money sent to them through banks. Given the said position of MNOs in MPS, there is justification to interrogate MNOs since the study goal is to develop and enhance an enabling and proficient control MPS governance framework that is client centric.

4.2.6 Rationale for interrogating clients.
The goal of this study is to develop and enhance an enabling and proficient control MPS governance framework that is client centric. In terms of the preferred research designs, the participatory bottom-up approach is employed as a way to ensure a client driven and centric development and enhancement of an enabling and proficient control MPS governance framework for MNOs in Zimbabwe.

4.2.7 Rationale for sample size and choice.
The researcher is a full time worker with NetOne which is one of the MNOs. The researcher has like-minded people across the MNOs spectrum who he has decided to meaningfully engage in this study. Time constraints are enormous and the balancing act is difficult to attain. Prudence demanded that the researcher uses voluntary and convenient sampling to mitigate the challenges of time. Some colleagues volunteered to participate in the study. For the sake of convenience, the researcher engaged others who accepted to partake in the study due to our long standing workmanship in MNOs. It is these grounds that the voluntary and convenience sampling methods were preferred. The relatively small sample size was opted to ensure rigor, thoroughness and quality of research outcomes. Other researchers with ample time can use large samples that are difficult to handle when there are time constraints.

4.3 DISCUSSION ON THE GENERAL THEMES, CATEGORIES AND SUBCATEGORIES

Qn							
	Job Category	23.3% Managers	73.7% non Mgrs				
	Gender	68.4% male	31.6% Female				
	qualification	Post Grad 15.8%	Degree 52.6%	Diploma 26.3%	certificate 5.3%		
	Age	< 25 15.9%	26-35 52.6%	36-45 15.8%	> 45 15.8%		
1	Location	Urban 89.5%	semi urban 10.5%	rural 0%			
2	Registration	NetOne 10.5%	Econet 78.9%	Telecel 10.5%			
3	MFS	Eco cash73.7%	One wallet 5.3%	Telecash 5.3%	all 15.8%		
5	Use	everyday 5.5%	once/wk 26.3%	twice/wk 10.5%	trice/wk 10.5%	monthly 21.1%	others 15.8%
6	Line Exchange	yes 15.8%	no 84.2%				
7	Change of line notification	yes 0%	no 100%				
8	Security	highly secured 36.8%	secured 52.6%	less secured 5.3	Not secured 11%		
9	Security of MFS	highly 21.1%	secured 68.4%	less secured 5.3%	Not secured 11.2%		
10	Trust of mobile phones	phone 68.4%	bank 26.3%	agents 5.3%			
11	Limits	strongly agree 31.6%	agree 31.6%	disagree 10.5%	strong disagree10.5%	condition al 15.8%	
12	Reg. MFS/MNO security	strongly agree 21.1%	agree 42.1%	disagree 21.1%	strongly disagree 10.5%		
13	Using unregistered line	yes 21.1%	no 78.9%				
14	replace with balance	yes 73.7%	no 10.5%				
15	Transfer across networks	yes 36.8%	no 57.9%				
16	Fraud awareness	yes 21.1%	no 68.4%				
17	Reversals	yes 26.3%	no 73.7%				
18	Security by MNO	highly 26.3%	secured 68.4%	less secured 5.3%	not secured 0%		
19	Wrong registration details	yes 40%	no 60%				
20	trust of mobile payments	highly 10.5%	Trusted 70%	less trusted 11.9%			
21	awareness	yes 36.8%	no 63.2%				
22	Who should regulate	POTRAZ 21.1%	RBZ 36.8%	both 15.8%	none 21.1%		
23	Other payments services	cash 5.3%	cheque 5.3%	Cards 31.6%	Bank 47.8%		

Table 4.1 questionnaire results

I. Theme Analysis on MPS, governance, public trust, confidence, security, convenience, computability, compatibility, acceptability, reliability and applicability.

II. Governance

Respondents said that they are not happy with the way the laws are selectively used for MNOs governance. When responding to the question of: Does the law apply in the same way when applied to NetOne and Telcel? The one respondent said; "No it does not, look what is happening to Telcel..." A response from another said, "Kiss goes by favour..." A pattern of lack of governance leads to Mistrust, lack of faith, lack of confidence, poor uptake, lack of accountability and reliability.

From the above responses, it is evident that there is lack of governance as clients are not sure of what actions to take when confronted by situations like reversal, replacing lines with balances and awareness. According to the evidence in the responses there is confusion as to who control or regulator mobile payments. Some are saying the banks and some are saying Mobile Network Operators. Since Zimbabwe has no framework it is difficult to know who controls the mobile payment systems. At the moment RBZ is controlling on the side of banks while POTRAZ is on the side of telecommunications.

When looking at the above responses there is need to come up with the regulator of mobile payment systems.

III. Awareness Education

From the above response there is no awareness for mobile payments. It is evidenced by the fact that most of the users do not know how to use the service. Most of the rural people are not well versed with these systems to the extent that they could not even attempt to answer questionnaire of this study. Evidence from the respondents' it shows that most of the users are not aware of the operations mobile payments services.

IV. Rationale for the functional relationship between clients and MNOs.

Clients see the MNOs as their saviour as most of the Zimbabwean populace was unable to access banking services. In the evidence given clients are saying it service is very convenient and secure to use while others are saying there is some elements of insecurity in using the service. Majority are saying there is security while referring to the use of PIN controls. They are not aware of other security threats like hackers, man in the middle attack, spam, fraudsters and software threats via mobile devices. Clients

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consider their devices as banks, phones, browsers, messengers etc. There is a cordial relationship between clients and MNOs.

V.   Rationale for the dysfunctional relationship between clients and MNOs.

       Clients to some extent feel to be cheated by MNOs through their tariffs. There is evidence that the tariffs are too high for poor Zimbabweans especially in the rural areas. Majority of the rural people cannot send cash or use their devices to transact. They only wait to receive cash from most urban people.

       Network issues were raised in different forms, no coverage, not reliable, not available, slow and undependable.

4.4 THEMES AND CATEGORIES : DETAILED ANALYSIS

The next step is identifying **a thematic framework** that is the initial coding of the framework which is established both from *a priori* concepts and from emerging concepts from the familiarisation stage.

The priori concepts where made up of words like registration, security, awareness, governance, risk, Authentication, Encryption, fraud and money laundering. The emerging concept was built from words such as regulators, Networks, payment methods, limits, trust and reliability. Data was organised according to a thematic framework. Some of the codes were identified by 'in vivo" terms that is codes used by the respondents themselves.

4.4.1 Theme Analysis

Theme: MPS Registration

- If not registered no transactions
- Different names can be used for registration of both MNO and Mobile money
- Know Your Customer (KYC)
- Nobody does the reconciliations of MNO and MFS registration
- Records are not verified through the registrar's office
- One person can have more than one account with different ID numbers.
- System should not allow one person to have different names in both registration systems (SIMCard and MFS registration)
- Sometimes people just register by filling in physical forms.
- In not registered you can only receive money but you can't serve
- Registration is mostly done by agents of the MNOs.

- There are several entities that are registering clients (agents, shops, dealers, vendors). The registration process is results-based but this infested with weaknesses.
- Registration can be done via USSD and portals.
-

Theme: MPS Security Management
- System can detect some of the fraudulent transactions
- Fraudulent through the phone is possible
- Not all phones have enough security for mobile payments (hacked through man in the middle attack, spyware, malware)
- One person can have more than one account with different ID numbers.
- Arguments on security of mobile phones is being blamed on slowing down processes of the phones hence are minimal.
- People should not be allowed to download applications from un-trusted sources for mobile payments.
- Phones should be fitted with remote wire to be able to clear the data when stolen.
- Subscribers should not share security information (PIN, Username, passwords).
- There are a lot of security accesses issues showing it is not enough on mobile phones
- There is need for secured layers of security to guard against fraud.

Theme: Public MPS Awareness Education
- Users are not well versed with mobile systems
- There is need to educate users on how the system function and for them not to exchange security information.
- Users need to be educated on what to do if devices are lost or stolen.
- People normally forget their password and usernames.
- Agents and dealers need to be trained to be able to assist customers.

Theme: MPS Governance
- No systems are in place to control MFS by the regulators
- Nobody is doing checks and control for compliance. Regulators are not enforcing compliance.
- POTRZ and RBZ are responsible but they don't have a combined framework.
- System up time ranges from 90% to 99%
- Some operators only rely upon auditors for compliance.
- There is no constant monitoring of transactions.

Theme: MPS Risk Management

- Not all mobile payments are routed through the banks
- Unregistered customers can transact with limited access once the line is registered on the Network.
- People can register themselves for MFS although it's partial.
- Failure of cash out due to sufficient funds (dealers and Agents).
- Subscribers can exchange lines without notifying services providers,

Theme: MPS Fraud Management

- Fraud is difficult to detect in mobile banking
- There is need for more control on fraud of MFS
- There is need for transaction pattern monitoring

Theme: MPS Money laundering

- There is no enough control of money laundering by regulators
- There is need for transaction pattern monitoring.
- Enforce KYC into systems

Theme: MPS Payment limits

- There should be limits on cumulative amounts per day
- There should be limits on the number of transactions per day

Theme: MPS Public trust

- Mixed feelings were echoed on trust.
- To the people it is a great development (banked and unbanked inclusive).
- Cashing out to wrong agents or clients.

Theme: MPS Accessibility and Reliability

- Connectivity issues are rampant
- Failure to get confirmation messages after transacting.
- Client paying wrong bills
- There are routing problems like from HLR to MSC and to MFS transactions get lost.
- Reversals are a problem sometimes system fails.
- Cash out to wrong clients

Theme: MPS Registration

- Registration of mobile payments and SIMCards is not enough to guarantee security.
- Strict measures should be used when registration is done.
- Very few people have failed to transact due to wrong details.

- One line can be given to two or more individuals.
- There is no communication when customers change lines or even between MNO and MFS so when lines are replaced they will be replaced on one side.

Theme: MPS Security Management

- System secured
- People do trust their phones as compared to other forms of payments as they feel they are in control.
- Most of the customers think the use of PINs is the best security. So they say systems are secure.
- Few customers are not even registered for mobile payments due the fact that they don't trust the service.
- Once information in the phone is deleted there is no backup, the providers will charge you for getting some of it.
- Very insecure for those staying with elderly people.

Theme: MPS Public Awareness Education

- Most of the rural people needs help to cash in and out.
- Customers are not aware about other forms of security beside PIN codes.
- There are no awareness programs
- Most of the recipients are only aware of what they experienced.
- Most of the rural folks are affected by ever-changing technology in handset like smart phones, tabs and computers
- The inclusion of the rural people is important in this business
- Most of the customers do not know how to reverse wrong entries or transactions
- People can just exchange lines without notifying service providers for customer information update.
- Customers tend to forget their passwords.
- Some customers tend to share passwords or PIN numbers.

Theme: MPS Governance

- Both POTRAZ and Reserve bank should be in control of mobile payments.
- Some are proposing for the reserve bank of Zimbabwe to be in control of all mobile payments.

Theme: MPS Risk Management

- Sometimes money in the phone is not easy to access – agents might not have enough money to cash out especially substantial amounts
- Some still believe that banks should be the custodian of mobile payments. There is risk in doing this business with MNO. Phones are not mending for financial services.
- Very few people exchange lines or offer their lines to friends or relatives.

Theme: MPS Fraud Management
- Customers are using fake ID to register.
- Out of the three networks Econet has been singled out as the one with the highest fraud activities.
- Verification of identity cards is not ensured.

Theme: MPS Money laundering Management
- Limits should be enforced to minimise money laundering.
- Depositing of fake notes into one's account and withdraw the money from another agent. Examples given were from EcoCash and NetOne.

Theme: MPS Payment limits
- Some responses are not agreeing with the limits. They feel limits will disadvantage users. At the same time majority are proposing for limits.
- Limits should be configured basing on the type of business.

Theme: MPS Public trust
- Reversal are time consuming and sometimes cumbersome.
- Others forms of payments like smart cards and visa cards were preferred than phone payments.
- Some network operators are able replace lines with their balances while others cannot. Once the line is replaced the balance is lost.
- Some customers are saying it's not possible to reverse transactions. It's impossible to do a reversal.
- Some subscribers are not comfortable with transfer across networks as they not trust the system.
- More interactive messages should be put in place like after each and every payment there should be confirmation.

Theme: MPS Accessibility and Reliability
- System is not reliable – sometimes it's down, sometimes they are slow in responding and loading data.

- The system is easy and convenient.

- The time need to load local data sometimes is high.

- In rural areas cash out is not reliable as there is no available cash from the agencies.

- It depends with the network.

- Customer care staff should always be available for assistance like reversals

- Transferring money across networks is stressful.

Theme: MPS Network Agencies

- There is need to increase number of agencies in the country.

- Some agencies do not have enough cash to disburse

- Agency awareness is important

Theme: MPS Tariffs

- Tariffs are too high customers feel they should be revised down.

- Some operators are charging an arm and a leg if you sent high figures.

Theme: MPS Cross Network transactions

- Customers are not even aware that they can transact across networks.

Theme: MPS Encryption

- Few customers are recommending data encryption when data is in transit

Theme: MPS Tracking/ Traceability

- Customers feel since there are systems which are able to track money movements ten there should be no limits.

- People want reliable systems which can track and trace registered users.

Theme: Liquidity crunch

- It is a risk to put your money as stored value as the money can be taken like what happen in 2008 before. So don't leave money in the phone.

- There is no enough cash in the country hence agencies are not exception.

- Because of liquidity crisis there is more chances of using fake notes.

Theme: MPS Convenience

- Available after hrs and nearer to you.

- You can transact on your own.

Theme: MPS Investor deposits

- During money transfer customers can punch wrong numbers ending depositing the money in another person's account.

- Money can be deposited into old accounts as customers have a tendency of keeping friends and relatives' old numbers

Theme: MPS Registration and Traceability and customer identification

- More strict measures should be put in place for tight registration to allow reliable traceability and customer identification

Theme: MPS Accessibility and Mobile applications

Since most of the applications come pre-configured, the few which are downloaded are not trusted as most of the subscribers are not sure of the safe or secure sites. Hence the opinions from subscribers are that MNO should avail trusted sites which are free from viruses and spam. At the same time these sites should be reliable enough not to share important customer information.

Theme: MPS Infrastructure

- The infrastructure should be able to support transactions in a reliable, fast and convenient manner. Responses should be delivered in no time as this concern money.

Theme: MPS Authentication

- System should be able to authenticate subscribers on the Network and in the MFS. Only authenticated subscribers should be able to transact.

Theme: MPS Transaction monitoring

- Systems should be able to monitor all activities taking place. This is from normal transaction to rogue transactions.

Theme: MPS Security Management

Security of mobile payments is not enough as there is a lot of fraud which is happening in EcoCash and One wallet. Although some subscribers expressed satisfaction with the current security their explanation was based in PIN numbers only which is not a factor to consider when talking about enterprise security. A lot of cross sectional survey was witnessed as they say security is enough but contrary to their explanations they believe that it's only managed by passwords.

Theme: MPS Public Awareness Education

A lot of awareness is need for both rural and urban users. This might reduce digital gap.

Theme: MPS Governance

There is no governance by either of the regulators (POTRAZ and Reserve Bank)

Theme: MPS Risk Management

There is a lot of risk in mobile payments emanating from lack of knowledge by subscribers, loose registration, and cumbersome reversal, lack of device security, poor authentication, fraud and lack of transaction monitoring.

Theme: MPS Reliability

Systems are not reliable as there is network unavailability, lost transactions, slow systems, poor response, incomplete transactions etc.

Theme: MPS Fraud Management

A lot of fraud is happening especially with EcoCash and One Wallet.

Theme: MPS Money laundering

Money laundering is very possible due to poor monitoring systems or tools.

Theme: MPS Security Management

- No mechanism in place for security incidents and reporting as this is supposed to be set by POTRAZ and Reserve Bank of Zimbabwe.

Theme: Storage of sensitive data

Data stored should not be accessed by unauthorised persons. There is need to conscientize subscribers about sharing passwords and confidential information.

Theme: Product and Client Support Management

Support for all the functions is needed. This should be in form of call centres which assist subscribers to reverse and manage transactions 24/7.

4.5 INTERPRETATION OF DATA

Neuman (1997: 54) says, "The word interpretation means the assignment of significant or coherent meaning". A qualitative researcher interprets data by giving the meaning, translating them or making them understandable. However, the meaning given begins with the point of view of respondents on how they see the world, how they define the situation, or what if means for them. Interpretation of data will be in a descriptive and narrative format rather than prescriptive and quantitative format.

The way MPS functions lead clients to react badly towards MPS use. Subscribers are using mobile devices for mobile payments due to lack of other better competitive ways. This has been reflected when most of the subscribers chose other forms of payments rather than the mobile devices.

Mobile payments through mobile devices are easy and convenient to use. They are available even after hours. They give accessibility to everyone who owns a mobile device and having coverage. These are unlike the banks where the poor majority cannot have accounts due to the initial requirements. This has been a relief to the rural and urban Zimbabweans.

Perception for using mobile payments is high although the services are characterised by poor systems and security. This has been evidenced by the responses as they articulate lack of security and awareness.

Due to the fact that there is no governance framework in Zimbabwe there is lack of MNO governance and this will result in regulators applying different rules and regulations to oversee their jurisdiction.

The situation is unmanageable without proper systems in place. As a result clients fill unsecured in using such systems and they don't have protection of their activities in accessing the service. As a result they will take the risk due to lack of other services like Visa card, Smartcard and banks throughout the country.

4.6 FINDINGS

Registration

Although POTRAZ and RBZ have put in place rules of the game, they are not enough. There is lack of security as subscribers can register without proper details for both MNO and MFS registration. Agents and dears can register subscribers resulting in more damage.

Security management

Security is not enough to guarantee clients. It is just secure enough to be able to transact small amount of money. There is a lot of fraud happening as evidenced by the responses. Most of the fraud is happening at Econet and Netone. Fraudsters are using fake registrations and unregistered lines to defraud people. They send rogue messages to different subscribers informing them about winning promotions and loans. They will ask processing fee from these people and ask them to deposit it to their accounts which cannot be traced. Hence usbcribers are not protected.

Awareness

There is lack of awareness both in the urban areas and rural areas about how mobile payments function, and even how they operate. Each Network operators has its own procedures and way of operating. For one to be aware that will be through experience.

Technology is ever-changing such that the majority are lagging behind. As a result most of the people are not aware of what is happening. Customers share passwords and PIN for their mobiles exposing themselves to fraud. People can just exchange lines without notifying the MNOs. The is digital gap between the rural and the urban but using the same service. Subscribers do not know what to when confronted by unfamiliar situations like reversal or wrong account transfers. Hence awareness is lacking.

Governance

Subscribers expressed ignorance about who controls, regulate and manage the players. Potraz is managing the telecommunication wing while RBZ is managing the banking side living the gap to customers. As a result customers are exposed. The statutory instrument in existence favours the MNO and Banks without considering the customers. Selective rules can be applied to MNO and banks as there are no proper frameworks in place to manage the complete service. In conclusion there is no governance in as far as the service is concerned.

Risk Management

Money in the phone might not be easily accessible due to several reasons that ranges from poor network coverage to unavailability of funds from agents.

Fraud

There is a lot of fraud happening especially at Econet and NetOne due poor registration systems. Verification of ids is not ensured as several agents can register clients. Agents can now act as bank branches and they are not experienced in dealing with payments. This on its own will expose the service especially to clients.

Money laundering

Fake notes can be deposited and the very person can withdraw real money at another point. Money can be taken from one country to another as there no checks and controls when crossing borders. Some MNO relationships expose the system as money can be exchange across network which are even beyond borders. This is a clear example where NetOne and MTN can exchange money through the MFS systems.

Limits

There are mixed feeling as some are not comfortable with limits although the majority is in agreement with limits. What is of surprise is that the regulator has imposed different limits as per MNO. This is evidenced by the fact that Ecocash limit is pegged ate one thousand United States Dollars while that of One wallet and Telecash is at five hundred dollars. This shows lack of standard systems by the regulator, hence poor governance.

Public Trust

Reversal are time consuming and sometimes cumbersome. Other forms of payments like smartcards and visa cards where indicated as better as compared to mobile devices. Some network operators are not able to replace lines with their balances ending up stealing from the clients. Clients are not comfortable with transferring money across networks as they do not trust the system.

System accessibility and reliability

Networks are not always available. Sometimes when available they are slow or not able to connect clients. In rural areas not all areas has got coverage. Because of ZESA problems base stations are always down when electricity is not available. Transferring money sometimes is stressful.

Agents

There is need to increase agents across the globe. Some do not have enough cash to transact especially when dealing with large amounts. There is need for agents awareness and training. They have problems of customer care.

Tariffs

Tariffs are too high. This will end up making the service unaffordable to subscribers both rural and urban. There is need to low tariffs. The regulator should enforce that.

Traceability

There is no traceability as most of fraudsters are undetected. It's is difficult to trace fraudsters in the system. Subscribers needs tight security measures to put in place to reduce fake Ids.

Encryption

Subscribers are recommending strong data encryption from end to end when data is in transit.

Authentication

Strong authentication algorithms should be put in place to safeguards security.

Mobile applications

Operators of the system are not comfortable with downloaded applications as they pose a challenge in service delivery. Most of the viruses are downloaded with these applications hence a security risk.

Infrastructure

Both banks and MNO infrastructure should be able to support the service without fail.

Transaction monitoring

Monitoring tools should be put in place to be able to monitor all transactions.

4.7 CONCLUSION

Having analysing all the coding and grouping them into themes, the data provided was enough to actually see the challenges customers are facing when doing mobile payments. The solution is presented in the following chapter.

CHAPTER 5

THE FRAMEWORK

5.1 INTRODUCTION

After going through the data in chapter four some answers to the research questions were provided for the construction of the framework. Therefore the purpose of this chapter is to provide a conclusion on the state of security governance framework for mobile payments in Zimbabwe. The findings provided a guide to recommendations made and the associated framework.

5.2 RE-STATEMENT OF THE RESEARCH PROBLEM

Mobile payments in Zimbabwe are not controlled effectively by the regulators (Reserve Bank of Zimbabwe and Postal Telecommunication Regulatory Authority of Zimbabwe). As a result there is risk to service providers and users of security exposure due to lack of collaborative operating guidelines between banks and Mobile Network Operators. The objective of this research is to minimise risk and recommend a control framework that govern the operations of the services offered by the service providers. In summary *There is lack of collaborative operating guidelines between Mobile Network Operators, banks, mobile payment service providers and regulators to provide security of mobile payments. As a result there is security exposure in providing the service.*

5.3 RESTATEMENT OF RESEARCH OBJECTIVES

To come up with a security governance payment framework for mobile financial services in Zimbabwe that can be used by all Mobile Network Operators, regulators and banks to manage and govern mobile payments.

5.4 PROPOSED FRAMEWORK

Mobile Financial Services (MFS) will require structural DNA changes that enables traditional players to play new defined roles and responsibilities and offer new services in an open, safe, collaborative and fast paced environment.

In the developing countries mostly poor African countries the emerging of mobile payment systems created new business and operational models that will lead to fresh set of business questions posed in the whole world. Those making wrong calls will be very costly.

The framework is made up of layers. The first layer is the lower layer where most of the other layers are built on. It is comprised of mobile hardware, application distribution and mobile platforms.

Mobile Hardware

These are devices like handsets, Ipads, laptop, tabs and computers. Thus the hardware used for mobile payments services.

Application distribution

This is the software used to do mobile payments. There are several of them available from the internet and other sources.

Mobile platforms are mobile financial system which manages mobile payments.
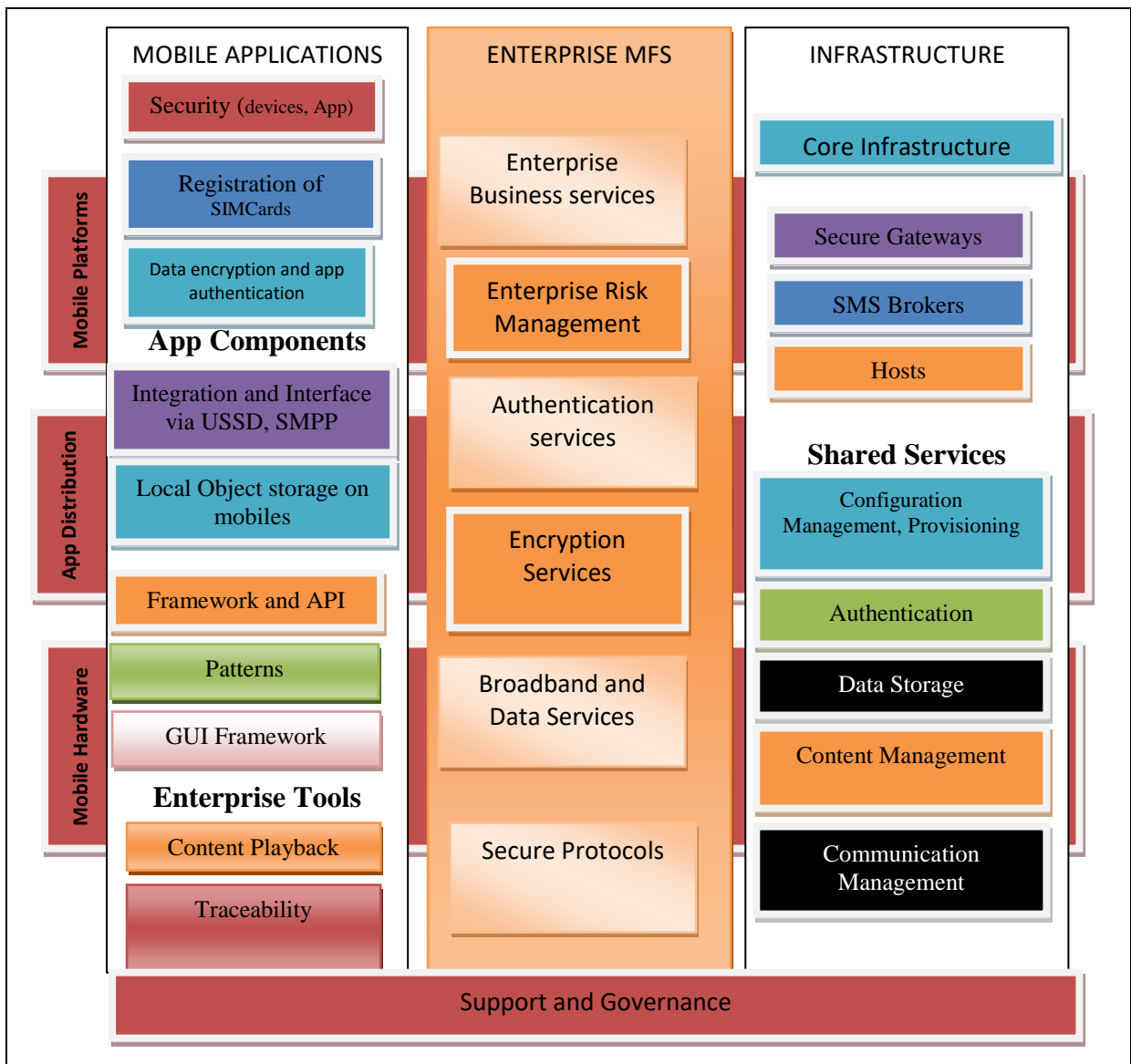
Fig 5.1 The Proposed framework

The other three layers which ride on top of the first three are mobile applications, Enterprise mobile financial services and Infrastructure.

Mobile Applications

These are the applications used for mobile payments. They reside on the mobile devices hardware. Connectivity is through the application program interface (API), via USSD and other forms of gateways.

Enterprise Mobile Financial Services

This is the enterprise business, the broad band, protocols and the data protection algorithms

Infrastructure

The backbone of the mobile payment services and its management.

5.4.1 Business Models

The business model is be made up of the banks, Retailers and Mobile Network Operators.

Bank Network	Collaborative	Innovators	Retailers	Mobile Network Operators
Banks Issuers Associations Networks	Banks MNOs Issuers Associations Networks	Alternative solution Providers	Agents Dealers Retailers Stand-alone merchants	All (MNOs) NetOne Econet Telecel
These forms the payment network that is built on existing networks and as well deploys mobile payments apps or associated devices to customers through banks and ensures Agents have required capability	There is need for collaboration between banks and mobile operators, their networks and other players in the value chain including third parties.	Cutting edge technological solutions are needed to develop a digital wallet and its related mobile payment capabilities.	Agents create their own point of sale applications that are compatible with existing technology	Mobile Network Operators deploy payment applications and VAS services via the mobile devices as bill to mobile or digital wallet services.

Operational Model

These are methods of operation within the chosen business model. Accompanying the business model are the organisational changes that spell different roles.

Loyalty Platform Provider	Trusted Service Manager	Data Services	Wallet Providers	Merchant Aggregator	Open Innovation Platform

MFS Enterprise (open collaborative, customer centric, scalable /flexible technology, Integrated customer view,

Unified Channels, Streamlined Agile processes and entrepreneurial)
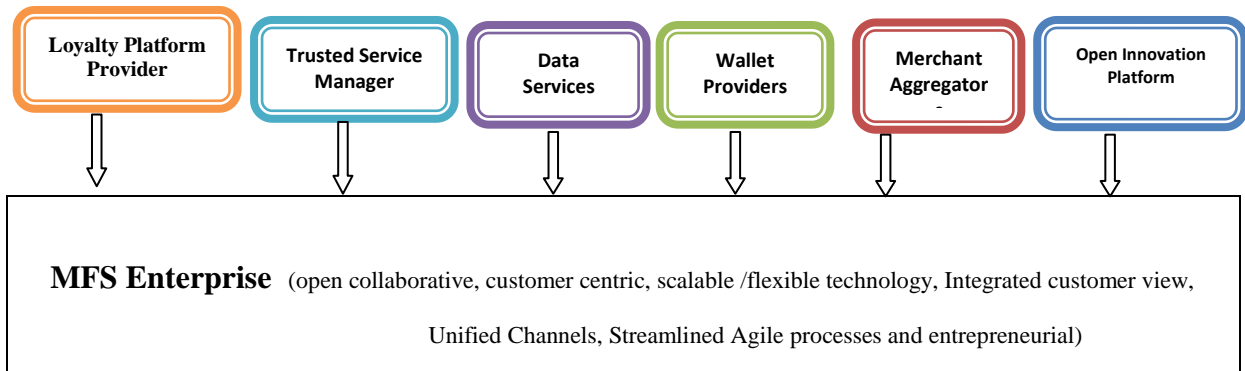
FIG 5.2 MFS – Mobile Financial Services

Mobile Network Operators should recognise that for mobile payments to succeed in Zimbabwe there is need for the future to be open and as such there is need for alignment with solutions that are open and collaborative as well. A closed system as opposed to an open system cannot leverage a wide variety of organisations to move forward.

5.4.2 Governance

i) Mobile payments offerings should be open to all devices like Motorola, Nokia, Samsung, Apple etc and open to all operating systems android, blackberry, apple and all issuers banks and all networks and all funding sources prepaid, credit cards etc.

ii) The wallet should be enabled to handle some of the following transactions like money transfer, identity verification, store of value social media integration, debit and credit confirmation, reward management, merchant advertising etc.

iii) Mobile payment services providers in Zimbabwe must implement approved formal security policy and the policy is subject to periodic reviews, close monitoring and control.

iv) All service providers should have security policy which is adequately documented and it should be reviewed regularly and it should be approved by senior management. The security policy should define security objectives and its underlying risk appetite.

v) In the security policy, roles and responsibility enforcement should be well defined. To support the policy there should be robust operating models and well explained explicit roles and responsibility for risk assessment, mitigation and control with the inclusion of administration of sensitive payment data.

vi) For all mobile devices the security policy must spell out proper and secure design. It should also address implementation of the components of all the mobile payment devices. Due consideration should be given by mobile payment service providers and factor in results from dependencies like third parties (Mobile Network Operators, Mobile devices, application developers etc) when designing and implementing security policy for all mobile payments.

vii) There is need for a dedicated security policy document.

viii) Mobile payment service providers should consider inviting application developers, Mobile Network Operators, device manufactures so that in their own policy they should consider as well the need for risk mitigation on mobile payments and the users.

5.4.3 Registration

Mobile Network Operators Registration

i) SIMCard registration must be done according to Statutory Instrument 95 of 2014 which state that all active SIMCards must be registered.

ii) All unregistered SIMCards must be removed from the Network.

iii) All Registrations must be verified by the National Central Registry for verification and correctness.

iv) For new registrations the applicant must provide Identification particulars in form of National Identity card, driver's licence or passport together with proof of residency and to give a copy of each to the service provider.

v) Regular checks and updates of Registration database must be done to check against rogue registrations.

vi) Swapping or exchanging of SIMCards must be done with the involvement of the Mobile Network Operators.

vii) On SIMCard replacement the same details should be cascaded to the Mobile Financial system for updates.

viii) Lost or stolen SIMCards must be reported to the police and service provider

ix) Every subscriber has a duty to report any change of SIMCard, phone number or other identity particulars to the respective service provider.

x) Any person who possess a phone number or any subscriber identity number which was previously owned by another person shall have the duty to register that phone number

Mobile Financial System registration

i) The kind of registration should be similar to that of the Mobile Network Operators. Customer details must be captured and verified with the Mobile Network Operator's details. Again copies of identification particulars and proof of residence must be left with the mobile financial service provider.

ii) Mobile Financial Service registration should be linked to the Mobile Network Operator's registration system for further verification and identification. Details contained in the two systems must be the same.

iii) Mobile financial system registration should be verified through the Central registry.

iv) All updates on SIMCards must be updated in both databases (MFS and MNO databases).

v) Reconciliations between Mobile financial registration system and Mobile Network Operator's registration system must be done regularly.

Authentication and Verification of Customers

Recommendation: Mobile payment service providers must ensure that all mobile payments together with sensitive payments and personal data are safe. This is accomplished through strong customer authentication algorithms.

Sub recommendations

i) Mobile payment service providers should enforce strong customer authentication algorithms for the security of their systems.

ii) Service providers must enforce strong customer authentication procedures for authorisation of all mobile payments. Various authentication measures should be adopted for:

- Transfers (peer to peer, cash out, top up etc)

- Low value payments should have measures that limit the payment risk for subscribers like limiting the cumulative amount for consecutive payments and to put in place authentication for resetting cumulative counters for online and offline payments

iii) There is need for strong authentication processes for one to obtain access or when one needs to amend the data.

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iv) When using personal identification numbers (PIN) the mobile payment service provider must ensure that they should be used without compromise.

v) There is need for bilateral authentication when communicating with Agents and dealers' acceptance devices.

vi) A PIN or static password when used to perform strong authentication as a way of authorising mobile payments it could be performed on independent mobile devices.

vii) Mobile payment service providers must provide ways for awareness of activation of mobile payment interface of all mobile devices (these are sound produced by mobile devices when a payment is authorised).

Provisioning of authentication tools and software

Recommendation: Authentication tools and software delivered to customers for provisioning must be carried in a secure manner.

Sub Recommendations

i) Distribution of authorisation tools and payment related software which are supposed be installed on mobile devices should be done via secure channels (e.g software preloading which is done by vendors or agents or downloaded from the internet sites using audited security procedures).

ii) Provisioning of authentication tools should address the following :
   - There is need for a safe, secure and trusted environment.
   - Secure and effective procedures must be put in place to make sure that delivery of personalised security information, payment applications and other personalised devices cannot be intercepted or reused.

iii) Subscribers should be given secure solutions that can allow them to activate / deactivate the payment functionality of the mobile device even remotely.

iv) Switching of mobile operator handsets or other movable devices with user credentials like SIMCards, transfer of such user credentials must be done in a secure manner, e.g. over the air transfer (OTA).

v) Mobile payment service providers must provide pairing of personalised security credentials, payment related software and all mobile devices through authentication to ensure that users uses authentic software devices. Every change on one pair should be accompanied by another pair otherwise access is denied.

vi) If using the mobile subscriber international standard digital number (MSISDN) as the account number then any change of SIMCard should reject the user to access the mobile payment system.

Authentication attempts and time out

Recommendation:

There is need for timing the number of log in or authorisation attempts. This can be achieved through time out control and the setting time limits for authentication validity.

Sub recommendations

i) One time password should be given validity period limited to minimum time or number of attempts.

ii) Failed attempts should be given a ceiling of which the mobile payment service can be temporarily/ permanently be blocked. There should be a secure procedure for unblocking.

iii) Mobile payment service providers must define maximum period for devices that are not used such that they are automatically terminated.

5.4.4 Transaction Monitoring

Recommendation: Transaction monitoring is designed to prevent, detect and block fraudulent transactions or those transactions that are suspicious or high risk transactions. These should be subjected to screening, filtration and other forms of evaluation.

i) Before an authorisation of a transaction by mobile payment service providers is done, mobile payment service providers should make use of fraud detection and prevention systems that are able to identify suspicious transactions. This can be achieved by defining parameterised rules like black listing all stolen data, monitor a typical transaction speed (man in the middle attack, abnormal transaction data e.g. transactions that are performed in geographically far from each other in a short time. The system should be in a position to detect signs of malware infection (scripts versus human validation) and other forms of fraud scenarios. Then the transaction is authorised.

ii) There is need to put in place systems that monitor and detect fraudulent activities by dealers and agents.

iii) There is need for transaction screening and evaluation procedures to guard against delays in the initiation and execution of transactions.

iv) Suspected transaction should be blocked until security issues are resolved.

v) Mobile payment service providers should consider ways of setting up formal agreements to exchange near real time information and documents on mobile payment related activities.

5.4.5 Traceability

Recommendation: Audit trail should be enforced for all transactions.

Sub Recommendations

i) Security mechanism for all services should be put in place. This includes transaction data logging, sequence numbers for all transactions, dates and relevant time stamps, access to transaction data as well as parameterisation changes.

ii) Audit files should show full trails of modifications, insertion and deletions of transactions.

iii) Transaction query analysis should show all audit trails and analysis of activities done. Privileges to such data should be limited to a few.

iv) Services providers should ensure that all payments are traceable and identifiable from initiation to completion.

v) Payments should be traced from source identifying the mode of initiators and devices like phone, laptop tab etc to the beneficiaries of that payment.

5.4.6 Specific controls and security measures
Initial customer identification and provision of information

Recommendation: Service providers should be able to identify their customers properly. They should be able to get confirmation from subscribers to make a payment or to accept a payment before being granted the service. Information to customers should be supplied prior or regularly to customers about what is required doing or accepting secure mobile payments together with the associated risk.

Sub recommendations

i) Customer due diligence is necessary and relevant information should be gather and collected before a customer is given access to mobile payment services.

ii) Specific details should be supplied to subscribers prior to the access to mobile payments services. This includes what is expected with regards to any requirement that is on their mobile equipment, the software or any other necessary tools like firewalls or antivirus. Information on how to use personalised security details should be availed before any attempt to use the services. Also the step by step procedures on

how to make payments (submit and authorise) and any security risk associated with it should be made available to the subscribers.

iii) The hardware and software provided to customers should have manuals on how to properly use and secure them.

iv) Clearly laid down procedures should availed to all subscribers with all steps which subscribers must take in the event that the device is stolen, lost or given to another person or personalised security details have been compromised.

v) Procedures to follow if customer replaces or changes their mobile numbers or acquires a new SIMCard or new device.

vi) Procedures to follow if an abused is suspected or detected.

vii) Service providers should give a clear guideline on the responsibility and liability with regards to the offering of the service.

viii) Mobile payment solution providers should give subscribers clear instructions that explain customer responsibility on how to use the services.

ix) There should be contracts between users of the service and the service providers that allow service providers to block any transaction from users that they feel is not normal and only to unblock it after the user's intervention.

x) There should be specific terms and conditions for the use of mobile payment services.

5.4.7 Risk Assessment

Recommendation: Risk assessment is an ongoing practise which must be done by mobile payment solution providers to ensure security of mobile payments and other ancillary services.

Sub Recommendations

i) Risk assessment should be carried out, assessed and documented by all mobile payment service providers. Ongoing monitoring of security threats should be assessed in line with the current technology, services outsourced and the subscriber's mobile device. Also risk that is associated with application software, operating systems, programming techniques and the platforms used should be analysed as well.

ii) Mobile payment solution providers should determine when security changes are necessary considering the existing security in line with the technology used and nature of service offered. Also to be considered is the time required to implement the change and minimisation of security incidents and time required without disrupting services.

iii) By assessing the current risk mobile payment service providers are trying to protect and secured subscribers data.

iv) Reviews should be done regularly and results should be sent to management for approval.

v) Risk assessment is a collaborative procedure which must be done by all players that is banks, Mobile Network Operators, Dealers, agents and regulators.

5.4.8 Security Incident, Monitoring and Reporting

Recommendation: There is need for consistent monitoring, following up and handling of security incidents as well as related customer complaints. There should be clearly laid down procedures for reporting security incidents to management and if major incidents then to competent authorities.

Sub Recommendations

i) Processes should be put in place that identify, handle, monitor and making follow ups on security incidents and complaints by customers that are related to security of mobile payments.

ii) There should be clearly defined roles and responsibilities of all actors in the offering of collaborated mobile payment services. This will reduce the risk of end to end payment transactions.

iii) There is need for collaborative efforts between law enforcement agents and mobile payment service providers in protecting the confidential data for subscribers.

iv) Contract should signed between services providers and merchants, dealers and Agents that guide and control agents on how to secure customer data and should prevent them from doing anything that is risk to the operations of mobile payments.

v) Banks and Mobile Network Operators should establish call centres for customer complaints and reporting on security incidents and lost or stolen devices.

5.4.9 Risk Control and Mitigation

Recommendation: Mobile payment service providers should implement security measures to safeguard the operations of mobile payments. These measures must be made up of different layers whereby if one layer fails then the other layer will create the next layer of defence**.**

Sub Recommendations

i) The notion that must be assumed with mobile financial service providers are that, there is exposure on mobile devices' operating systems hence there is need to consider security when designing, developing and maintain financial mobile applications.

ii) Information technology environments (development, testing and production) need to be separated from designing, development and maintain mobile payments services. By doing so we are trying to enforced separation of duties and access rights.

iii) There is need for appropriate security for all devices and software used for making mobile payments. This includes networks, servers, databases, links and associated devices.

iv) Appropriate processes and procedures are required for monitoring, restrict and accessing sensitive payment data and the network, systems, databases etc.

v) Data minimisation is an essential element for core functionality of mobile payments. Data preparation, routing, processing, storing and achieving should be minimised and not accessible to other application (application sandboxing).

vi) Applications that are used for mobile payments need to be verified for genuine via digital signatures when accessing services.

vii) Mobile payments service providers should ensure genuine of applications programs that are used for mobile payments and that they are up to date for patches.

viii) Any change to security features should be authorised, planned, documented and tested. There is also need for regression tests to guard against potential attacks.

ix) There is need for regular audit to ensure robustness, efficient and effectiveness.

x) When outsourcing make compliance is adhered to for all related services.

5.4.10 Storage: Protection of sensitive payment data and subscriber data

Recommendation: There is need to protect subscriber data when stored, processed or transmitted.

Sub Recommendations

i) There is need for Confidentiality, integrity and availability of subscriber data.

ii) All data must be encrypted and stored in a secure place.

iii) Sensitive data or payments should not be exchanged over the air. If done make sure it is encrypted point to point end to end.

iv) Data should not be accessed through contactless interfaces (NFC) of the mobile device.

v) Mobile payment service providers should make sure that on stolen or lost mobile devices no sensitive data should be accessed.

vi) Mobile payment service providers should be able to disable applications in stolen or lost devices.

5.4.11 Customer Awareness education and Communication

Recommendation: There is need by service providers to assist and also to provide guidance to customers. This will assist in the use and security of mobile payments. Customers need authenticity of communication from services providers especially when it comes to messages they receive.

Sub Recommendations

i) Services providers in Zimbabwe should consider providing one secure channel for communication with subscribers for the sack of correct and secure use of mobile payment services. The channel should provide ongoing communication to keep them updated. The services providers should conscientise their subscribers that any other message outside this channel like emails is not reliable and should be disregarded.

ii) Service providers should through the secure channel educate their subscribers the procedure of communicating to them when encountering fraudulent activities or money laundering elements. This also should include suspicious payment and anomalies encountered during transacting.

iii) Procedures on how the service providers should respond to the subscribers should be known and clear.

iv) It is the responsibility of service providers to provide warning messages about fraudulent, suspicious activities that are taking place within their environment. This also should include warnings about emerging risks, attempts by fraudsters to extract subscriber data or any other personal information from the system.

v) Help lines for subscribers should made available by service providers to assist subscribers with all questions, complaints, support and all notification of incidents or anomalies encountered by users and customers should be made aware of how to use them.

vi) Programmes for awareness and education to subscribers should be done to make sure that subscribers understand the need for protection against their password, PIN, personal details and other information which is confidential. There is need for device

management through protective measures like antivirus software, security patches and their constant updates for proper security.

vii) Subscribers need to be conscientised about the risk of using unsecured downloaded software. There is need for such important communication to make sure that downloaded software are from trusted sources and won't be a threat to the security of these mobile payments.

viii) For crystallised risks service providers should make sure that there is redress strategies which are in place.

ix) Service providers with acquired services should try and hold educational programs for agents and dealers on fraud prevention methods.

x) Educational and communicational policies should be drafted by services providers basing on their common understanding of risks.

5.4.12 Notifications, setting of Limits

Recommendation: Mobile payment service providers must set limits for daily transactions. Service providers should as well provide subscribers with various options within the set limit of risk mitigation. Notifications can be achieved through alerts and subscriber management services.

Sub Recommendations

i) When setting subscriber data cumulative limits should be set and subscribers should be alerted about their limits per day. These limits should be set relevant to the service.

ii) Alerts should be sent to subscribers of suspicious transactions or abnormal payments depending with the risk management policy.

iii) Service providers should as well allow subscribers to lower their limits for different services.

5.4.13 Subscriber access to information

Recommendation: Notification of payment initiation should be provided to a customer in time to check that the payment has been initiated correctly and executed as per instruction.

i) A facility for near real time checking of the transaction in execution should be provided to the subscribers to check the status together with balances at any given time in a safe and trusted manner.

ii) Detailed electronic payments should be made available to subscribers in a trusted environment. Sensitive data must not be included in such communication as this might be provided via emails or the internet.

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iii) For peer to peer the payer should be allowed to view the status of the payee before making a transaction.

5.4.17 Support

Recommendation: Every component or module on the framework needs support.

Sub Recommendations
i)   All services needs support
ii)   All application needs support.
iii)   All database needs support.
iv)   Support should be 24/7.
v)   System up time should above 98%.
vi)   All the infrastructure needs support.

5.5 CONCLUSION

The framework provided will go a long way in assisting the regulators solving their current problems. At the same time it will enhance security of mobile payments such that the majority will feel comfortable in using the system. The will guarantee the business as well as assisting users to make their life better. Hence there is need for consideration of its implementation.

5.6 RECOMMENDATIONS

Mobile Network operators in Zimbabwe needs to be more customer focused to remain relevant. As evidence by the status quo the rules and regulations in existence are more concerned with the operators' security than the customer's needs and expectations. Regulators should promote awareness and be customer centric if they need sustainability. The regulators should proactive when it comes to changes in technology rather than lagging behind. There is need for innovation within this industry to be at par with changes in the environment. The government also should take a proactive approach to its citizen so as to protect their interest. Customer is king.

5.7 SUGGESTIONS FOR FUTURE RESEARCH

Although the study achieves its intended objectives there areas which needs more research. This includes mobile banking through the internet. There is also need to look into issues that govern the operations Agents as they are now replacing banks. Although a lot has been done on MFS governance frameworks to regulate MPS but a lot need to be done on risk management.

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APPENDICES

APPENDIX A - INTERVIEW GUIDE

My name is Tauya Mugwagwa. I am a student at Midlands State University doing a Masters Degree in Information Systems Management. I would highly appreciate to have about 35-45 minutes of your time to discuss with you the mobile payment security governance framework for mobile operators in Zimbabwe. This will help me come up with a framework that can be used by Mobile Network Operators and banks to deliver their services to the customers in a fair, secure and transparent manner. The objective of the interview is to find out how subscribers are registered, how they transact and how the regulators govern service delivery.

Your responses will be treated with utmost confidence and your identity will not be disclosed to any other person or published for any other reason. Do you have any questions or any issues that you feel may need to be clarified before we start the interview.

1. How do customers register for mobile payment systems?
2. Kindly explain how to do cash in?
3. Kindly explain how to do cash out?
4. How do you maintain your store value balance? e.g loading money
5. How do you rate security of mobile payments?
6. Are there any fraud or money laundering experiences from mobile payments?
7. How is awareness in terms of mobile payment services?
8. Any other experience you want to share?
9. What are your recommendations?

Agent recruitment

1. Can you take me through the process of agent recruitment for Mobile Network Operators?
2. Do you know of any challenges experienced so far by turning agents into bank branches?
3. Do you share agents among network operators? Explain you answer.
4. What is the role of the regulator in this environment?

Operators

1. What are the challenges faced by the converging of MNOs and banks?

2. Which segment are you administering between the bank and MNO?

3. Where is the separation of duties between the two above?

4. Who is the overseer of all these activities?

5. Any recommendations?

6. Across Network Transactions (Viral transactions), how do find the experience?

7. Kindly explain the security of mobile payments?

APPENDIX B –SAMPLE QUESTIONNAIRES

Client questionnaires

This questionnaire seeks to understand security and governance of mobile payments in Zimbabwe. Your opinions will help mobile phone operators and regulators to improve on security and quality of service. The survey which is being carried by Mr Tauya Mugwagwa (R134184F) is a partial fulfilment of a Master of Science in Information Systems Management degree, Midlands State University.

You are free to participate in this exercise or even allowed to withdraw from participation during the course of this interview. The responses in this questionnaire are private and confidential. Your cooperation is sincerely appreciated. If you have any inquiry to make, kindly forward your inquiries to: tauyamugwagwa09@gmail.com / SMS or phone +263715 980 503.

This questionnaire will take you twenty minutes to complete.

Instructions

1. Kindly indicate your response by ticking in the box corresponding to your answer ☑ .
2. Kindly fill in the open space if your answer needs further explanations.
3. If the response does not fit your unique situation, write your suggestion below the question.

Name of Your Organisation	
Job Category	☐ **Managerial** ☐ **Non Managerial** ☐ **Not Employed**
Gender	☐ **Male** ☐ **Female**
Highest Academic Qualification	☐ **Post Graduate** ☐ **Degree** ☐ **Diploma** ☐ **Certificate** ☐ **A-Level** ☐ **O-level** ☐ **None**
Age	☐ **15-25** ☐ **26-35** ☐ **36-45** ☐ **above 46**
Where do you stay	☐ **Urban** ☐ **Semi urban** ☐ **Rural**

1. Which mobile network are you registered with ☐ Netone ☐ Econet ☐ Telecel ☐ None

2. Which Mobile Financial System are you registered with

    ☐ One-Wallet ☐ Eco-Cash ☐ Tele-Cash ☐ None

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3. How often do you use your registered line for mobile payments?

☐ Everyday ☐ Once a week ☐ Twice a week ☐ Three times a week ☐ Never

4. Kindly explain your challenges in using mobile payment systems (One-Wallet or Eco-cash or Tele-Cash) ....

....

5. Have you ever exchanged or given your line to someone ☐ Yes ☐ No

Kindly explain ....

....

6. If you gave someone, did you notify the Service provider? ☐ Yes ☐ No

Kindly explain ....

....

7. How do you rate security of your money in the mobile phone

☐ Highly secured ☐ Secured ☐ Less secured ☐ Not secured

Would you like to suggest anything about mobile phone agencies regarding the security of your money?

....

8. Do you feel secured in using mobile payments services (Cash in, cash out, Depositing etc)

using your p☐ e   Highly sec☐ d   Sec☐ d   Less sec☐ d   Not secured

9. Are funds in mobile phone transactions easily accessible?

Kindly explain

....

....

10. For making mobile phone payments which one do you trust ☐ My phone ☐ Bank

☐ internet ☐ Agent ☐ None of the above

Explain your answer ....

....

11. Should there be limits on mobile money transfer per day? ☐ Strongly agree ☐ Agree
☐ Disagree ☐ Strongly disagree

Explain your answer ....
....

12. Does the registration of SIMcards or lines by Mobile Network Operators guarantee security
of payment☐ Strongly agree☐ Agree☐ Disagree☐ Strongly disagree

Kindly explain ....
....

13. Do you know anyone who is using an unregistered line ☐ Yes ☐ No

14. If your line is stolen with a balance in the phone do you get back your balance when
replacing ☐ Yes ☐ No

What is your comment about this issue?

....
....

15. Have you ever transferred money across networks like from One-Wallet to Eco-cash

☐ Yes ☐ No

If so, explain your experience ....
If not, explain why...

16. Have you ever heard of any fraud of mobile money ☐ Yes ☐ NO

If so, identify the network(s) involved ....
Kindly explain the fraud ....
....

17. Have you ever reversed a transaction in either One-Wallet, Eco-Cash or Tele-cash ☐ Yes
☐ No
If so, describe your experience/s...
If not, state your reason/s...

18. The fact that mobile phones are now used to access your money in the bank, how do you
rate security registration of mobile phones by network operators
☐ Highly secured ☐ secure ☐ Less secured ☐ Not secured.

What is your

comment...

19. Have you ever failed to transact because of wrong registration details ☐ Yes ☐ No

What is your comment...

20. How do you trust phones to do payments ☐ Highly trusted ☐ Trusted ☐ Not trusted

☐ Never trusted

What is your comment...

21. Are rural and urban mobile payments users aware of what to do and how to use the service

(awareness) ☐ Yes ☐ No

Kindly explain ....

....

22. Who should be in control of the mobile payments ☐ POTRAZ ☐ Reserve Bank of

Zimbabwe ☐ Both ☐ None of the above

Can you give a comment...

23. Which other payment services offer better security than mobile payments

☐ Cash ☐ Cheque ☐ Smartcard ☐ Bank transfer ☐ Others Specify ....

Why is this so..

24. Do you have any other comments on the use of mobile phones to make payments (cash in

and out e.t.c) and the necessary controls

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Thank you for participating in this survey.

This questionnaire seeks to understand security and governance of mobile payments in Zimbabwe. Your opinions will help mobile phone operators and regulators to improve on security and quality of service. The survey which is being carried by Mr Tauya Mugwagwa (R134184F) is a partial fulfilment of a Master of Science in Information Systems Management degree, Midlands State University.

You are free to participate in this exercise or even allowed to withdraw from participation during the course of this interview. The responses in this questionnaire are private and confidential. Your cooperation is sincerely appreciated. If you have any inquiry to make, kindly forward your inquiries to: tauyamugwagwa09@gmail.com / SMS or phone +263715 980 503.

This questionnaire will take you twenty minutes to complete.

Instructions

4. Kindly indicate your response by ticking in the box corresponding to your answer ☑ .

5. Kindly fill in the open space if your answer needs further explanations.

6. If the response does not fit your unique situation, write your suggestion below the question.

Name of Your Organisation	
Job Category	☐ **Managerial** ☐ **Non Managerial**
Gender	☐ **Male** ☐ **Female**
Highest Academic Qualification	☐ **Post Graduate** ☐ **Degree** ☐ **Diploma** ☐ **Certificate** ☐ **A-Level** ☐ **O-level** ☐ **None**
Age	☐ **15-25** ☐ **26-35** ☐ **36-45** ☐ **above 46**
Station	☐ **Urban** ☐ **Semi urban** ☐ **Rural**

1. For how long have you been operating with the system ☐ Less than a year ☐ One year ☐ Two years ☐ Three years ☐ More than three years.

2. Your designation ☐ Administrator ☐ Support analyst ☐ Programmer ☐ Specialist

3. System up time   as a percentage ....%

4. Contact clients (who do you deal with) ☐ Internal clients ☐ External clients ☐ Both

5. What kind of problems do you normally experience
   ....
   ....
   ....

6. How do you monitor miscellaneous transactions?
   ....
   ....
   ....

7. Are there chances of hackers   or fraudsters getting access into the system through mobile phones? Kindly Explain
   ....
   ....

8. What is the relationship between the banking systems and the Mobile Network Operators' registrations systems
   ....
   ....

9. Can someone who is not registered be able to transact? Kindly explain
   ....
   ....
   ....

10. Can someone use different names between Operators' SIMCard registration and Mobile financial services registration ☐ Yes ☐ No

11. What are the system mandatory requirements for one to be able to transact
    ....
    ....
    ....

12. Generally how are people registered for mobile services
    ....

....
....

13. Who does the checks and control of compliance of mobile financial registration and Operators' SIMCard registrations
....
....

14. Do you verify registration details with the registrar general's office?
Kindly Explain
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....
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15. Are all mobile payments routed through the banks
Kindly Explain
....
....

16. Do you think mobile phones have enough software security to do mobile payments?
Kindly Explain
....
....

17. Do you think the Reserve bank and POTRAZ as regulators are doing enough to control money laundering and fraud in mobile payments?
Kindly Explain
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....

18. How should fraud and money laundering in mobile payments be controlled?
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19. Do you have any comments to make on mobile payment operational issues
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Thank you for participating in this survey.

Banks Questionnaire

This questionnaire seeks to understand security and governance of mobile payments in Zimbabwe. Your opinions will help mobile phone operators and regulators to improve on security and quality of service. The survey which is being carried by Mr Tauya Mugwagwa (R134184F) is a partial fulfilment of a Master of Science in Information Systems Management degree, Midlands State University.

You are free to participate in this exercise or even allowed to withdraw from participation during the course of this interview. The responses in this questionnaire are private and confidential. Your cooperation is sincerely appreciated. If you have any inquiry to make, kindly forward your inquiries to: tauyamugwagwa09@gmail.com / SMS or phone +263715 980 503.

This questionnaire will take you five minutes to complete.

Instructions

7. Kindly indicate your response by ticking in the box corresponding to your answer ✓ .

8. Kindly fill in the open space if your answer needs further explanations.

9. If the response does not fit your unique situation, write your suggestion below the question.

Name of Your Organisation	
Job Category	☐ Managerial ☐ Non Managerial
Gender	☐ Male ☐ Female
Highest Academic Qualification	☐ Post Graduate ☐ Degree ☐ Diploma ☐ Certificate ☐ A-Level ☐ O-level ☐ None
Age	☐ 15-25 ☐ 26-35 ☐ 36-45 ☐ above 46
Your branch	☐ Urban ☐ Semi urban ☐ Rural

1. Have you ever received rogue transactions from mobile device via Mobile network Operator's systems ☐ Yes ☐ No
   Kindly explain ....
   ....

2. Do you feel you are not secured by the integration of mobile payments ☐ Yes ☐ No
   Please explain ....
   ....

3. How do you monitor transactions from mobile operators ....
   ....

4. How do you control payments from mobile operators..
   ....

5. Do you have any other comments to make on controls and handling of mobile payments through mobile operators' systems

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Thank you for participating in this survey.

Potraz Questionnaire

This questionnaire seeks to understand security and governance of mobile payments in Zimbabwe. Your opinions will help mobile phone operators and regulators to improve on security and quality of service. The survey which is being carried by Mr Tauya Mugwagwa (R134184F) is a partial fulfilment of a Master of Science in Information Systems Management degree, Midlands State University.

You are free to participate in this exercise or even allowed to withdraw from participation during the course of this interview. The responses in this questionnaire are private and confidential. Your cooperation is sincerely appreciated. If you have any inquiry to make, kindly forward your inquiries to: tauyamugwagwa09@gmail.com / SMS or phone +263715 980 503.

This questionnaire will take you five minutes to complete.

Instructions

10. Kindly indicate your response by ticking in the box corresponding to your answer $\boxed{\checkmark}$.

11. Kindly fill in the open space if your answer needs further explanations.

12. If the response does not fit your unique situation, write your suggestion below the question.

Name of Your Organisation	
Job Category	☐ **Managerial** ☐ **Non Managerial**
Gender	☐ **Male** ☐ **Female**
Highest Academic Qualification	☐ **Post Graduate** ☐ **Degree** ☐ **Diploma** ☐ **Certificate** ☐ **A-Level** ☐ **O-level** ☐ **None**
Age	☐ **15-25** ☐ **26-35** ☐ **36-45** ☐ **above 46**
Your branch	☐ **Urban** ☐ **Semi urban** ☐ **Rural**

6. Kindly explain how you govern mobile payments in Zimbabwe

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7. What are the challenges in managing mobile payments in Zimbabwe

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8. What are the mechanism in place to control mobile payments in Zimbabwe for the delivery of mobile payment services

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9. Do you have any other comments to make on controls and handling of mobile payments through mobile operators' systems

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Thank you for participating in this survey.

APPENDIX C1: INITIAL CODING; recording descriptions (line-by-line) from
MNO Operators' responses

Open Code	NetOne Questionnaire Responses	Telecel Questionnaire Responses	Econet Questionnaire Responses
Skill Practice	+ 2 years, + 3 years x 3, + 1 year	+3 years x 2, + 1 year, +2 years x 2	+ 1 year x 2, +3 years, +2 years x 2
Job Title	Specialist, Admin x 4	Admin x 2, Specialist x 2, Support Analyst	Support Analyst x 2, Specialist x 3
System Status	99, 99.9, 90, 99	99,9, 98, 90, 99	99,9 x 2, 98, 96, 99
Clientele	Internal & External x 2 Internal x 3	Internal x 2 External Internal & external x 2	Internal & External x 5
MPS Problems	Connectivity-sms delivery delays System down, failure, unresponsiveness x 2 High network use cause obscurity x 2 Lack of knowledge and funding x 2	Connectivity – sms delivery failures x 2 Data log management causing high disk usage User not versed with systems	Rectifying accounts, lack awareness on limits and value of transactions Connectivity – APP & DB servers, Forgetting passwords, user negligence
Traverse transactions	DPI tools & Log files x 3 Extracting periodic reports Reports detect strange behaviors	Network, Monitoring tools Nagios Monitoring system Two system report-admin & client Daily reporting & reconciliations	Maker & checker process, via logs, Monitoring system, Review exception reports There are limits of value & transactions.
Fraudsters	Yes, middleman attacks, social engineering, spyware, malware or key loggers x 2 Yes, if client looses PIN or password No, smsc platform independent system No chance for hackers	Yes, security not enhanced or fake docs x 2 Not yet experienced x 2 No, same infrastructure-banks have higher	No, firewall & audit protector x 2 No record, Yes, through USSD-PIN No, serve for the fake registered
Bank-MNO Liaison	Each user to have one account. Some have two accounts with different IDs Customer details – itineration MNOs interface with clients, banks with MNOs x 2	Bank have the ledger books, Bank has clients DB & we have our own. Synchronization x 2 of bank MFS accounts Client ID, Trust account or paymnt gateway	Through trust account x 2 Integration of bank & MFS acc.x 2 Zimswitch, Getting physical cash, Systems have similar information
Unauthorized Accessibility	No, only registered can transact x 2. No, because of KYC restrictions x 2 Yes, but costly	No, registration, password x 2 Yes, viral foud out system can send money to other MNO receiver is security code x 2 Yes, with limited services	No, but can receive Yes, viral send money or cash out x 2 No, USSD, PIN for verification required x 2
Unauthorized Transactions	Yes x 4 No	No x 4 Yes	Yes x 2 No x 3
Multiple Registration	Register with network & wallet x 2 Register & get 128k card Register, password, ID x 2	KYC registration & password details x 4 Line to be active on Network Clients initiate, admin finalize	PIN, password, ID x 4 Registration & account activation
Registration Pre-requisites	Customer care desk x 2 Agents with proof of ID x 3	Registration captured in systems Dealers, offices, brand ambassadors Agents x 2, Website KYC verification & registration	Via USSD or portal client name x 3 Offices & Agents x 2
Compliance	Potraz & RBZ x 2 KYC requirement for RBZ Compliance officer Systems administrator	RBZ Risk Compliance officer No	RBZ & Risk control department x 2 Risk Compliance department x 2 Potraz & RBZ Audit department
	No x 3 systems not integrated	Yes, DB linked to RG schema	No, cash point ID checks x 3

RG Verification	ID cant suffices Not sure Domestication not made public by RG Awareness required	User registration, authentication Handled by Compliance department. Yes, No	Risk Compliance department RG not electronic Yes, DB linked to RG schema
MPS - Bank Relationship	No, money not always through bank though it gets into wallet through bank x 2 Yes, RBZ requirement, MNO can on its own x 2	Yes x 3, banks hold the ledger balance books Not all, but those integrated in our system Not exact, clients-corporate can also do	No, bank-MFS platform only Not all, some pass through banks Yes x 2, iteration, wallet to bank, regulatory requirement
Phone Security	Phones don't need security else slow down device Yes, SIM has Ki, MSISUN, IMSI authentication pads x 2 Enhance, some have, others don't have x 2.	No, non-encrypt connections prevent interceptors Not exactly, cases rise security not enough Yes x 2 Depends on access mode	No, MFS platform not phones do this x 2 Yes, but not 100%. Yes, but not all Yes, USSD simple phone access
Potraz & RBZ	Need for awareness education Monitoring & weekly/monthly uptime reports Potraz & RBZ to audit x 3	Yes, tighten registration processes Yes, limit control put in place x 2 Yes, transaction limits, No	Yes, monitor accounts, velocity limits x 3 Yes, standards & framework for MPS Yes, monitor & track regularly x 2
Money laundering	Prevent malware virus downloading Avoid remote wire when clearing data Enforce limits, enhance security, KYC x 2 Confusing rules & regulations Audit trials & regulatory enforcement	Adhere to registration processes Enhance security Enforce other security features Monitoring client transactions patterns x 2 Smart tools & processes, effective data analyses	Monitor, restrict, limit SVA, trust, velocity x 2 Enforce, check & balance transactions x 2 Client, AMC Agent education x 2
Comments	Phone manufacturers don't put complex security features. So far so good. Phones are not up-to-date have security vulnerabilities Users to be educated on systems use Users need education on not sharing handsets, credentials Networks to improve high system availability. MFS a good development for underprivileged users who use it to bank where banks are not available	A solution to the unbanked society More research on fraud activities	Improve MPS, multiple security layers, Constant Monitoring More agents for convenience and flexibility

APPENDIX C2: FIRST CYCLE CODING; pawing tentative Concepts from MNO Operators' descriptions

Open Code	NetOne Questionnaire	Telecel Questionnaire	Econet Questionnaire
Skill Practice	2 years, 3 years x 3, + 1 year	3 years x 2, 1 year, 2 years x 2	+ 1 year x 2, 3 years, 2 years x 2
Job Title	Specialist, Admin x 4	Admin x 2, Specialist x 2, Support Analyst	Support Analyst x 2, Specialist x 3
System Status	99, 99.9, 90, 99	99,9, 98, 90, 99	99,9 x 2, 98, 96, 99
Clientele	Internal & External x 2 Internal x 3	Internal x 2 External Internal & external x 2	Internal & External x 5
MPS	Connectivity-sms delivery delays System down, failure, unresponsiveness x 2	Connectivity – sms delivery failures x 2 Data log management causing high disk usage	Rectifying accounts, lack awareness on limits and value of transactions Connectivity – APP & DB

Problems	High network use cause obscurity x 2 Lack of knowledge and funding x 2	User not versed with systems	servers, Forgetting passwords, user negligence
Traverse transactions	DPI tools & Log files x 3 Extracting periodic reports Reports detect strange behaviors	Network, Monitoring tools Nagios Monitoring system Two system report-admin & client Daily reporting & reconciliations	Maker & checker process, via logs, Monitoring system, Review exception reports There are limits of value & transactions.
Fraudsters	Man in middle attacks, social engineering, spyware, malware or key loggers x 2 Yes, if client looses PIN or password No, smsc platform independent system No chance for hackers	Yes, security not enhanced or fake docs x 2 Not yet experienced x 2 No, same infrastructure-banks have higher	No, firewall & audit protector x 2 No record, Yes, through USSD-PIN No, serve for the fake registered
Bank-MNO Liaison	Each user to have one account. Some have two accounts with different IDs Customer details – itineration MNOs interface with clients, bank with MNOs x 2	Bank have the ledger books, Bank has clients DB & we have our own. Synchronization x 2 of bank MFS accounts Client ID, Trust account or payment gateway	Through trust account x 2 Integrate bank & MFS accounts' x 2 ZimSwitch, Getting physical cash, Systems have similar information
Unauthorized Accessibility	No, only registered can transact x 2. No, because of KYC restrictions x 2 Yes, but costly	No, registration, password x 2 Yes, viral foud out system can send money to other MNO receiver is security code x 2 Yes, with limited services	No, but can receive Yes, viral send money or cash out x 2 No, USSD, PIN for verification required x 2
Unauthorized Transactions	Yes x 4 No	No x 4 Yes	Yes x 2 No x 3
Multiple Registration	Register with network & one wallet x 2 Register & get 128k card Register, password, ID x 2	KYC registration & password details x 4 Line to be active on Network Clients initiate, administration finalize	PIN, password, ID x 4 Registration & account activation
Registration Pre-requisites	Customer care desk x 2 Agents with proof of ID x 3	Registration captured in systems Dealers, offices, brand ambassadors Agents x 2, Website KYC verification & registration	Via USSD or portal client name x 3 Offices & Agents x 2
Compliance	Potraz & RBZ x 2 KYC requirement for RBZ Compliance officer Systems administrator	RBZ Risk Compliance officer No	RBZ & Risk control department x 2 Risk Compliance department x 2 Potraz & RBZ Audit department
RG Verification	No x 3 systems not integrated ID cant suffices Not sure Domestication not made public by RG Awareness required	Yes, DB linked to RG schema User registration, authentication Handled by Compliance department. Yes, No	No, cash point ID checks x 3 Risk Compliance department RG not electronic Yes, DB linked to RG schema
MPS - Bank Relationship	No, money not always through bank though it gets into wallet through bank x 2 Yes, RBZ requirement, MNO can on its own x 2	Yes x 3, banks hold the ledger balance books Not all, but those integrated in our system Not exact, clients-corporate can also do	No, bank-MFS platform only Not all, some pass through banks Yes x 2, iteration, wallet to bank, regulatory requirement
Phone Security	Phones don't need security else slow down device Yes, SIM has Ki, MSISUN, IMSI authentication pads x 2 Enhance, some have, others	No, non-encrypt connections prevent interceptors Not exactly, cases rise security not enough Yes x 2	No, MFS platform not phones do this x 2 Yes, but not 100%. Yes, but not all Yes, USSD simple phone

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	don't have x 2.	Depends on access mode	access
Potraz & RBZ	Need for awareness education Monitoring & weekly/monthly uptime reports Potraz & RBZ to audit x 3	Yes, tighten registration processes Yes, limit control put in place x 2 Yes, transaction limits, No	Yes, monitor accounts, velocity limits x 3 Yes, standards & framework for MPS Yes, monitor & track regularly x 2
Money laundering	Prevent malware virus downloading Avoid remote wire when clearing data Enforce limits, enhance security, KYC x 2 Confusing rules & regulations Audit trials & regulatory enforcement	Adhere to registration processes Enhance security Enforce other security features Monitoring client transactions patterns x 2 Smart tools & processes, effective data analyses	Monitor, restrict, limit SVA, trust, velocity x 2 Enforce, check & balance transactions x 2 Client, AMC Agent education x 2

APPENDIX C3: SECOND CYCLE and AXIAL CODING: Developing Focused Concepts, Patterns and Categories

Axial Code	Focused Concept Descriptions	Frequency	Pattern Codes	Categories
Potraz & RBZ	CP_2 Client Awareness education G_1 Compliance Framework Standards, Monitoring, Controlling, Limits, Audits & Records.	CP_1 = 14; G_2 =12	Client Participation Governance	Communication management. Governance, Security
RG Verification	CP_2 Public awareness, clients partake in registration & authentication G_1 Compliance, System integration, RG schema, ID checks, Compliance	CP_2 =11; G_2 = 11	Client Participation Governance	Awareness, Registration, Authentication, Governance
Compliance	G_1 Compliance to Potraz & RBZ, Risk Control & Compliance, Systems administration. Non – Compliance CP_2 Client involvement, KYC	G_1 = 13; CP_2 = 2	Governance Client Participation	Enterprise risk management, Support, Enterprise Business services
System Status	CS_4 90, 98, 99, 99.9.	CS_4 = 15	Cyber security Client Participation	Core Infrastructure
MPS Problems	CS_4 Network connectivity, system failure, down, high disk use & obscurity, data log, no reversals, CP_2 Client knowledge, forgetting passwords, lack awareness & knowledge on limits & value. SS_3 Socio-economic, funding, communication barriers	CS_4= 11; CP_2= 5; SS_3= 12	Cyber security Client Participation Social security	Secure gateways, Configuration management, Enterprise Business services, Integration and interfaces (USSD, SMS, SMPP), Traceability, security,
Bank-MNO Liaison **MPS - Bank Relationship**	CS_4 Integration, Synchronization, Trust account, One MPS account, Banks-MNOs interface, Akin systems Info & Ledger books SS_3 Customer ID, records, account	CS_4 = 12; SS_3 =5	Cyber security Social security Client Participation	Integration and interface, Framework and API, Hosts
	CS_4 Interface Platform, RBZ regulatory must, Bank-MFS only,	CS_4=11; G_1= 2; SS_3= 6	Cyber security Governance Social security	Secure gateways, Governance, Enterprise Risk

	G₁ MPS autonomy **SS₃** Socio-economic, no money			management.
Phone Security	**CS₄** Enhance security, Ki, MSISUN, IMSI pads, some have, non-encrypt connections, USSD, Prevent interceptors, Access mode, Not 100%. **SS₃** Rise of phone crimes	CS₄ = 11; SS₃ = 1	Cyber security Social security Client Participation	Secure protocols, Encryption Services, Authentication services. Data encryption and App authentication.
Money laundering **Fraudsters**	**CS₄** Man in the middle, Prevent malware virus, remote wire data clearing, Enforce SVA limits, trial audits, Enhance security, Adhere to registration process, Smart tools & processes, Monitor KYC transactions, Check Trust account & balance transactions & patterns. **G₁** Rules & regulations, regulatory enforcement, monitor clients, **CP₂** Client AMC Agent education	CS₄ = 15; G₁ = 4; CP₂ = 10	Cyber security Governance Client Participation	Encryption services, secure protocols, Enterprise risk management, Traceability, Authentication services, Registration,
	CS₄ Man in the middle attacks, social engineering, spyware, malware, key loggers, lost PIN or password, USSD-PIN, same MNO infrastructure, firewall & audit protector **G₁** Independent smsc, fake registration, bank-MNO GUI laws.	CS₄ = 11; G₁ = 3	Cyber security Governance Client Participation	SMS brokers, GUI framework, Patterns, communication management, Registration,
Registration Pre-requisites	**G₁** Customer care desk, Agents with proof of ID **CS₄** registration in system, KYC verification, Website, via USSD or portal client name	G₁ = 7; CS₄ = 7	Governance Social-security Cyber security	Registration, Security, Framework and API, Local objects storage and API,
Multiple Registration	**CS₄** Register with a MPS, bring ID, get password or PIN & 128K, Account activation. MFS & MNO separate accounts, Man in the middle. **G₁** GUI frame & API **CP₂** Clients initiate, admin finalize,	CS₄ = 15 ; G₁ = 1; CP₂= 14	Social-security Cyber Computational Client Participation	Compliance, GUI framework & API, Authentication services
Traverse transactions **Unauthorized Accessibility**	**CS₄** DPI tools & Log , Network, Nagios monitoring tools, Extracting reports, Maker & checker via logs, system monitor, secure gateway. **CP₂** detect & report strange behavior	CS₄ = 15; CP₂ = 2	Cyber security Governance Client Participation	Traceability, Host, SMS brokers, Security, Compliance, Content management, Secure gateways
	CS₄ Yes, costly, viral foud, viral send money, receiver security coded **CP₂** KYC restrictions, USSD PIN & ID	CS₄ = 7; CP₂ =9	Cyber security Governance Client Participation	Secure gateways, USSD, SMS, SMPP, KYC
Unauthorized Transactions	**CS₄** Yes **G₁** No	CS₄ = 7; G₂ = 8	Cyber security Governance Client Participation	security

G_1 = Governance; CP_2 = Client Participation; SS_3 = Social security; CS_4 = Cyber security

APPENDIX D1: INITIAL CODING; recording descriptions (line-by-line) from Banked MPS Clients' responses

Open Code	NetOne and Telecel Questionnaire Responses	Econet and Telecel Questionnaire Responses	NetOne and Econet Questionnaire Responses
Network Option	**Both x 5**	**Both x 5**	**Both x 5**
MPS Option	**One-Wallet & Tele-cash x 3 Eco-cash**	**Eco-cash x 3 Tele-cash & Eco-cash x 2**	**Eco-cash x 2 Wallet & Eco-cash x 3**
Registration Frequency	**Twice a week x 3 Never**	**Once per week x 3 Everyday Twice a week**	**Three times a week Once a week x 3 Everyday**
Phone Challenges	**Limit on transactions Network problems x 3 High tariffs, few agents**	**High tariffs x 2 Location/position x 2 Network availability**	**Network down, no access, tiresome x 2 Network goes down during transaction Slow connectivity x 2**
Line exchange	**No, security reasons x 5**	**No x 4 Yes, confidentiality, private**	**No x 4 its personal item Yes, to a relative who does not have**
Line Swap Notification	**No, takes time x 2**	**No x 3**	**No, not aware of procedure x 2**
Money Security	**Highly secure, sufficient measures x 3 Secure x 2**	**Secure x 4 PIN in encrypted format Highly secure Multiple passwords**	**Secure dealer can capitalize Secure, agents vetting x 3 Not secure,**
MPS Security	**Highly secure x 2 Secure x 3**	**Less secure Secure x 4**	**Secure x 4 Not secure**
MPS Accessibility	**Not easily, PIN protection Yes, easier than bank x 2 Few agents, no money**	**Sometimes agents fail to pay x 2 fuss Depends with nearest agents x 2 Access to large amounts challenge Yes, because of withdrawal limits**	**Not easily accessible x 2 Yes, agents availability Not accessible for large amounts x 2**
MPS Trust	**Bank & MPS convenience and reliability x 2 My phone, access to info & convenient x 3**	**Bank x 5 more security rigor more personal**	**My phone due to PIN Phone, convenient & 100% control x 3**
Transfer Limits	**Yes, prevents money laundering Disagree, situations, monetary exchange laws x 2 Prevents laundering, Pay In line with economy x 2**	**Strongly disagree access to be all time x 2 Disagree, as long as there is balance Strongly disagree, discourage users Agree, reduced risk when there is security breach**	**Agree, protection of funds Disagree, increase in tariffs reduce limits Strongly agree, if not then open to terrorism Disagree, clients have no liberty**
SIM card security	**Strongly agree, proof of identity x 2 Disagree x 3 any system flawed, can be manipulated**	**Strongly agree, records will be in the system x 3 Disagree, though there will be information**	**Agree, PIN & security reasons Agree, traceability & recovery assurance Disagree, it has nothing to do with security x 2 Strongly disagree, one line can be for two**
Unauthorized use	**No x 4**	**No x 5**	**No x 5**
Lost line balance	**Yes, it will be safe Yes, no comment x 3**	**Not sure Yes, brings confidence to clients Yes x 3 because money will be in my SIM**	**Yes, lose of SIM not mean lose of account x 2 Not sure x 3**
Cross network	**Yes, can send to an unregistered person what they need is money No, not aware x 2**	**No, never bothered x 2 No, high tariffs Yes, can send money to unregistered**	**No, Eco-cash for Econet, NetOne for wallet Yes, transfers go through No, there no direct transfer**

	Yes but few agents	**Yes, but friends use eco-cash**	**among actors** **No, not aware x 2**
Fraud	**No x4** **Yes, its not Nigerian where there are pyramids**	**No, high tariffs x 5**	**No x 4** **Yes and no**
Reverse Transaction	**Yes, quick process and return** **No, not yet done this, no mistake x 4**	**No, no knowledge** **No, haven't used wrong account x 2** **Yes, easier through customer care x 2**	**No, cannot reverse** **No, never made a mistake** **No, never need it** **Yes, time consuming x 2**
Bank-MNO Security	**Highly secure** **Secure, enhance it, authentication x 4**	**Less secure, less knowledge** **Highly, banks have secure cryptography algorithms** **Secure x 3 same ID required**	**Secure, no PIN no access x 3** **Secure, banks & MNOs work together** **Not secure, one line for two people, no synchronize**
Failed Transaction	**Yes, wrong PIN** **No x 4**	**No x 4** **Yes, insert system of validation**	**No x 4 good validation** **No**
MPS Trust	**Trusted, reduces one moving with physical money** **Trusted x 3** **Highly trusted**	**Trusted, can change PIN & control transaction x 2** **Trusted, avoid PIN disclosure** **Trusted x 2**	**Trusted, highly secure** **Trusted, convenient & secure x 2** **Not trusted, error in the biller/merchant code** **Not trusted, info can delete, no back up**
Awareness Education	**Yes, promotional campaigns done** **Clients are ignorant & no access to info x 2** **Yes, clients need more x 2**	**No, no information, trial & error** **Yes, but need for more x 2** **Instructions provided, any can use USSD x 2**	**Yes, network is always down** **Yes, few people know x 2** **Yes x 2 several people need help**
RBZ, Potraz role	**Both, RBZ with banking, Potraz with systems x 2** **None of the above, autonomy of MNOs** **RBZ for taxation**	**RBZ, it is about banking x 2** **Both, one controls banking, the other systems x 2** **Its new in both domains**	**Potraz because it licenses** **Both, accountability, standards & expectations x 3** **RNZ since it governs banks**
MPS ratings	**Cash, convenient & accessible** **Bank transfer x 3, audit trial** **Smartcard x 2, cryptography better**	**Bank transfer, verify signature & ID x 4** **Smartcard, done by one with PIN, no repudiation** **Cannot replace traditional banking ethos**	**Bank transfer, security rigor x 2** **Internet, verifies & validates by phone** **Cash x 2 & Smartcard, tried & tested** **Smartcard, no cash, better security**
Comments		**Agents to ask for ID** **Thorough awareness education** **More standards for MNOs as in banks** **Life & Bill payment easier & flexible by phones x 2**	**With Eco-cash you can access your bank account** **Convenience, popularity** **Cut travelling costs** **Fast, day or night** **No network in other areas or are down** **Security enhancement need**

APPENDIX D2: FIRST CYCLE CODING; pawing tentative Concepts from Banked MPS Clients' descriptions

Open Code	NetOne and Telecel Questionnaire In Vivo Codes	Econet and Telecel Questionnaire In Vivo Codes	NetOne and Econet Questionnaire In Vivo Codes
Network Option	Both x 5	Both x 5	Both x 5
MPS Option	One-Wallet & Tele-cash x 3 Eco-cash	Eco-cash x 3 Tele-cash & Eco-cash x 2	Eco-cash x 2 Wallet & Eco-cash x 3
Registration Frequency	Twice a week x 3 Never	Once per week x 3 Everyday Twice a week	Three times a week Once a week x 3 Everyday
Phone Challenges	Limit on transactions Network problems x 3 High tariffs, few agents	High tariffs x 2 Location/position x 2 Network availability	Network down, no access, tiresome x 2 Network goes down during transaction Slow connectivity x 2
Line exchange	No, security reasons x 5	No x 4 Yes, confidentiality, private	No x 4 its personal item Yes, to a relative who does not have
Line Swap Notification	No, takes time x 2	No x 3	No, not aware of procedure x 2
Money Security	Highly secure, sufficient measures x 3 Secure x 2	Secure x 4 PIN in encrypted format Highly secure Multiple passwords	Secure dealer can capitalize Secure, agents vetting x 3 Not secure,
MPS Security	Highly secure x 2 Secure x 3	Less secure Secure x 4	Secure x 4 Not secure
MPS Accessibility	Not easily, PIN protection Yes, easier than bank x 2 Few agents, no money	Sometimes agents fail to pay x 2 fuss Depends with nearest agents x 2 Access to large amounts challenge Yes, because of withdrawal limits	Not easily accessible x 2 Yes, agents availability Not accessible for large amounts x 2
MPS Trust	Bank & MPS convenience and reliability x 2 My phone, access to info & convenient x 3	Bank x 5 more security rigor more personal	My phone due to PIN Phone, convenient & 100% control x 3
Transfer Limits	Yes, prevents money laundering Disagree, situations, monetary exchange laws x 2 Prevents laundering, Pay In line with economy x 2	Strongly disagree access to be all time x 2 Disagree, as long as there is balance Strongly disagree, discourage users Agree, reduced risk when there is security breach	Agree, protection of funds Disagree, increase in tariffs reduce limits Strongly agree, if not then open to terrorism Disagree, clients have no liberty
SIM card security	Strongly agree, proof of identity x 2 Disagree x 3 any system flawed, can be manipulated	Strongly agree, records will be in the system x 3 Disagree, though there will be information	Agree, PIN & security reasons Agree, traceability & recovery assurance Disagree, it has nothing to do with security x 2 Strongly disagree, one line can be for two
Unauthorized use	No x 4	No x 5	No x 5
Lost line balance	Yes, it will be safe Yes, no comment x 3	Not sure Yes, brings confidence to clients Yes x 3 because money will be in my SIM	Yes, lose of SIM not mean lose of account x 2 Not sure x 3
Cross network	Yes, can send to an unregistered person what they need is money No, not aware x 2 Yes but few agents	No, never bothered x 2 No, high tariffs Yes, can send money to unregistered Yes, but friends use eco-cash	No, Eco-cash for Econet, NetOne for wallet Yes, transfers go through No, there no direct transfer among actors

			No, not aware x 2
Fraud	No x4 Yes, its not Nigerian where there are pyramids	No, high tariffs x 5	No x 4 Yes and no
Reverse Transaction	Yes, quick process and return No, not yet done this, no mistake x 4	No, no knowledge No, haven't used wrong account x 2 Yes, easier through customer care x 2	No, cannot reverse No, never made a mistake No, never need it Yes, time consuming x 2
Bank-MNO Security	Highly secure Secure, enhance it, authentication x 4	Less secure, less knowledge Highly, banks have secure cryptography algorithms Secure x 3 same ID required	Secure, no PIN no access x 3 Secure, banks & MNOs work together Not secure, one line for two people, no synchronize
Failed Transaction	Yes, wrong PIN No x 4	No x 4 Yes, insert system of validation	No x 4 good validation No
MPS Trust	Trusted, reduces one moving with physical money Trusted x 3 Highly trusted	Trusted, can change PIN & control transaction x 2 Trusted, avoid PIN disclosure Trusted x 2	Trusted, highly secure Trusted, convenient & secure x 2 Not trusted, error in the biller/merchant code Not trusted, info can delete, no back up
Awareness Education	Yes, promotional campaigns done Clients are ignorant & no access to info x 2 Yes, clients need more x 2	No, no information, trial & error Yes, but need for more x 2 Instructions provided, any can use USSD x 2	Yes, network is always down Yes, few people know x 2 Yes x 2 several people need help
RBZ, Potraz role	Both, RBZ with banking, Potraz with systems x 2 None of the above, autonomy of MNOs RBZ for taxation	RBZ, it is about banking x 2 Both, one controls banking, the other systems x 2 Its new in both domains	Potraz because it licenses Both, accountability, standards & expectations x 3 RNZ since it governs banks
MPS ratings	Cash, convenient & accessible Bank transfer x 3, audit trial Smartcard x 2, cryptography better	Bank transfer, verify signature & ID x 4 Smartcard, done by one with PIN, no repudiation Cannot replace traditional banking ethos	Bank transfer, security rigor x 2 Internet, verifies & validates by phone Cash x 2 & Smartcard, tried & tested Smartcard, no cash, better security

APPENDIX D3: SECOND CYCLE CODING: Developing Concepts, Patterns and Categories

Axial Code	Focused Concept Descriptions	Frequency	Patterns	Categories
Transactional Frequency Line Exchange Swap Notification	SS₃ Once a week, Twice a week, Three times a week, Every day, Never,	SS₃= 3 median	Social security	Enterprise Business services,
	SS₃ No, security reasons, confidentiality, private, personal, CP₂ Give relatives who do not have,	SS₃=13; CP₂ 2	Social security	Security, privacy
	CP₂ No takes time, not aware of procedures,	CP₂=7	Cyber security	Communication management, security
RBZ, Potraz roles	G₁ Both for accountability, RBZ with banking, Potraz licenses & oversee systems, None of the above, autonomy of MNOs, RBZ for taxation, CP₂ It new to both domains,	G₁=14; CP₂ = 1	Governance	governance

Bank-MNO Security **Transfer Limits**	**CS$_4$** Highly secure, authentication, less secure, enhance cryptography algorithms, smsc ID, **G$_1$** No PIN no access, banks & MNOs interface , **CP$_2$** Less knowledge, Synchronize multiple SIM ownership, same ID to be requested,	CS$_4$=12; G$_1$= 6; CP$_2$=4	**Cyber security Governance Client Participation**	**Security, awareness,**
Fraud	**SS$_3$** Prevents money laundering, dispirits clients **G$_1$** De-regularize limits, **CP$_2$** Pay on demand all time, **CS$_4$** Reduces security, protection of funds, limits liberty & terrorism,	SS$_3$=12; G$_1$=14; CP$_2$=12; CS$_4$=3	**Social security Governance Client Participation Cyber security**	**Enterprise Risk management, Content management, Limits**
	CS$_4$ No, secure protection, **SS$_3$** Yes, not Nigeria where there are pyramids,	CS$_4$= 14; SS$_3$=2	**Cyber security Social security**	**Awareness, security**
Phone Challenges	**CS$_4$** Network connectivity, slow, down, remote **G$_1$** Limit on transactions, High tariffs, few agents, connectivity,	CS$_4$=14; G$_1$=6	**Cyber security Governance**	**Core infrastructure, Tariffs, Enterprise Business services, provisioning**
SIM card security **Money Security**	**CS$_4$** Proof of ID, system can be manipulated, Records in the system, one SIM two holders, **SS$_3$** Traceability, recovery assurance, **CP$_2$** one SIM for client, PIN & security reasons	CS$_4$= 14; SS$_3$=7 CP$_2$= 8	**Cyber security Social security Client Participation**	**Security,**
MPS Security	**CS$_4$** Highly secure, sufficient measures, Secure, multiple passwords, PIN encrypted format, **CP$_2$** Unsecure, agent vetting, misled or taken advantage of,	CS$_4$=13; CP$_2$ =2	**Cyber security Client Participation**	**Security**
MPS Rating	**CS$_4$** Highly secure, Secure, **CP$_1$** Not sure, less secure,	CS$_4$ =13; CP$_2$ =2	**Cyber security Client Participation**	**security**
	CS$_4$ convenient & accessible, Stop order, Bank have security rigor, ethos, tried & tested, audit trial, verify signature, Smartcard, cryptography better, PIN, no repudiation, no cash involved, **SS$_3$** Internet, verifies by phone, bank ethos	CS$_4$= 16; SS$_3$= 7	**Cyber security Social security**	**Authentication services, Broadband and data services, cryptography, encryption.**
MPS Accessibility	**CS$_4$** PIN protection, easier than bank, **SS$_3$** Money non-availability, agents, withdrawal **G$_1$** Withdrawal limits, no access to large withdrawals, **CP$_2$** Not easily accessible,	CS$_4$=5; SS$_3$=12; G$_1$=13; CP$_2$=13	**Cyber security Social security Governance Client Participation**	**Enterprise Risk management, security**
Cross network	**SS$_3$** Can send to an unregistered person; what MNOs need is money not registration, **G$_1$** Few agents, high tariffs,	SS$_3$ =7; G$_1$= 6; CS$_4$= 4;	**Social security Governance**	**Registration, provisioning, SMS brokers.**

Reverse Transaction	each MNO for itself **CS₄** No to inter MPS, transfers go through, not aware, no direct transfers for actors, **CP₂** Not aware,	**CP₂=11**	Cyber security Client Participation	
Failed Transaction	**CS₄** Quick process, return, not yet done this, **CP₂** No knowhow, Never used a wrong number, no mistake, **G₁** Cannot reverse, time consuming,	**CS₄= 3; CP₂= 14; G₁ = 5**	Cyber security Client Participation Governance	Communication management
Lost line balance	**CS₄** PIN, enhances validation system, **CP₂** Gives confidence,	**CS₄ = 6; CP₂ = 9**	Cyber security Client Participation	security
	SS₃ Safe, no comment , not sure, **CS₄** money will be in the system not SIM, **CP₂** retrieval gives confidence to clients,	**SS₃=13; CS₄=6; CP₂ =13**	Social security Cyber security Client Participation	awareness
MPS Trust **Awareness Education**	**SS₄** Bank & MPS convenience and reliability, access to info & convenient, **CS₄** more security in banks, enhance rigor, PIN, **CP₂** 100% control of my money,	**SS₃ =8; CS₄=6; CP₂=9**	Social security Cyber security Client Participation	Enterprise MFS
	SS₃ Promotional campaigns, clients are ignorant, **CS₄** Have no access to information, **CP₂** clients need more, clients use trial & error, few people know, several people need help,	**SS₃ = 10; CS₄= 3; CP₂=13**	Social security Cyber security Client Participation	Communication manageemnt

G₁ = Governance; CP₂ Client Participation; SS₃ = Social Security; CS₄ = Cyber security

APPENDIX E1: INITIAL CODING; recording descriptions (line-by-line) from Unbanked MPS Clients' responses

Open Code	NetOne Questionnaire Responses	Econet Questionnaire Responses	Telecel Questionnaire Responses
Network option	NetOne x 5	Econet x 5	Telecel x 5
MPS option	One Wallet x 5	Eco-cash x 5	Tele-cash x 5
Registration frequency	Once a week x 2 Occasionally x 2 Twice a week	Once a week x 5	Once a week x 3 Twice a week
Phone Problems	Network down x 4 Limited agents Network distribution narrow	Network coverage Slow loading No money in agents x 3 High tariffs	No agents during odd hours & unlinked to ATM High tariffs x 2 Network problems
Line exchange	No x 5 prefer to keep personal ID to myself	No x 5	No x 4
Exchanged line Notification	No, not necessary	Too busy to give someone Keep my line secure	No x 2
Money Security	Highly secure, no ID no transaction x 2 Secure, embed with tight security x 2 Don't disclose PIN number	Secure, use of PIN x 2 Highly secure Secure, PIN	Secure x 2 but enhance security Highly secure x 2
MPS Security	Secured x 4 Highly secure,	Secure x 3 reduces time Highly secure	Secure x 4

MPS Accessibility	Yes, if agent is available x 2 Yes, so far Not easily accessible, cash shortage	Not accessible, network problems Agents, no money for large cash-outs x 2	Depends where you are Accessible during the day Few agents in the remote areas
MPS Trust	My phone, convenient, gives audit trail x 5	My phone, ease access challenges x 4 Easy anytime, anywhere	My phone, low tariffs My phone, accessible, secure, in control x 3
Transfer Limits	Disagree, limits inconvenience to obligations x 3 Strongly disagree, clients to access all cash anytime Agree, form of client & fraud control	Strongly disagree, financial integration x 3 demands unlimited cash flows & transactions Disagree, shouldn't be limits due to obligations Agree,	Agree, prevents fraudsters x 2 Strongly agree, curbs money laundering Strongly agree, security reasons
SIM card security	Strongly agree, system identifies – authentication Disagree, stolen lines & IDs can be used x 2 Strongly agree, prevents frauds The registered might not be the user	Agree x 3 recognition of holder & confidentiality Disagree, the owner might not be user Agree, no password, no access	Agree, use SIMcard, National ID x 2 Agree, enable trail audit Agree but not totally
Unregistered line	No x 5	No x 4 Yes	No x 4
Lost line balance	Yes, money in the system not handset x 4 Don't know	Yes, improves reliability of MNOs, appreciable No, unfair, tiresome, police report to get another SIM card Yes, can redeem money after SIm replacement	Yes, guarantees safety of money It has never happened to me Money in the system not SIM card
Cross network	Yes, MNO do not allow Telecel, Yes, convenient Yes, it was horrible – took days, no reimbursement No need	Lack of money & knowhow to transfer x 2 No, have never done it x 2 No, have no one to transact with	No, it's possible x 2 Yes, awesome, convenient, seamless x 2
Fraud	Yes, others registers with other names x 2 No x 3 Yes, read about it from internet	No, unlawful use of other people's funds x 3 Yes, Econet some steal money using stolen phone	No x 3 Yes
Reverse Transaction	No, no need so far x 3 No, time consuming x 2	Yes, time consuming & lack of knowhow x 2 No, never encountered such a situation x 3	No x 3, never tried to do so Yes, had send to wrong recipient
Bank-MNO security	Less secure, others register with other names Secure, aids identification process x 3 Highly secure, PIN a secret & safety	Secure x 3 due to PIN Not secure, enhance security Secure, easy & convenient	Less secure, enhance security Secure x 2, should check details some are wrong Highly secure, SIM has unique security features
Failed Transaction	Yes, wrong PIN x 2 Sure that details are correctly captured x 3	No x 4 Yes, proofs that there is security	No x 4
MPS Trust	Trusted x 4 service provider Highly trusted, convenient	Not trusted, government tracking mobile systems Trusted x 2, PIN, prompt transaction x 3	Trusted x3 can track or trace misconducts Highly trusted due to authentication process
Awareness Education	No, need education & training by Marketing dept x 2 No, not much has been done x 2 despite agents Not all, intensify awareness	Yes, agents are doing this x 3 No, some don't have full knowledge x 2	Yes, use system everyday Yes, vigorous awareness is required x 3
RBZ, Potraz	RBZ, financial or monetary authority or expert x 3 None of the above, MNO autonomy serve abuse Potraz, technical knowhow	None of the above x 2 Potraz, technical knowhow & centralized x 2 RBZ for money, Potraz for systems	RBZ, controller of financial system x 2 Both, increase accountability x 2
	Bank transfer, more secure x	Cash	Smartcard

MPS rating	2 Cash, no transaction cost Smartcard, safe, secure & accessible x 2	Smartcard, security, user friend & accessibility x 3 Bank transfer enhanced security & global trust x 2	Cash, no tariffs Bank, trusted, charges are not as big x 2
Comments	MNOs to ensure proper client registered Agents be easily available x 2 Daily limit to be increased to US1 500. 00 Good way of keeping money Access is anytime of the day Avail user friendly handsets Awareness to every corner Regular system maintenance & upgrading High tariffs, need for free transactions Not 100% accessible, clients seek other MNO	High tariffs for cross network x 2 High tariffs, to be done once a week or month per client Enhance security e.g. fingerprints, scanning from user to MNO & regulator Invest in new technologies, loading data x 2	Use fingerprint readers to enhance security x 2 Changed financial landscape Help unbanked public

APPENDIX E2: FIRST CYCLE CODING; pawing tentative Concepts from Unbanked MPS Clients' descriptions

Open Code	NetOne Questionnaire In Vivo Codes	Econet Questionnaire In Vivo Codes	Telecel Questionnaire In Vivo Codes
Network option	NetOne x 5	Econet x 5	Telecel x 5
MPS option	One Wallet x 5	Eco-cash x 5	Tele-cash x 5
Transacting frequency	Once a week x 2 Occasionally x 2 Twice a week	Once a week x 5	Once a week x 3 Twice a week
Phone Problems	Network down x 4 Limited agents Network distribution narrow	Network coverage Slow loading No money in agents x 3 High tariffs	No agents during odd hours & unlinked to ATM High tariffs x 2 Network problems
Line exchange	No x 5 prefer to keep personal ID to myself	No x 5	No x 4
Exchanged line Notification	No, not necessary	Too busy to give someone Keep my line secure	No x 2
Money Security	Highly secure, no ID no transaction x 2 Secure, embed with tight security x 2 Don't disclose PIN number	Secure, use of PIN x 2 Highly secure Secure, PIN	Secure x 2 but enhance security Highly secure x 2
MPS Security	Secured x 4 Highly secure,	Secure x 3 reduces time Highly secure	Secure x 4
MPS Accessibility	Yes, if agent is available x 2 Yes, so far Not easily accessible, cash shortage	Not accessible, network problems Agents, no money for large cash-outs x 2	Depends where you are Accessible during the day Few agents in the remote areas
MPS Trust	My phone, convenient, gives audit trail x 5	My phone , ease access challenges x 4 Easy anytime, anywhere	My phone, low tariffs My phone, accessible, secure, in control x 3
Transfer Limits	Disagree, limits inconvenience to obligations x 3 Strongly disagree, clients to access all cash anytime Agree, form of client & fraud control	Strongly disagree, financial integration x 3 demands unlimited cash flows & transactions Disagree, shouldn't be limits due to obligations Agree,	Agree, prevents fraudsters x 2 Strongly agree, curbs money laundering Strongly agree, security reasons
SIM card security	Strongly agree, system identifies – authentication Disagree, stolen lines & IDs can be used x 2 Strongly agree, prevents frauds	Agree x 3 recognition of holder & confidentiality Disagree, the owner might not be user Agree, no password, no access	Agree, use SIMcard, National ID x 2 Agree, enable trail audit Agree but not totally

	The registered might not be the user		
Unregistered line	No x 5	No x 4 Yes	No x 4
Lost line balance	Yes, money in the system not handset x 4 Don't know	Yes, improves reliability of MNOs, appreciable No, unfair, tiresome, police report to get another SIM card Yes, can redeem money after SIm replacement	Yes, guarantees safety of money It has never happened to me Money in the system not SIM card
Cross network	Yes, MNO do not allow Telecel, Yes, convenient Yes, it was horrible – took days, no reimbursement No need	Lack of money & knowhow to transfer x 2 No, have never done it x 2 No, have no one to transact with	No, it's possible x 2 Yes, awesome, convenient, seamless x 2
Fraud	Yes, others registers with other names x 2 No x 3 Yes, read about it from internet	No, unlawful use of other people's funds x 3 Yes, Econet some steal money using stolen phone	No x 3 Yes
Reverse Transaction	No, no need so far x 3 No, time consuming x 2	Yes, time consuming & lack of knowhow x 2 No, never encountered such a situation x 3	No x 3, never tried to do so Yes, had send to wrong recipient
Bank-MNO security	Less secure, others register with other names Secure, aids identification process x 3 Highly secure, PIN a secret & safety	Secure x 3 due to PIN Not secure, enhance security Secure, easy & convenient	Less secure, enhance security Secure x 2, should check details some are wrong Highly secure, SIM has unique security features
Failed Transaction	Yes, wrong PIN x 2 Sure that details are correctly captured x 3	No x 4 Yes, proofs that there is security	No x 4
MPS Trust	Trusted x 4 service provider Highly trusted, convenient	Not trusted, government tracking mobile systems Trusted x 2, PIN, prompt transaction x 3	Trusted x3 can track or trace misconducts Highly trusted due to authentication process
Awareness Education	No, need education & training by Marketing dept x 2 No, not much has been done x 2 despite agents Not all, intensify awareness	Yes, agents are doing this x 3 No, some don't have full knowledge x 2	Yes, use system everyday Yes, vigorous awareness is required x 3
RBZ, Potraz	RBZ, financial or monetary authority or expert x 3 None of the above, MNO autonomy serve abuse Potraz, technical knowhow	None of the above x 2 Potraz, technical knowhow & centralized x 2 RBZ for money, Potraz for systems	RBZ, controller of financial system x 2 Both, increase accountability x 2
MPS rating	Bank transfer, more secure x 2 Cash, no transaction cost Smartcard, safe, secure & accessible x 2	Cash Smartcard, security, user friend & accessibility x 3 Bank transfer enhanced security & global trust x 2	Smartcard Cash, no tariffs Bank, trusted, charges are not as big x 2

APPENDIX E3: SECOND CYCLE and AXIAL CODING: Developing Concepts, Patterns and Categories.

Axial Codes	Focused Concept Descriptions	Frequency	Pattern	Categories
Network option	CS$_4$ NetOne, Econet, Telecel,	CS$_4$ = 15	Cyber security Social security Client Participation	Infrastructure
MPS option	SS$_3$ One Wallet, Eco-cash, Telecel,	SS$_3$ = 15	Social security	Enterprise MFS

			Client Participation	
Frequency - use	**SS$_3$** Once a week, Occasionally, Twice a week,	**SS$_3$** = 15	Social security Client Participation	Client participation
Phone Problems	**CS$_4$** Network down , limited agents & money, narrow network distribution, coverage, **G$_1$** Tariffs, slow loads, no night services, no ATM link,	**CS$_4$** = 8; **G$_1$** =7	Cyber security Governance	Broad band Data services
Line exchange	**SS$_3$** Prefer to keep personal ID to myself, **CP$_2$** Personal property,	**SS$_3$** = 14; **CP$_2$** =15	Social security Client Participation	security
Exchanged line Notification	**SS$_3$** Not necessary, keep my line secure **CP$_2$** Too busy to give someone, keeps my line secure	**SS$_3$** = 9; **CP$_2$** = 10	Social security Client Participation	awareness
Money Security	**CS$_4$** Secure, no ID no transaction, embed system with tight security, **G$_1$** Enhance security, **SS$_3$** Non- disclose of PIN,	**CS$_4$** = 7 ; **G$_1$** = 12 ; **SS$_3$** = 12	Cyber security Governance Social security	security
MPS Security	**SS$_3$** Secure, **CP$_2$** Reduces time moving,	**SS$_3$** = 14; **CP$_2$** = 15	Social security Client Participation Cyber security	Convenience security
MPS Accessibility	**SS$_3$** If agent is available, not easily accessible, location relativity, few agents in rural areas, **G$_1$** No large withdrawals, cash shortage **CS$_4$** Network problems,	**SS$_3$** = 9; **G$_1$** = 5; **CS$_4$** =4	Social security Governance Cyber security	Enterprise business services, Enterprise risk management
MPS Trust	**SS$_3$** My phone, convenient, gives audit trail, access anywhere anytime, control of deposit, **G$_1$** Tariffs, audit trial	**SS$_3$** = 14; **G$_1$** = 2; **CS$_2$** = 13	Social security Governance	Traceability, security
Transfer Limits	**G$_1$** Limits impulse obligations, **CP$_2$** Clients cant access cash all-time, curbs fraud, **SS$_3$** Control money laundering, promotes cash flow integration, for security reasons	**G$_1$** = 10; **CP$_2$** = 14; **SS$_3$** = 12	Governance Client Participation Social security	Limits, fraud, money laundering
SIM card security	**CS$_4$** System authentication, stolen lines & IDs can be hacked, prevents frauds, no password, no access, enable trial audit, **SS$_3$** Cannot dictate when registered is the user, SIM security not convincing	**CS$_4$** = 9; **SS$_3$** = 11; **CP$_2$** = 15	Cyber security Social security Client Participation	Encryption and authentication
Unregistered line use	**CS$_4$** Yes **SS$_3$** No	**CS$_4$** = 14; **SS$_3$** = 1	Cyber security Social security	Registration
Lost line balance	**CS$_4$** Money in the system not handset, **CP$_2$** don't know, hasn't happened, **SS$_3$** Improves MNO acceptability, reliability, legal recourse & re-registration tiresome, guarantees safely of deposits,	**CS$_4$** = 6; **CP$_2$** = 7 ; **SS$_3$** = 13	Cyber security Client Participation Social security	awareness
Cross network	**SS$_3$** Where allowed, it's convenient **CP$_2$** Horrible, takes days, useless domain, limited knowhow, awesome, never done it, **G$_1$** No reimbursement, money, seamless, MNO not allowed,	**SS$_3$** = 11; **CP$_2$** = 12; **G$_1$** = 4	Social security Client Participation Governance	Enterprise business services
	G$_1$ Use of pseudo names, hacking **CP$_2$** read about it from internet,	**G$_1$** = 8; **CP$_2$** = 13;	Governance Client	security

Fraud	SS_3 Hack from Econet or stolen phone,	$SS_3 = 8$	Participation Social security	
Reverse Transaction	CP_2 No need so far, time consuming, lack knowhow, never tried or encountered it, SS_3 Money sent to wrong recipient,	$CP_2 = 14$; $SS_3 = 6$	Cyber security Social security	Enterprise business services
Bank-MNO security	G_1 Less secure, pseudo name registration, SS_3 Secure, aids identification process, PIN is a secret CS_4 Enhance security,	$G_1 = 5$; $SS_3 = 7$; $CS_4 = 11$	Governance Social security Cyber security	security
Failed Transaction	CP_2 Wrong PIN, SS_3 Ensure correct data capturing, proof of the existence of security,	$CP_2 = 9$; $SS_3 = 6$	Cyber security Social security	Awareness
MPS Trust	CP_2 Trust MPS providers, convenient, prompt, SS_3 PIN, trace misconducts, authentication process, G_1 Not trusted, government tracks	$CP_2 = 12$; $SS_3 = 13$; $G_1 = 9$	Client Participation Social security Governance	Enterprise risk management
Awareness Education	CP_2 Some don't have full knowledge, Need education & training, less done despite having agents, SS_3 Intensify vigorous awareness	$CP_2 = 13$; $SS_3 = 9$	Client Participation Social security	Communication management
RBZ, Potraz	G_1 RBZ is controller of financial or monetary system, prevents abuse, prevents abuse, Potraz has technical knowhow, Both to increase accountability, CP_2 None of the above, MNO autonomy,	$G_1 = 14$; $CP_2 = 4$	Social security Client Participation Social security Governance Cyber security	Compliance, Governance
MPS rating	CS_4 Bank transfer, more secure, enhanced security & global trust, SS_3 Cash, no transaction cost, CP_2 Smartcard, safe, secure & accessible, G_1 High tariffs	$CS_4 = 7$; $SS_3 = 12$; $CP_2 = 15$; $G_1 = 5$	Cyber security Social security Client Participation Cyber security Governance	Enterprise business services

G_1 = Governance; CP_2 = Client Participation; SS_3 = Social security; CP_4 = Cyber security

APPENDIX F – REVIEWER'S COMMENTS

Comments: Overall, good work! This is a well-designed and comprehensive framework which could be improved by considering the following:

1. Adding more flesh on the governance area.

2. A summary of your objectives