THREATS AND OPPORTUNITIES BY FINTECHS ON ZIMBABWEAN COMMERCIAL BANKS: AN OPEN INNOVATION PERSEPECTIVE

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Declaration

I Linnet Vimbai Mafinyori do hereby declare that this dissertation is a result of my own investigation and research, except to the extent indicated in the acknowledgements, bibliography and comments included in the body of the report, and that it has not been submitted in part or in full for any other degree to any other university.

……	**28 February 2020**
Student Signature	**Date**
……	**……**
Supervisor Signature	**Date**

Dedication

A special dedication goes to my parents, work mates and friends who taught and encouraged me to think, understand and express. I earnestly feel that without their inspiration, able guidance and commitment I would not be able to sail through the strenuous process of this research study.

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Abstract

The growth in financial technologies (Fintech) skyrocketed in Zimbabwe and there are many reasons behind this happening. New entrants in financial services sector such as large cutting-edge technology companies and technology startups offer new innovations and technologies. They shape whole sector in terms of regulations which are made by authorities, customer habits and strategies. The study aims at understanding the triggers behind Fintech development and unearthing the threats presented by Fintechs to the Zimbabwean commercial banks. In addition, the study seeks to examine the opportunities presented by Fintechs to the Zimbabwean commercial banks, to find the implications of FinTechs to the regulation of financial services sector and to establish the strategies being employed by the Zimbabwean commercial banks to cope with this disruptive technology.The study reflects the effect of economic crises, the developments in technology after and changing business models of technology vendors and changes in the demographics as triggers behind Fintech development. It exposes that while capital and customer base are the main advantages of incumbents, cutting-edge technologies and flexibility are main advantages of Fintechs. The Zimbabwean banking fraternity has welcomed financial technologies as it improves prudential safety and soundness. The results analysed focused on the drivers of Fintec, threats and opportunities of Fintec (mobile banking, Regtech and digital banking). Technological breakthrough and good supporting infrastructure were found to be the major drivers of fintech. Several opportunities were noted which include the enhancement of customer base, reduction of real time transactions, convenience and reduced expenditure in terms of building many branches. Fintech companies were found to be threat to commercial banks in the country. In terms of threats, it emerged that cyber risks and systems challenges are the major setbacks being experienced by customers when using digital platforms, however the cash crisis has been partially eased by both mobile and digital banking.

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CHAPTER ONE:INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

The 21st century technological breakthrough in the form financial technology (FinTech) has revolutionised the way financial markets operate. This disruptive technology has redefined the business models in provision of financial services and how the general public attain financial services. The word FinTech is featuring in every strategy meetings of financial service providers, in trying to find ways of exploiting opportunities and minimising the threat which it presents to the provision of financial services to their customers. According to Lee and Kim (2015), the word FinTech was defined as the dynamic industry in the connection of finance and technology. It was also defined by Lee and Kim (2015) as a new financial service provision innovation that combines information technology, settling of payments, transfers and asset management. The Financial Stability Board (FSB) (2017) further defines it as the technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services."

Even though FinTech has become popular for its efficiency and cost effective, various regulators have echoed the emergence of cyber risks associated with the use of these technologies to both FinTech companies and banks. According to the Reserve Bank of Zimbabwe (2017) the swift acceptance of new and emerging financial technologies exacerbates the likelihood of technological and systems failure. The RBZ recommended that banks and FinTechs need to give proper attention to the crafting of cyber security risk management frameworks which respond to the deterrence, detection, monitoring, technology literateness and disaster recovery plans. According to Basel Committee on Banking Supervision (2018) the type and range of banking risks as traditionally known may fundamentally revolve as time passes with the growth of FinTech adoption, through new technologies which disrupt bank business models. Despite the risks and threats posed by these technologies, they could also unearth new opportunities for both customers and banks at large. This research seeks to unearth these threats and opportunities associated with the growth of technologies to the Zimbabwean commercial banking sector. A brief background of FinTech was given below.

1.1.1 FinTech sector in Zimbabwe

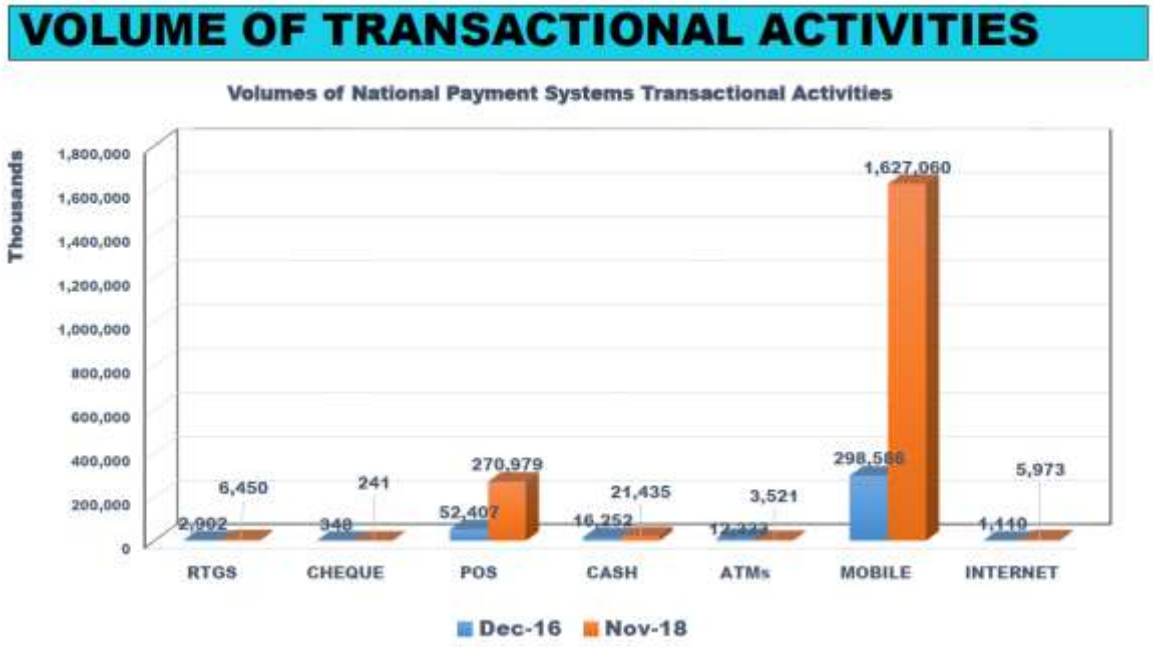
The Zimbabwean FinTech industry is growing significantly. Over the past five years many players have joined the industry. In Zimbabwe various companies including Cassava, Paynet, Bitimari, Bitfinance, Telecash, One money, GetBucks, E-Transact, Zimswitch, Instapay, Zapper, World remit, Zing, Hello Paisa, Paysave and Paynow have revolutionised the way people perform their financial transactions. CASSAVA seems to be leading the way in the FinTech revolution in Zimbabwe. Below is the table showing the financial technologies housed under CASSAVA.

Table 1: Cassava Smartech

Source: Chipika (2019)

The RBZ 2018 report demonstrates that most transactions are now being performed through mobile phones which are a 445% increase from 2016 as shown in the table below. The table also shows the volume of transactions performed using various platforms or methodologies. Regulators are working tirelessly in building frameworks covering prevention, uncovering, monitoring, technology literacy and recovery plans (RBZ, 2017).

Table 2: Volume of transactional activities



Source: Chipfika (2019)

It is against this background of Fintech and banking sector that the researcher seeks to investigate the threats and opportunities presented by FinTech on the Zimbabwean commercial banks.

1.2 Background of the study

Today, FinTech has developed to be a key ingredient in economic development and the anchor stone of knowledge-based economies in relation to operations, quality of service delivery and financial intermediation (Oluwagbemi, Abah &Achimugu, 2017). Therefore, exploiting financial technology opportunities has become a necessity for all developing countries of which Zimbabwe is not an exception, however, a full comprehension of the threats posed by these technologies is key.

Most empirical studies are proving that Knowledge-driven invention is a decisive element in the sustainable competiveness of countries, industries and companies (Philipon, 2018). The digital revolution has left banks in serious panic and left an unanswered question with regards to the outlook and future for the banking industry (International Trade Administration, 2016). The most fundamental question is what the future nexus among banks and fintechs will be, and its implications for the on provision of banking services and for banks' financial performance and market share. The answers to these questions are informed by the nature of

Fintech in context and the size of the players. This industry is dominated by large and small start-ups fintech firms therefore these two groups pose fundamental different threats and opportunities. The banks are responding to these threats and opportunities differently, some have taken over these Fintech firms, some are merging, and some are forming strategic partnerships to remain responsive to the changing needs of the public (Erman, 2017). Through these strategies' banks are imbedding FinTech services into their operational process to achieve their digital plans.

The Big-Tech firms pose a greater challenge for banks, due to their competitive ages (Alt *et al*., 2018). Big fintech firms created platforms which enhance customer experience, through unique real time information on the goods, sales, and consumer contentment levels of companies using their platform (Chuen &Teo, 2015). Furthermore, they can watch revenues and marketplace structure, approximating the companies' income-generating capacity. These firms also have information that can be used to infer customers' test, choices and living standards. Such data can be exploited for credit underwriting which is the core service of traditional banking. The second advantage of Big Techs is a wide customer base and they also subscribe to customer-centric business principles. They can easily harness the customer-specific data in a more efficient and effective manner than banks that are usually myopic on products like loans, deposits, and mortgages. Third competitive advantage is the ability to manage and exploit big volumes of data into meaningful information for marketing (Admati &Hellwig, 2013). Furthermore, financial capacity of these fintech companies presents a competitive advantage since these financial resources can be harnessed towards the expansion of financial intermediation business (Panetta, 2018). Looking at major changes that have taken place in the financial innovation, commercial banks in developing countries seem to be immune to these disruptive innovations since commercial banks are also employing FinTech (Mutua, 2010). Mutua (2010) argued that most financial innovation is tapping into the abandoned informal markets and unbanked rural folk.

Technology enabled innovation in financial services sectors growing at an increasing rate and it is redefining the banking sector and the future prospect of FinTech landscape in Zimbabwe (RBZ, 2017). In light, of the changes the RBZ is looking at the level of adoption of technology at the same time ensuring the integrity of financial markets and payment systems, consumers' protection and investors, and protection of overall financial market stability. For the moment, the banking sector and private segment will find ways of harnessing the business

opportunities from FinTech developments whilst safeguarding against risks associated with FinTech insurgency (RBZ, 2017).

1.2.1 Zimbabwean banking sector

The banking sector in Zimbabwe is well advanced and effectively regulated by the central bank. The banking sector is made up of 13 commercial banks, 5 building societies 2 Merchant Banks and 1 Savings Bank.

Table 3: The structure of Banking Sector in Zimbabwe

Type of Institution	**Number**
Commercial Banks	13
Building Societies	5
Savings Bank	1
Total Banking Institutions	**19**
Credit-only-Microfinance Institutions (MFIs)	203
Deposit-taking MFIs	6
Development Financial Institutions	2
Total non-banking institutions	**211**

Source: RBZ (2018)

The nation's banking sector parade a mixture of a monopolistic and oligopolistic arrangement in which the products and services are differentiated but however similar in nature (RBZ, 2017). The uptake of technology in the global space, digital banking has become wide spread a platform which RBZ feels that will offer opportunity for future economic development (Mangudya, 2017). One major question is whether Zimbabwe is under banked or overbanked? In a country with an estimated population of 15 million accommodating 19 banks and over 200 microfinances on could easily be tempted to conclude that Zimbabwe is over banked, however, the RBZ report of 2013 estimates shows that only 14% had access to the formal banking services and the 2019 estimates demonstrates that 69% of the population had access to formal financial services. The 2014 estimates demonstrate that only 30% of the adults had access to the formal banking services. This low penetration rate may be attributed to failure by formal banks to tap into the rural folk which constitute 62% of the Zimbabwean population. These areas could be penetrated through financial literacy and investing in FinTech (RBZ, 2019). The other reason cited by Chipika (2019) is the location of traditional

banks which prioritise major towns and leaving other areas marginalised. The table below demonstrates the baseline survey results of 2014 on the level of financial exclusion. It is against this background of high financial exclusion rate that the researcher wants to investigate the threats and opportunities that can be presented by FinTech in addressing this high financial exclusion rate.

Table 4: The financial exclusion baseline

Baseline Level of Financial Exclusion in Zimbabwe

2014 CONSUMER SURVEY
- **23%** Financially excluded
- Only **30% of Zimbabwe's adult population made use of banking services** as at 2014
- Only **20% of the adult population made use of formal savings** channels

MSMES 2012 SURVEY
- Only **14% of MSME owners banked.**
- Only **18% of MSME business owners are formally served,** including both bank and other formal non-bank products/services.
- **57% of the MSME business owners** in Zimbabwe **are women**

Financial Service	Level of Financial Exclusion (2014)
Banking	70%
Savings and Investment	53%
Insurance & Risk Management	70%
Mobile Money	55%
Borrowing & Credit	58%
Capital Markets	99%

Source: Chipika (2019)

The Zimbabwean rural populace is still marginalised and financially excluded. The case studies from Bangladesh and Kenya Equity Bank demonstrates that the rural market can be taped into through commitment from banks to find effective distribution channels. The other aspect is that the Zimbabwean economy has turned into informal sector which is now contributing up to 25 % of the GDP and remains generally unbanked to date (RBZ, 2017). In the southern region Zimbabwe is the least in terms of deposits accounts per 1,000 individuals at 139. This means that on average only 139 people have deposits accounts per every 1000 people, leaving 861 people not included in the formal banking system. FinTech was cited by World Bank (2015), RBZ (2019) and Chipika (2019) as the major enabler of the achievement of 2030 sustainable development goal on financial inclusion.

1.3 Problem statement

The emergence of FinTechs has created significant changes in how the financial system operates, with effects on currency, banking, insurance, and a myriad of other industries (Philipon, 2018). Fintech firms are mainly distinguished through their innovative business models which dependent on advanced disruptive state of the art technology. These distinctive features enable Fintech firms to disrupt traditional financial intermediation in financial ecosystem. They focus on their main goals with their lean and agile organizations, minimising costs leveraging on technologies like blockchain; cloud infrastructure which improve user experience.

The new FinTechs are not just small start-ups, but world giants such as Google, Apple, Facebook, Amazon, Alibaba at global level. In the domestic market, the Zimbabwean banking sector has also witnessed the development of FinTechs such as CASSAVA, Paynet, Pay now, Pay save, Telecash, Hello Paisa and One Money, amoung other and their impact on disruption and complementarity to banking has been varying.

The threats and opportunities presented by these clusters of competitors are materially different. On one hand, Fitechs presents direct competition to commercial banks, by providing a rival efficient services premised on technology. Furthermore, FinTechs rides on extensive use of various technologies and multifaceted algorithms that expose both banks and FinTechs to cyber risks which have already proved to be the major financial risk of the 21st century. For instance, in 2017 alone, the spread of two threads of malicious software WannaCry and NotPetya through the interbank messaging service (SWIFT) caused a significant theft of money from British National Health Service (BNHS) and Moller-Maersk of Denmark, customers, and numerous central banks (Nakaso, 2016).

On the other hand, Fintechs do not operate in a vacuum, rather they have premised their operations on banking sector business, systems and sector, providing a dimension of value added service to banks. Some Fintechs have partnered banking institutions, thereby, enhancing the quality and efficiency of banking services.

The digital revolution in the financial services sector, therefore, continues to cloud the minds of both practitioners and academia with regards to their impact on the future of the banking sector. Fundamental questions remain, particularly on the relationship of banks and FinTechs

and the resultant risks and complementarities that fintechs presents to commercial banks. Therefore, this research assessthe opportunities and challenges brought by Fintech to commercial banks in Zimbabwe.

1.4 Research objectives

- To determine the drivers behind FinTech Development
- To establish the opportunities presented by FinTechs to the Zimbabwean commercial banks
- To unearth the threats posed by FinTechs to the Zimbabwean commercial banks
- To establish the strategies being employed by the Zimbabwean commercial banks to cope with this disruptive technology
- To find the implications of FinTechs to the regulation of financial services sector

1.5 Research questions

- What are the drivers behind FinTech Development?
- What are the opportunities presented by FinTech to the Zimbabwean commercial banks?
- What are the threats posed by FinTech to the Zimbabwean commercial banks?
- What are the strategies being employed by the Zimbabwean commercial banks to cope with this disruptive technology?
- What are the implications of FinTech to the regulation of financial services sector?

1.6 Assumptions of the Study

This research is based on assumption that the FinTechs and Banks will be the relevant sample to investigate the threats and opportunities presented by financial technology to Zimbabwean commercial banks. It is further assumed that the respondents will provide their true position on the questions to be asked in research instruments.

1.7 Justification of the study

The research findings shall not only help the researcher, but also the regulator and other players in the financial services sector who could be bereft of an understanding of the real threats and opportunities presented by financial Technology. It is also expected to add to the body of knowledge for the University of Zimbabwe. The findings of this research will benefit banks and FinTech companies in coming up with response strategies to these disruptive technologies brought about by evolution of financial technology. The research findings will

also help the regulatory policy framework developers to have a full understanding of the link between commercial banks and FinTechs and their possible implications to financial market stability regulation.

1.8 Scope of the study

The study shall concentrate on Zimbabwe's eleven commercial banks and FinTech companies. However, since FinTech is international some materials shall be imported from countries with developed FinTech.

1.9 Limitations of the Study

Time and financial resources are the major constraints that are likely to affect this research. Therefore, the researcher expects to make use of cost-effective means of collecting data such as information and communications technology. The second limitation of this study is the potential for bias inherent in the 'within-subjects' comparison technique. A larger survey in which respondents receive only a single scenario accompanied by more detailed questionnaires including more items per construct would stand as a replication and refinement of this study.

1.10 Organisation of study

This research proposal will act as the introductory chapter to the study. Chapter two - Literature Review: explains both theoretical and empirical evidence of the study. It gives different opinions from different authors pertaining to the subject in the question.

Third Chapter- Research Methodology: give details of the research design that will be used in the study to obtain all the results from the study. This chapter will show in detail the tools to be used for gathering all the necessary data for the research, how it will be conducted and how the gathered data would be presented for analysis.

Fourth Chapter- Data Presentation and Analysis: Presents all the data that will be gathered in the second chapter in form of tables, charts and graphs for analysis purposes.

Fifth Chapter- Research Findings, Conclusions and Recommendations: gives a summary of the research findings and conclusions for the data that was collected and analysed. Recommendations to the FinTechs, banks and policy makers are given. Suggestions for future study are also made explicit.

1.11 Chapter Summary

This chapter established the research topic and the motivation of the researcher in carrying out this research. The background of the study was presented so that the audience can easily understand the problem which gave rise to this research. This chapter also seeks to provide organisation of the study including the tools used to carry out the study. Research objectives were established and how those objectives were achieved.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

Existing literature provides the basis for the justification and importance of the study and its objectives (Bryman and Bell, 2011). The theoretical framework discusses FinTech study in a broad viewpoint from theories that build Open Innovation and cascade down to Open Innovation in provision of financial services. The open innovation covers disruptive technological advancement, new business models, investments, strategic partnerships and new regulatory policy framework in FinTech arena. The chapter began with the definition of financial technology which gave a full picture of the research dimensions namely the drivers of fintech, the opportunities, the threats and the solutions to the threats. In addition, the short history of financial technology was also included in this chapter.

2.1 The History of the Financial Technology Evolution

In 1967, the Automated Teller Machine (ATM) was launched in Britain and was the beginning of modern technology in banking industry. In the period 1967-1987 monetary services industry changed from an analogue to a digital enterprise (Arner, Barberis, & Buckley, 2015). The change from manual banking to automated teller machines has resulted in the innovation of banking services where mobile banking is another example of the innovation. Late in the 1980s, the financial services enterprise had primarily become into a digital industry, based totally on the electronic transactions between economic individuals and several companies. The innovation and development in the banking sector has resulted in the improvement of business transactions and elimination of banking services through new financial offering companies (African Development Bank, 2013). The development of financial technology was evidenced in the USA in 2001 when eight of its banks had online customers which were more than one million. (Aglionby, 2016).In addition, in 2005 the first banks without consumer offices emerged in the United Kingdom making use of financial technology a necessity and making it popular worldwide (Alt & Puschmann, 2012).

In the early 2000s, also a lot of activities of banks were digitalized, which was mirrored by spending in information technology by using the economic services industry especially the banking industry (Dayadhar, 2015). Also, market regulators, particularly protection exchanges, stored more and more using information technology on regular basis. According

to Arner, Barbarisand Buckley (2015), the Global Financial Crisis marks a turning factor in the records of financial technology development since the use of physical banks where customers use to visit the banks was no longer viable. The disaster has been an accelerator for the increase of a new financial technology duration (2009-now). The market stipulations changed, thereby imparting opportunities for new advanced companies to establish on the market hence information technology being the most viable option in settling those (Dietz, et al., 2016). Financial Technology zone has been evolving in the course of and after the Global Financial Crisis, which makes it so fascinating to see the IPO overall performance of firms before and after the crisis (Foy, et al., 2015).

Investors, companies, market contributors and even regulators can benefit from the findings of research, as it will touch some of their working fields in a benefiting way and manner. For instance, innovative start-ups are always a fascinating (investment) target for competitors and/or investors, however on the different hand, are also interesting to deliver to the stock market, for the founders of the companies. Besides, in the (near) future possibly a growing variety of Financial Technology corporations will operate an IPO. As in case of the IPO of Lending Club, the place the under-pricing was high, the founders, buyers and Lending Club itself, ought to have had extra proceeds if they knew what factors were affecting the degree of under-pricing of Financial Technology companies. The elements affecting the under-pricing of Financial Technology companies can be different from the elements affecting the under-pricing of organizations of different sectors, which are usually examined in general, as an alternative of on a precise sector.

2.2 Theoretical framework

In the words of Kutvonen (2016), numerous theories build up Open Innovation paradigm. The following are the theories behind open innovation, Knowledge-Based View of the Firm (Grant, 1996; Spender, 1996), Dynamic Capabilities (Teece et al., 1997; Teece, 2007), Organizational Learning (March 1991; Levinthal and March,1993; Nonaka, 1994), Relational View, Resource Dependence Theory and Game Theory. This research prioritised the use of Dynamic capabilities and organisational learning theories. These theories were chosen since they express how FinTech is developed, they also reflect how firms create information, build dynamic capabilities and trigger transformation in organisations in an ever-changing

environment. Consequently, these theories occupy a special position as compared to other theories that build Open Innovation in this study.

2.2.1 Dynamic Capabilities

According to Teece *et al*. (2007), Dynamic Capabilities theory mainly focuses on private enterprises in an ever-changing environment and explains how wealth is created in these environments. The theory states that company's specific processes, assets covering knowledge assets and matching assets and adopted, or inherited evolution pathways shape competitive age of organisations (Teece *et al*., 1997). This theory is a product of Resource-Based View (RBV). Furthermore, it closes the gap on how to generate sustainable competitive age in an RBV (Cavusgil *et al*., 2007). According to Teece (2007), long term superior organisational performance can be built through crafting dynamic capabilities. In this study, Dynamic Capabilities methodology tries to obtain answers on the ways to create wealth and their possible implications to Zimbabwean commercial banks. Consumers require the harmonisation of services and networks. Diverse information channels and respondents involved in many products. Emerging challenges may demand new viewpoints to resolve them. Incumbent financial services providers have a bias to solve emerging challenges with existing convictions and knowledge bases and these lead business leaders not to fully exploit emerging opportunities. Furthermore, strong balance sheet may make it challenging for incumbents to craft dynamic capabilities, whilst business leaders who manage to build dynamic capabilities regardless of legacies issues can make a huge impact (Teece, 2007). Transformation, learning and transmission of capabilities have become tremendously imperative (Cavusgil *et al*., 2007).

2.2.2 Organizational Learning

Firms operating in an environment characterised by rapid changes and striving to build dynamic capabilities must be in a better position to create valuable information and process it to guide decision-making process (Erman, 2017). The transformation of an organisation into an innovative organisation is driven by the skills and capabilities which it possesses. It is imperative noting that individual attitudes and competences are vital to the creation of an organizational knowledge building (Nonaka, 1994). Organisations follow their learning curves, successes or failures shape the organisations' success experimentally. Organisational success is now a function of its state of technology. In technology sense, firms employ three

kinds of tactics to learn. These are respectively "adoption of search strategies, improving search competencies and adopting their aspirations to learn what to hope for" (Levinthal and March 1981). Organizational learning theory adds to understanding of how firms create information and drive the transformation and application of Open Innovation approaches in FinTech space better.

2.2.3 Open innovation in services

The technological breakthrough in mobile technology has shortened the life cycle of many products (Erman, 2017). The new information technology has made it easy for various firms to enter highly regulated industries through the application of open innovation principles. Due to high levels of competition firms are now developing customised products in shorter periods (Hidalgo &D'Alvano, 2014). The fast-changing consumer needs has forced even famous companies to produce products and services which are customer-oriented. Chesbrough (2010) postulates that distributed information and manufacturing, reduced cost of transport for manufactured goods around the globe, the reduction in life span of the product in the market create a commodity trap for product-oriented firms. Lack of intellectual property rights in financial technology has made it easier for other players to develop me-too products through reverse engineering. This status quo forces firms to migrate from their product-oriented strategies (Chesbrough, 2010).

Open service innovation is a useful approach to run away from this commodity trap. The open service innovation comprises four steps. The first stage entails that firms should evaluate their products or services open businesses for making differentiation. This perception demands a paradigm change in the firm's culture and mindset. According to Silva (2014) innovation process can be explained in two broad categories namely innovation in back-end processes and innovation in front-offices. Most firms are splitting their front-end and back-end organisations since they demand implementation of unique strategies. While front-end organizations are facing with customers and require customized solutions, back-end systems are more cost and efficiency-focused. Secondly, the customers should be included in the creation process. Thirdly, firms must apply Open Innovation approaches for improving innovation and this helps reducing time and resources needed for transformation. Lastly, tapping into already existing platform and infrastructure will make it possible to enjoy innovations established by other firms (Chesbrough, 2010).

2.3 Drivers of fintech

The world is turning into a global village through globalisation where banking and monetary transactions across the world should be easily done and convenient to all business partners. Many factors have driven the introduction and expansion of financial technology which are globalisation, convenience, customer's tastes and preferences, long distances and financial inclusion.

2.3.1 Digitalization of Financial Services

Russell, *et al*. (2017) postulated that because of digitalization several financial institutions including the banking industry have changed the way they communicate with the clients and the way of doing business has changed greatly. Historically, customers used to consolidate their financial needs at a certain branch in a certain city or area convenient to where they work getting the help from staff from the bank in making deposits, withdraws and applying for loans but with impact of digitalization computers and phones have replaced the physical banks and their staff where all those can be performed home (Foy, et al., 2015). Goyal and Vishal –Kuman, Ishank, (2017) coined that with digitalization, customers now frequently and easily access banking services online, promoting convenience and comfortability to the customers hence making financial technology inevitable. PWC indicated that around 49% of consumers in the whole world both the developed and the developing countries are now carrying out their banking at activities either their homes or companies or even travelling utilizing the smartphones and computers. The report also indicated that several banks in the United States of America are expecting an 8% downfall in their activities whereby by 2027 20% is expected to be experienced.

Consumers are no longer restrained to the handful of firms with local branches, however, instead can shop for the great pricing or offerings amongst dozens, if now not heaps of agencies online (Adongo, 2015). While this opens the door for extra typical corporations to compete against every other, it additionally allows entirely new firms with unique commercial enterprise fashions to enter the space, such as digital-only banks and insurance plan companies, as properly as peer-to-peer lending and crowdfunding platforms (KPMG, 2016). While these FinTech corporations frequently lack the scale of more traditional firms, they are searching for to leverage their nimble shape and know-how in technology to actively disrupt the status quo. Many consumers are incorporating these FinTech offerings into their

monetary lives, with EY estimating that 33% of the global digitally lively populace has already adopted FinTech.

2.3.2 Rising Number of Payment Options

These days even the coffee shops opt to offer in-store services with the aid of computers and cell ordering alternatives to customers, while accepting physical charge in cash, debit, credit, present cards, as well as digital payments from mobile wallets on phones and wearables, money transfers from apps, and now and again even in a variety of crypt occurrences (African Development Bank, 2013). Take, for example, the payment methods prevalent at Starbucks, in accordance to their website: Gift cards, Starbucks Mobile App, Chase Pay, Apple Pay, PayPal, Visa Checkout, Credit Cards, and Cash (listed in that order!). All these forms of fee want to happen instantaneously, whilst ensuring security, reliability, and integration across the business's different accounting, inventory, and order fulfilment systems hence the role of financial technology is created (Błach, 2011). For many firms, presenting such a complex internet of payments preferences requires working with third-party FinTech firms that offer point-of-sale hardware, cloud-based software solutions, and repayments infrastructure to facilitate these transactions. The cease result is that repayments companies are entrenched as a vital aspect of retail business operations around the world.

2.3.3 Tapping into the Emerging Markets' Middle Class

FinTech companies with digital-only techniques enjoy notably scalable platforms due to this fact majority of their costs are in the preliminary software development and infrastructure buildout (Ackley & Malady, 2015). There are nominal prices to web hosting extra servers and storage, however, in the digital age, these charges are minimising travelling cost and enhancing convenience to the customers (Echchabi, 2014). Comparing this to a common tax prep firm where adequate additional clients requires setting up a new, utterly staffed branch of tax advisors and bringing on extra back-office assist to set up accounts (Błach, 2011). What does this have to do with the rising markets' middle class? Previously, many financial services firms, from banks to investment houses, or even tax preparers, had no wish to spend the money required to lengthen their offerings to this group (European Investment Bank., 2013). The predicted income truly may want to not cover the incremental costs hence FinTech firms are uniquely located to serve them. Given their highly scalable platforms, adding a middle type banking consumer with a few thousand dollars in savings or who requests a loan for a few thousands may additionally still be profitable. Factoring in the size

and growth of the rising markets centre class, tapping into this group may want to meaningfully accelerate FinTech's growth. In China and India, the wide variety of middle type customers is developing at 6% per year, compared to simply 0.5% increase in developed markets. Globally, the middle category is including about a hundred and sixty million people every year. In all, Accenture believes there is $380 billion in manageable revenue from extending monetary offerings to the unbanked. In our opinion, FinTech corporations are the best-positioned to capitalize on this opportunity (Ionescu, 2012).

2.3.4 Expansion beyond Traditional Financial Services

Many FinTech corporations are exploring new technologies and services to complement their core offerings. One place receiving great attention is blockchain and crypto-assets where currently, agencies representing one-quarter of the Global X FinTech ETF (FINX) are actively concerned in some way on blockchain or crypto-assets (Kama & Adigun, 2013). Many of these firms view blockchain/crypto as a disruptive, excessive growth doable technological know-how and are leveraging their understanding in programming, payments, or market shape to help develop this field (Błach, 2011). Some FinTech companies are additionally getting into areas greater tangential to their core business, such as repayments companies presenting marketing, operations, and human resources software. Given their giant client base, knowledge in software development, and understanding of small business needs, these firms consider they are well-positioned to offer a broader vary of merchandise to help control a business (Kamau, 2011).

2.4 Opportunities and threats

New technologies such as "BlockChain" also enhance the effectivity of financial technology (Peters & Panayi, 2016; Wood, 2015). The regulations surrounding banking sector has resulted in the birth of many micro finances offering the similar services but utilising the financial technology. According to Peters and Panayi (2016), decreasing counterparty and contract risks in shortening the contract cycle from three days to 2 days will benefit numerous markets in decreasing counterparty and agreement risks, and Block Chain technologies have the practicable to lead to near-instantaneous settlement. An opposite look at the FinTech asserts that advances in monetary technology have failed to decrease intermediation expenses (Philippon, 2015). According to Buchak, *et al*. (2017), FinTech lenders, in reality, they offer higher activity fees than non- FinTech lenders, but the issue of convenience and time of process advantage them. To provide a complete seem to be at the predicted effects that

encapsulates the doable threats and opportunities that FinTech offers for the economic markets and banking sector, we explored the reports and research that performed through the important our bodies fascinated in the monetary markets and establishments in addition to published studies. Some of these sources took the opportunities and threats of FinTech in widespread (BCBS, 2017), others took it for specific segments of FinTech companies (IOSCO, 2017). Though the present research focusses commonly on the banking industry, as they accept as true with that the FinTech have merely the effect on the financial markets and banks with some mild differences. Keeping in idea that the benefit of possibilities and the degree of publicity to the risks not equal to industry, it depends on many elements as the nearby environment, management, and international surroundings changes. The ability to Create Strategic Value utilizing Financial Technology is what makes the required difference between banks

2.5 Opportunities for Financial Technology.

Several academic reports and researches identified different opportunities of financial technology to the banking sector and how the banking services were improved (Financial Stability Board, 2017). The following are the opportunities of financial technology to the banking sector.

2.5.1 Greater access to capital

Due to financial technology in the service industry, many businesses have access to capital without many complications compared to when the banks were the sole providers (Karpowicz, 2014). In addition, due to the introduction of technology, several banks, especially in developed countries, have managed to attract investment from different parts of the world conveniently and offer services worldwide (Kenyoru, 2017). European Investment Bank., (2013) postulated that banks like Barclays and standard chartered have managed to raise enough capital when they started partnering banks in different countries enhancing its growth as a result of financial technology. In research on the impact of technology on the development of banks postulated that as a result of financial technology banks that adopted the technology efficiently have excelled taking ABSA bank as an example which is excelling of its partnership with the Barclays bank. In addition, the financial technology have resulted in the mobile networks offering services traditionally offered by the banks resulting in the collaboration between the services these service providers with the banks enhancing the capital structure of the banks (Ackley & Malady, 2015).

2.5.2 Financial inclusion

Digital finance has accelerated get entry to monetary services by means of under-served groups where financial technology can attain remote locations (Adongo, 2015). FinTech Platforms are increasingly concentrated on large-sized trades and are moving to company and executable orders. Inclusion of new asset lessons is any other side of this opportunity, as example, many Distributed Ledger Technologies (DLT) specialists be aware that one of the benefits of DLT is that belongings that are costly to source, transact, and supply such as commodities, energy products, art pieces, actual estate, and private equities can be "tokenized" for securitization, which in flip makes them accessible for buying and selling and as collateral (Dietz, *et al*., 2016).

2.5.3 Better and extra tailored banking services

Banks can advantage from the specialization of FinTech companies to enhance their standard choices to deliver them in a value effective and bendy way (Russell, *et al*., 2017). Banks may, for example, white-label Robo-advisors to assist customers navigate the funding world and create a better and tailored purchaser experience (KPMG, 2016). In addition, the entities can also partner with these financial service providers so that they can utilise the benefits of technology as alluded by Ncube, (2015) who coined that Steward bank and other banks have successfully partnered eco cash and they are reaping the benefits as eco cash transactions sometimes profits them. He further stressed the fact that nowadays the need to queue for money in the banks have been eradicated proving to be a convenient benefit to customers at the same time banks also benefiting.

2.5.4 Cost advantage

This is because fintech companies provide lower transaction charges and faster banking services and sometimes carry out their transfers and payments and reduce their costs, as with cross-border transfers, fintech companies can provide faster banking services at an advantageous and viable cost (KPMG, 2015). Several markets have skilled advantages in reducing counterparty and settlement dangers in shortening the settlement cycle from 3 days to 2 days, and blockchain applied sciences have the viable to lead to near-instantaneous settlement (Kenyoru, 2017). Potential high-quality influence on monetary stability due to increased competition: The entry of new gamers competing with incumbent banks should

eventually fragment the banking offerings market and limit the systemic danger related with players of systemic size (Kamau, 2011).

2.5.5 Regulation Technology (Regtech)

Contemporary progressive technologies can assist economic establishments comply with regulatory requirements and pursue regulatory targets (as prudential requirements consisting of reporting, consumer protection). Banks can gain from Regtech with extra wonderful approaches to improve their compliance and risk management (Kamau, 2011). It might also be a capacity of coping with trade in the regulatory surroundings and riding down the charges involved in meeting the or responding requirements (Aglionby, 2016).

2.5.6 Enhancement in Security:

For one of the core tendencies in FinTech, safety is constructed into the blockchain via encryption of the blocks and the linkages between the blocks. Furthermore, attacking every node in a blockchain is greater tough with present state technological know-how than to attack a central database (Karpowicz, 2014). FinTech Platforms additionally offering several techniques to protect anonymity and prevent data leakage (Karpowicz, 2014). It is extraordinarily important to be aware that the clear advantages from fintech, need to not be at the cost of security and soundness, and patron protection. Banks and bank supervisors need to keep the identical level of hazard management, control requirements and protections to new emerging shipping channels and offerings being delivered by using financial institutions via fin-tech (Russell, *et al*., 2017). Banking standards and expectations are sufficiently flexible to accommodate innovations inside the splendid statutory authorities of jurisdictions; nonetheless, the excessive requirements for safety and soundness and consumer safety objectives required in the banking enterprise need to be maintained (BCBS, 2017).

2.6 Threats of Fintechs

Like any development, the Fintech encapsulate now not solely advantages and opportunities, it affords a wide variety of risks that cut throughout a range of sectors and regularly combo each tactical and strategic danger elements (Goyal & Vishal –Kuman, Ishank, 2017). The FinTech dangers and threats come mainly from worries about the operational risk, compliance, liquidity and volatility of financial institution funding sources, and the extreme

competition (Lim & Ting, 2012). The following danger associated with FinTech, mainly in the banking sector.

2.6.1 Competition on market share (Strategic risk)

The conceivable for fast unbundling of bank offerings to non-bank fin-tech or BigTech companies increases risks to profitability at man or woman banks (African Development Bank, 2013). Existing financial establishments stand to lose a sizable part of their market share or income margin if new entrants can use innovation more efficaciously and supply much less highly-priced offerings that higher meet consumer expectations (Echchabi, 2014).

2.6.2 Risk of collapse, fraud or malpractice through the platform or some of its users

Certain instances of platform fraud have materialized. Fraud can happen with events presenting (and buying) securities on the platform (European Investment Bank., 2013).

2.6.3 High operational threat – systemic dimension

The upward thrust of fintech leads to greater IT interdependencies between market gamers (banks, fintech and others) and market infrastructures, which should purpose an IT risk match to expand into a systemic crisis, in particular, the place offerings are concentrated in one or a few dominant players (Echchabi, 2014). The entrance of fin-tech firms to the banking industry increases the complexity of the machine and introduces new gamers which may additionally have limited information and experience in managing IT risks (Ionescu, 2012).

2.6.4 High operational chance idiosyncratic dimension

A proliferation of modern products and offerings can also extend the complexity of monetary offerings delivery, making it extra tough to manage and manage operational risk (Mbutor & Uba, 2013). Legacy bank IT systems may additionally now not be sufficiently adaptable or implementation practices, such as trade management, may also be inadequate (Echchabi, 2014). This type of threat primarily attributed to the dependence on the Robo-advisers, which purpose technical dilemmas like blunders in algorithms, overly complex algorithms, overly simplistic algorithms, and static patron information (Dayadhar, 2015).

2.6.5 Increased difficulties in meeting compliance requirements and mainly Anti-money laundering and countering the financing of terrorism AML/CFT obligations:

The higher degree of automation and distribution of the product or service among banks and fintech companies can result in less transparency on how transactions are finished and who has compliance responsibilities (Alt & Puschmann, 2012). The Risk of conducting standard solicitation/ unlicensed activities grew to become greater than before, platforms may also contend that they do no longer engage in regulated things to do because they only offer execution-only services, statistics services, and matching services (Dayadhar, 2015). Besides, many FinTech systems may also lack standardization and furnish much less element than securities in the public markets (Aglionby, 2016).

2.6.6 Liquidity danger and volatility of bank funding sources:

The use of new technological know-how and aggregators creates possibilities for clients to routinely exchange between exceptional savings accounts or mutual dollars to achieve a better return (KPMG, 2015). While this can amplify efficiency, it can also affect patron loyalty and amplify the volatility of deposits. This in turn may want to lead to higher liquidity risk for banks (African Development Bank, 2013).

Fig 2.1: Risks and Opportunities

	Risks	Opportunities
Impact on consumer sector	A. Data privacy B. Data security C. Discontinuity of banking services D. Inappropriate marketing practices	A. Financial inclusion B. Better and more tailored banking services C. Lower transaction costs and faster banking services
Impact on banks and banking system	A. Strategic and profitability risks B. Increased interconnectedness between financial parties C. High operational risk – systemic D. High operational risk – idiosyncratic E. Third-party/vendor management risk F. Compliance risk including failure to protect consumers and data protection regulation G. Money laundering – terrorism financing risk H. Liquidity risk and volatility of bank funding sources	A. Improved and more efficient banking processes B. Innovative use of data for marketing and risk management purposes c. Potential positive impact on financial stability due to increased competition[15] D. Regtech

Source: BCBS.

2.9 Solutions to Threats.

The In spite of the rising wave of FinTech and aggressiveness in taking place in the global monetary and banking system, usual banks have no longer yet exhausted the chances for upgrades along these strains (Mackenzey, 2015). As it is mentioned earlier; FinTech as a task

encapsulates many challenges for the standard vendors of economic offerings in well-known and banking enterprise particularly. Many bank leaders around the globe searching at FinTech indicates it as an opportunity to "pump" new blood to the normal banking device as a complement to the retail banking services. This can be bought through joint partnerships, provider outsourcing, project capital funding, or acquisitions. For these banks, FinTechs merits outweigh the demerits (Lines, 2016). Moreover, collaborations between banks and special FinTech corporations as start-ups also gain these firms, it might also get right of entry to world fee systems and the banks' customer base. This lowers the barriers of entry for FinTech companies to the economic quarter and permits them to acquire more trust from their customers (Juengerkes, 2016). According to Mackenzey (2015); "an overarching assignment for banks is how to “open up” structurally both in phrases of how they leverage partnerships and how they allow different entities to access their capabilities. Those banks that pursue inattentive method to assembly this assignment will be first-class located to evolve their commercial enterprise fashions and locate new sources of fee for their customers whilst performing properly financially".

Different institutions recommended required response of banks to advantage from the accelerating wave of FinTech to maximize the opportunities and reduce the threats that FinTech companies signify for the banking enterprise or the risks related with adopting Fintech solutions in banking works (Kama & Adigun, 2013). Ten key observations recognized through BCBS (2017) and ten guidelines counselled to deal with FinTech base on these recommendations, they centred on the required movements to be taken by means of the banks' management, such as making sure the protection and soundness of the banking system with minimising the threat of inadvertently inhibiting advisable innovation in the financial sector, acquiring high-quality governance buildings and threat management processes and superb IT and other chance administration processes (Dayadhar, 2015). In addition to investigating and exploring the attainable of new technologies to enhance their strategies and methods and evaluate their current regulatory, supervisory and licensing frameworks in mild of new and evolving dangers springing up from revolutionary products and business models.

Use data-driven insights and analytics holistically throughout the bank. Competitor FinTech vendors powered by way of records and analytics, massive client ecosystems (e.g. Facebook, Google, Apple), or some of the greater modern monetary establishments are opening new battlegrounds in areas like customer acquisition, patron servicing, credit score provision,

relationship deepening via cross-selling, and patron retention and loyalty. Consider the provision of deposit–one of banking's remaining huge moats. The large-scale availability of new and huge records (and the truth that banks no longer have a monopoly on such information which they have constructed and leveraged over centuries) is pushing banks to radically seriously change simply to maintain up. Building a comprehensive records ecosystem to get admission to purchaser data from inside and beyond the bank; creating a 360-degree view of client activities; developing a strong analytics and facts infrastructure; and leveraging these to pressure scientific (versus case law-based) decisions across a large vary of things to do from purchaser acquisition to servicing to cross-selling to collections - all are essential to a bank's future success. Create a well-designed, segmented and integrated patron experience, as a substitute than one-size-fits-all distribution. The days of banking being dominated by physical distribution are swiftly coming to an end. The proliferation of cell devices and transferring preferences among demographic corporations suggest that clients assume extra real-time, cross-channel capabilities (e.g. reputation inquiries, problem-resolution) than ever before. Physical distribution will nonetheless be relevant, however a way much less important, and banks must examine to deliver offerings with a compelling layout and a seamless unconventional purchaser experience and build digital marketing abilities that equal experience E-commerce giants. Today, banks are in a fight for the customer, not only with other banks however also non-banks (Adongo, 2015). To fill the gap in advertising and marketing competencies that currently exists between e-commerce players and banks, banks ought to master digital media, content marketing, digital patron lifecycle management and marketing. Building these skills and recruiting and protecting digital advertising Genius will require huge time and investment (Goyal & Vishal –Kuman, Ishank, 2017). Aggressively mitigate the conceivable fee advantage of attackers thru radical simplification, process digitization and streamlining. After the closing dot-com boom, banks effectively electrified core processes (Karpowicz, 2014). Now they must digitize them. This will be a multi-year process for banks, as it will require the integration of a couple of legacy systems and attainable re-platforming to enable simply digitized processes (Alt & Puschmann, 2012). Simplification, digitization and streamlining possibilities exist throughout larges wraths of banking operations (Mbutor & Uba, 2013).

Rapidly leverage, installation the subsequent technology of technologies, from cell to agile to cloud. The science agenda for banks and bank CIOs has end up even more demanding and complex. First and foremost, "mobile-first" is no longer simply a buzzword it is the clearest

directive banks may want to acquire from shoppers about how they desire to have interaction with their service providers (African Development Bank, 2013). Secondly, banks must give a boost to not only their applied sciences but additionally their inner approaches and cultures, to protect customers' data from breaches (Błach, 2011). Third, the pace of innovation in banking is accelerating rapidly, requiring banks to make bigger their velocity to hold up, consisting of software improvement via methods such as agile and non-stop delivery (African Development Bank, 2013). Finally, extensively faster, nimbler and dramatically lower-cost versions of processing and storage technologies are now commonplace Banks want to go onto such platforms, retiring and changing legacy systems quickly (European Investment Bank., 2013). Since such structures are neither without problems nor shortly replaced, many banks may pick to pass to a "two-speed architecture" strategy that builds greater bendy layers of science on top of existing systems, but still attracts on and interacts with those structures to furnish the subsequent era of science agility and seamless customer experiences. From providing virtually scalable utility structure with a particular emphasis on mobile to addressing the cybersecurity threats they face every day to mastering agile shipping and modernizing their infrastructure, banks have a difficult but important avenue in advance in constructing next-generation technology capabilities (Echchabi, 2014). Rethink legacy organizational buildings and selection rights to help a digital environment. The ordinary enterprise chart of any bank will show a matrix of products and channels, with bodily distribution typically leading in dimension and scope (Aglionby, 2016). The P&Ls that accompany these matrices vest power in the proprietors of the channels and merchandise that are most likely to be in the firing line of FinTech attackers (African Development Bank, 2013). These attackers are usually oriented to patron metrics tied at once to their financial performance. In contrast, most banks have consensus-oriented cultures that require a long time to build alignment (African Development Bank, 2013). Banks must complement their existing P&Ls with techniques that enable quicker adaptability to exterior changes and foster cultures that assist quicker decision making. Banks ought to think tough about how best to arrange to aid the preceding imperatives (Dietz, et al., 2016).

2.10 Empirical evidence

2.10.1 Financial technology in India

India, like China, has a world-class tech industry set against the backdrop of a financial services industry that no longer serves but supports the mass market and small businesses.

Over the last decades, a strong technology zone based primarily on world-leading software and technological know-how has developed(Alt & Puschmann, 2012). This has created a tech ecosystem that includes skills and capital to support a burgeoning FinTech sector, including payment innovators, digital small organization and retail loans, non-public monetary management, and insurance. India's tech region was held back by laws that restricted unlicensed entities from doing banking things while retaining high boundaries to obtaining a banking license. New policies introduced in 2014, however, will allow tech companies to compete. Most FinTechs have already bought and applied for licenses(Błach, 2011).Significant advances in infrastructure, notably digital identity that can be linked to bank accounts, have provided an opportunity to limit on-board customer prices and ongoing compliance(Ionescu, 2012).These developments in law and technology pave the way for both mainstream and non-traditional companies to extend the provision of monetary offerings.

2.10.2 Financial technology in Kenya

In Quadrant IV, Kenya appears as an early adapter of mobile money simply under Quadrant I, highlighting the accelerated reach of its monetary quarter thanks to Kenya's mobile money system, M-PESA, launched in 2007 by Safaricom, the country's largest mobile network operator(Dietz, et al., 2016). Mobile transactions are reworking Kenya's repayments system; they hit a record $33 billion in 2016 and accounted for 67 per cent of transactions tracked with the aid of the National Payments System. In November 2012 Safaricom, collectively with Commercial Bank of Africa (CBA), brought M-Shwari, leveraging the M-Pesa community to grant credit score and lending products without delay onto a phone handset. M-Shwari grew rapidly; via 2014 it had been in position to mobilize deposits of $1.5 billion and had disbursed loans of $277.2 million. CBA’s market share of deposits rose to 6 percentage in 2015 from 4.7 percentage in 2012, and its share of the total quantity of bank bills grew to 37 percentage (12.9 million accounts) from 7 percentage in 2012 (1.1millionaccounts). CBA’s contribution to opening bank accounts represented close to 12 million of the total 19 million new money owed in Kenya from 2012-2015, and Equity financial institution accounted for every other 5 million. While M-Pesa supplied the pipes for CBA’s growth, seize of value-add in monetary services seemed to shift again to the banking sector.

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2.10.3 Financial Technology in Zimbabwe

Financial technology in the banking industry in Zimbabwe has become a focal area where strategies for the foreseeable future should be based on (KPMG, 2015). It has become a very

strong revolutionary force since the incomes of the banks are significantly being affected by non-funded income lines, being driven by innovative products. Financial technology introduction acted as a solution to the scarcity of cash in banks and the inability of Zimbabwean banks to provide financial services (African Development Bank, 2013). In addition, the shortage of cash has also resulted in innovations by banks to overcome the negative effect of cash shortages by introducing swiping and Eco cash link (Russell, et al., 2017). According to Mushayavanhu, (2018) the chief executive of FBC bank postulated that any institution in the banking industry have to adopt to financial technology to survive the current environment of globalization where technology is the only way to go.

Several banks at the end of their financial years indicated the need to focus on financial technology as it improves the quality of the services, enhances the competition and also for survival in the cashless environment. Mutandagayi, (2018) the ZB financial holdings chief executive acknowledge the need to make use of financial technology in engendering efficiencies and responding to the changing customer demands. Agribank financial statements reported an increase of 35 percent in the non-interest to US$16 million in 2018 from US$12 million in 2017. Malaba, (2018) acknowledged the increase was a result of financial technology delivery channels and electronic banking (E-channels) and promised to a strategy of enhancing non-funded e-channels related income.

Stanbic financial institution chief executive Joshua Tapambgwa (2018) stated that the financial institution's online and cell banking platforms are underneath continuous development to give the consumer extra control of their finances. We maintain to force a patron-centric way of life in our improvements leading to the development of consumer friendly and handy technologies (Tapambgwa, 2018).FBC Holdings' Chairperson, Nkala,(2018) stated on the institution's outlook, digital transformation, investment in ICT abilities and strengthening our compliance and risk control frameworks will remain the key enablers or our enterprise going forward.

Metbank additionally expressed commitment to improve provider shipping thru "the upgrade of e-banking and monetary inclusion merchandise," while NMB is intensifying investments digital channels to beautify carrier delivery as well as accommodate the increased transactional volumes created by means of the broadened patron base. The fee that digital enlargement creates is sizeable and to make it extra successful the banking establishments

additionally need to spend money on educating their personnel and customers in order that its revolution can well be maximized that allows you to hold pace with market disruptions and consumer needs (African Development Bank, 2013).

2.11 Summary of the chapter

The chapter reviewed the related literature to the study where a background of financial technology was given in the first parts of the chapter. The theoretical frameworks adopted in this research were also reviewed and the benefits. The objectives were used as the guidelines. The following chapter will concentrate on the methodology of the research under study.

CHAPTER THREE: RESEARCH METHODOLOGY

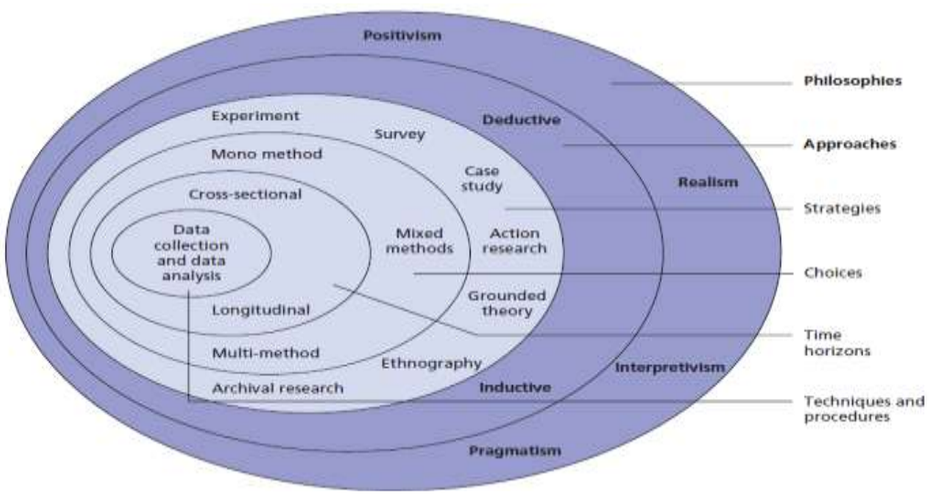
3.1 Introduction

Research is defined as a process undertaken to unearth hidden things in a systematic and procedural manner to increase the knowledge (Saunders *et al*., 2012). According to Sounders the term systematic is based on logical links as opposed to general beliefs. The research process involves the use or application of different methods and approaches. According to Bryman and Bell (2015) research methodology is the examination of, and reason for, the specific method or methods applied in the research at hand. Mackenzie and Knipe (2006) postulated that methodology is the complete approach to a study linked to the paradigm while on the other hand method refers to systematic modes, processes, used for data gathering and analysis. This chapter presents the research design, data collection and analysis methods, as well as the related challenges that are likely to be met during this research.

3.2 Proposed Methodology

Saunders *et al*. (2012) developed a diagram which breaks down the research into several layers like an onion. The research onion will help map and develop the research methodology for this study. This will include selecting a suitable research approach, relevant strategies and philosophies as well as the techniques involved in the collection and analysis of the data.

Diag 3.1 Research Onion



Source: Saunders *et al*. (2012)

3.3 Research Philosophy

Research philosophy relates to the development of knowledge in a particular field and contains important assumptions about the way in which researchers view the world (Mugenda, 2008). These assumptions reinforce the research strategy and the methods chosen as part of the strategy. Philosophy is concerned with views about how the world works and the academic studies usually are driven by an epistemic imperative or the need to create knowledge (Yegon, 2015).

Epistemology was derived from episteme, the Greek word which means knowledge or how we come to know. Blumberg *et al*. (2011) postulated that researches are carried out in broader philosophies of science. They further argued that the science, includes either a subjective or an objective approach to research, and these two main philosophical slants are defined by various key assumptions regarding ontology, epistemology, human nature, and methodology (Holden &Lynch, 2004). According to Bhattacherjee (2012), an epistemology refers to the assumption that the best way to study the world is either to use objective or subjective approach to study social reality. This contains different philosophies of research approaches. Bryman and Bell (2007) explain that epistemology is categorized as descriptive where one can describe a philosophical position that can be discerned in research. Saunders *et al.* (2012) postulated that the fundamental issue is not much about whether the research should be philosophically dependent but, rather how well it is as compared to other philosophies. This study was intended to describe the philosophical position about the threats and opportunities presented by FinTech on the Zimbabwean commercial banks. Essentially there are three epistemological positions: positivism, realism, and interpretivism (Bryman & Bell, 2007).

3.3.1 Positivism/ quantitative

The expression positivism was first coined by a French philosopher August Conte (1798-1857). The philosopher integrated rationalism and empiricism into one integrated philosophy called positivism. Yegon (2015) postulated that theory and observation have a circular dependence on each other while theories may be created via reasoning and that they are only authentic if they can be verified through observations. Positivism advocates for the use of natural sciences in studying social reality and beyond. Positivists believe in the possibility to observe and describe reality from an objective viewpoint in that, they observe the world in some neutral and objective way, discover general relationships and universal laws, derive theories and test them (Yegon, 2015). They further postulated that phenomena should be isolated, and observations should be repeatable. This often involves manipulation of reality with variations in a single independent variable to identify regularities in, and to form relationships between, some of the constituent elements of the social world (Bhattacherjee, 2012). These research aims to investigate the threats and opportunities presented by FinTech on Zimbabwean commercial banks consequently the elements of quantitative approach were adopted.

3.3.2 Interpretivism/phenomenology/qualitative

Interpretivism has managed to stand the test of time since certain aspects cannot be well understood in quantitative or mathematical terms. In this research certain threats and opportunities presented by FinTech cannot be measured objectively. Positivism has been criticised since it defines “laws” in the similar way as physical objects considering the complexity of the business management and social world. Due to these weaknesses of the positivism the researcher also applied the interpretivism approach so that they complement each other in analysing these threats and opportunities presented by FinTech to Zimbabwean commercial banks. Interpretivists an expression given to opposing epistemology positivism. The

term subsumes the views of writers who have been critical on applications of a scientific model and are influenced by different intellectual traditions (Yegon, 2015). Interpretivism supporters emphasise the need to note the differences among humans in our role as societal actors (Saunders *et al*., 2012 pg. 137). Interpretivists postulate that the social world cannot be well understood through application of natural science principles. According to Blumberg *et al*. (2011) fundamental principles of interpretivism are the social world is constructed with a meaning from people, the investigator is part of what is witnessed, and research is motivated by interests.

Interpretivists believe that reality can be fully understood through subjective interpretation of and intervention reality. The study of phenomena in their natural environment is key to the interpretive philosophy, together with the acknowledgment that scientists cannot avoid affecting those phenomena they study. According to Yegon (2015), realism is a belief that the natural and social sciences can and should start with the collection of data, explanation, commitment and view that there is an external reality to which scientists direct their attention in other words.

The anti-positivists rejected positivism by equated it with quantitative research methods such as experiments and surveys and without any explicit philosophical commitments while anti-positivism employed qualitative methods such as unstructured interviews and participant observation (Bhattacherjee, 2012). Cohen *et al.,* (2007), additionally posits that positivism cannot be applied to the study of human behaviour where the immersed complexity of human nature and elusive and intangible quality of social phenomena contrast strikingly with the order and regularity of the natural world.

The anti-positivism emphasized that social actions must be studied through interpretive means based upon an understanding of the meaning and purpose that individuals attach to their personal actions (Bhattacherjee, 2012). Positivism, however, criticises the qualitative approach citing that contexts, situations, events, conditions and interactions cannot be replicated to any extent nor can generalisations be made to a wider context than the one studied with any confidence (Yegon, 2015). More so, because of the subjective nature of qualitative data and its origin in single contexts, it is difficult to apply conventional standards of reliability and validity and the time required for data collection, analysis and interpretation are lengthy (Tichapondwa, 2013). Rafik (2014), argued that for a best of both world's approach and suggested that qualitative and quantitative approaches should be combined.

In view of the above, the study subscribed for a pragmatic paradigm in which observations can be made objectively in a neutral way, general relationships and common laws can be established and deriving theories that can be tested (quantitative) while subjective interpretations are adopted in studying human perception which is difficult to use positivism (qualitative). Mixed paradigm is an attractive philosophy for integrating perspectives which offer the best frame to address and provide tentative answers to one's research questions (Creswell, 2014). This offered the researcher an opportunity to objectively analyse the threats and opportunities presented by FinTech on the performance of commercial banks in Zimbabwe.

3.3.3 Justification of using a pragmatic paradigm

The justification is in line with the application of phenomenology include its aptitude to comprehend the meanings attached by people and its contribution to the development of new theories. On the other hand, positivism research allows the researcher to establish the nexus among variables but is often weak when it comes to exploring the reasons for those relationships (Creswell, 2014). A qualitative study can be used to explain the factors underlying the broad relationships. The researcher opted for multiple methods (as opposed to a mono method) in undertaking the research, that is, a combination of positivism (quantitative) and phenomenology (qualitative) methods and procedures, as well as both primary and secondary data. This was done in the form of a mixed-model research (a subset of multiple methods), where some data, which is predominantly qualitative, was, in the words of Saunders *et al.* (2009), "quaint sized" so that it could be analysed using quantitative methods. This research prioritised the use of phenomenology over positivism as the researcher was not setting out to test a single pre-existing theory. From this discussion, the researcher was convinced that the use of a pragmatic paradigm will provide respondents with an opportunity to provide information on their views

3.4 Research design

The research design is defined as a "road map" that connects the empirical evidence to the research objectives and ultimately to the discoveries and conclusions. The research design is also known as types of inquiry within qualitative, quantitative, and mixed methods approach that provide specific direction for procedures in a research design (Creswell, 2014). Cooper and Schindler (2011), stated that a research design helps the researcher to allocate limited resources by ensuring that appropriate methodology is used. Research design establishes the blueprint for collection, measurement, and analysis of the data (Cooper & Schindler, 2011). From the above definition, it can be noted that a research design provides a chronological fashion in which data is collected, blended and analysed to address research objectives in the most robust and comprehensive manner. Research design may comprise casual-comparative research, correlational research, explanatory research, descriptive research and exploratory research. The main aim of the research was to provide an accurate and valid representation of the threats and opportunities presented by FinTech on the Zimbabwean commercial Banks. Taking note of the above, the research study adopted a descriptive research analysis, and this is explained below.

3.4.1 Descriptive research analysis

The descriptive survey is a method of collecting information by interviewing or administering a questionnaire to the population under study Orodho, (2005). Kombo and Tromp (2006) further opined that descriptive research studies are not only limited to fact findings but may often result in the formulation of important principles of knowledge and solution to significant problems. Therefore, it cannot fit well into the category of either qualitative or quantitative but rather apply the elements of both within the same study. A descriptive study is intended to produce statistical information about the threats and opportunities brought about by FinTech to the commercial banks in Zimbabwe. Bijpai (2011) propounded that the results from descriptive studies are often

used in the formulation of important principles of knowledge and can serve as a direct source of valuable information, which can assist government and banks in planning and solving the challenges faced by the industry. After data collection, descriptive studies involve measurement, classification, analysis, comparison, and interpretation of data (Yegon, 2015). In line with the views advocated above, a descriptive research best suits this investigation in that it will avail the present condition of Fintech in the country and its threats and opportunities to commercial banks.

3.4.2 Justification of adopting a descriptive research analysis

This type of study was chosen as it offers a direct source of valuable information concerning human perceptions and assist in planning and solving problems of various aspects (Bijpai, 2011). A descriptive research as suggested by Cooper and Schindler (2011) enables an in-depth study of phenomena or characteristics associated with subject population such as who, what, when, where, and how of a topic; estimation of proportions of population that have these characteristics, determine bivariate or multivariate correlation between variables, cross tabulation of information, strength of relationship or magnitude of relationship and determine the correlation between different variables. A descriptive research design was also adopted by other scholars like Nakaso (2016) who also carried out a study on the impact of FinTech on the commercial banks in Japan.

Descriptive analysis was adopted in the study with a quest to describe the specific behaviour as they appear in the environment. According to Mugenda (2008), the purpose of a descriptive research is to determine and report things the way they exist, enabling the identification of the present conditions and point out the present needs and immediate status of a phenomenon. The flexibility of the method since it provides an opportunity for considering different components of a problem under study (Kothari, 2009). Descriptive studies offer information for the future course of action and hence suit this study as there is a need for future action in adapting to these developments in FinTech space (Sekaran, 2010). Descriptive research allows an in-depth study of phenomena or characteristics associated with a subject population such as who, what, when, where, and how of a topic

In light on the above, a descriptive analysis will help in establishing the current level of FinTech use and the threats and opportunities presented to Zimbabwean commercial banks. The statistical information produced by a descriptive analysis help in identifying the most powerful variable of FinTech that is revolutionising the way people transact and access financial services.

3.5 Research strategy

In selecting a research strategy, the nature of the perceived connection between theory and research implied by the research question, as well as the epistemological consideration will be influential, as quantitative and qualitative research strategy differs greatly in each respect (Rafik, 2014; Bhattacherjee, 2012). Positivism paradigm uses survey studies while interviews, focus groups, case studies, action research, and ethnography are phenomenological research strategies.

A study that used a combined paradigm can develop a strategy by combining the strategies from the two paradigms. In light on the above, the research utilised a survey strategy.

3.5.1 A survey study

A survey research is a precise type of field study that involves the collection of data from a sample of elements drawn from a well-defined population through use of a questionnaire. This enabled the researcher to have an in-depth understanding of the threats and opportunities on commercial banks. Surveys have inside and outside legitimacy and they depend on some form of random sampling technique that will produce a sample which is illustrative of the specific populace under review and will deliver discoveries which may be generalised to the wider population. A greater strength of a survey study as the source of primary data is its versatility, besides it being confidential, efficient, economical and easy to administer (Creswell, 2014). They are accordingly an exceptionally savvy method for discovering what individuals do, think and need and no other research method can provide this broad capability, which ensures a more accurate sample to gather targeted results. Studying a representative sample through field research is quite easy and practical. The probability theory used in sample selection have developed number of efficient in survey research by drawing representative samples that are easy to contact and findings from such a sample can be confidently generalised to the entire population (Creswell, 2014). The anonymity of survey studies promoted a high response from the respondents to answer questions with a high degree of honest. They also offer flexibility in that they can be easily combined with different techniques to produce richer data.

3.6 Research Choice

The next element or layer of the onion is research choices which refers to the methods adopted; in this study both qualitative and quantitative research methods were chosen. Saunders et al (2012) discuss that one way of differentiating between quantitative and qualitative research is to distinguish between numeric data and non - numeric data.

3.6.1 Qualitative Research

Qualitative techniques are a fundamental approach of exploration and analysis, including in-depth interviews, participant observation, videotaping of subjects Blumberg et al (2011 pg. 144). According to Denzin and Lincoln (2005) qualitative research is deeply rooted in an interpretive philosophy were by the researcher wants to draw meanings and to make sense of the subjective and social constructs. Qualitative research mainly uses words and themes rather than figures. The strong subscribers to this method believe that social aspects can be explained in words rather than figures (Bryman & Bell 2015). The design adopted in this research is related to a myriad of strategies with the same ontological and epistemological footing. Some strategies employed are case studies, action research, grounded theory and semi structured interviews. The quantitative make use of quantitative information where closed questions where used whereby some of the data could not be obtained. In attempt to bridge that gap interviews were carried out to unearth

all information that closed questions could have left out. In addition, the questionnaire was also designed with closed questions to all gather additional information.

3.6.2 Quantitative Research

Quantitative research is grounded in positivism philosophy and it is mainly used in highly structured researches. It is also applied to predetermined and highly organised data gathering techniques (Saunders *et al*., 2012). Furthermore, Bryman and Bell (2015) stipulated that quantitative research commonly underscores quantification in the gathering and analysis of data. According to Blumberg *et al*. (2011) quantitative research studies heavily depend on quantitative data like numbers and figures. The mainly used strategies in this study design are experimental and survey study carried out using questionnaires or highly structured interviews.

For the sake of this study, the research opted for multiple methods (as opposed to a mono method) in undertaking this research, that is, a combination of positivism (quantitative) and phenomenology (qualitative) methods and procedures, as well as both primary and secondary data. This was done in the form of a mixed-model research (a subset of multiple methods), where some data, which is predominantly qualitative, was, in the words of Saunders *et al.* (2009), "quaint sized" so that it could be analysed using quantitative methods. This research prioritised the use of positivism over phenomenology as the researcher was not setting out to test a single pre-existing theory. Because of time questionnaires were also used containing closed questions which were precise and to the point. The questionnaires were distributed to the respondents and were given ample time to respond either manually or through the email.

3.7 Target population

The target population is defined as the collection of objects which process the information required by the researcher and about which inferences are to be made (Bijpai, 2011). Cooper and Schindler (2011) defined a target population as the entire group under study and that the population parameters are the summary descriptors such as incidence proportion, mean and variance. The selection of respondents depends on the nature of analysis needed, the kind and number of comparisons that are to be made (Yegon, 2015).

The targeted population was the managers of commercial banks, fintech managers and experts who are the most informed classes of individuals. It made it necessary for the researcher to select a representative from each class. The targeted respondents were bank managers, bank employees, fintech managers and experts in the financial services sector and this enabled the researcher to have a cross-sectional examination of the effects of FinTech to the commercial banks in Zimbabwe. The decision to choose bank employees and managers was reached with an aim of getting information from those who better understand the impact of FinTech on their organisations. FinTech managers were chosen since they are the ones who are pioneering the FinTech revolution. Experts were also targeted since they are the key informers with an objective analysis of the future of commercial banks in the digital and big data world.

3.7.2 Sampling techniques

Although a survey method was adopted sampling has to be carried in choosing the respondents. A stratified random sampling technique was used to divide the population into sub-populations or strata. Stratified random sampling was appropriate in segmenting the heterogeneous population, into homogenous status (groups). The different groups involve Bank managers, Bank employees FinTech managers and Experts. This technique aided in drawing up a group of a representative of which inference can be made from the whole group.

3.7.3 Judgemental/ purposive sampling

After the grouping of the population into strata, the respondents were chosen using judgemental /purposive sampling. This involves drawing a representative data by selecting people who the researcher thinks would be appropriate for the study. The fact that not everyone is able to understand the variable understudy. Some of the dimensions required someone to have some degree of financial literacy hence judgemental sampling was adopted. Although it contains some elements of bias, it is useful when some members of a population make better subjects than others and it affords the researcher opportunity to select respondents whose availability and attitude are compatible with the study.

3.7.4 Sample Size

It represents the list of elements from which the potential respondents are drawn (Sekaran & Bougie, 2010). Table 3.1 shows the sample size which forms the source of primary data.

Table 3.1: Sample size

Targeted population	**Targeted respondents**
Bank managers	35
Bank employees	30
FinTech managers	25
Total	90

Source: primary data

The 90 questionnaires were sent to the respondents for data collection as shown in table 3.1. The researcher carried out in-depth interviews with the 10 experts drawn from different financial backgrounds.

3.8 Research instruments

The study used one type of research instrument to collect data. Yegon (2015) defined a research instrument a means by which data is collected in social research. The researcher collected information from two sources, primary source and secondary sources.

3.8.1 Questionnaires -primary data collection

Monette *et al.* (2011) regards a questionnaire as a way to collect data in survey research that contains recorded questions that people respond to directly on the questionnaire form itself, without the aid of an interviewer. The questionnaires were the main instrument used in the study. Information such as the impact of FinTech on commercial banks was structured based on the objectives of the study. They were specifically designed to collected data on the opportunities and threats presented by FinTech in the Zimbabwean commercial banking sector.

3.8.2 Justification of using questionnaires

Kothari (2009) posits that the use of questionnaire brings the benefits of easy reach of large samples, low cost when the universe is large and reduced the bias of interviewees. Administering of questionnaires is much easy, less time consuming and less costly. Questionnaires also provide respondents with enough time to complete and respond without disrupting their daily activities. More so they gave the researcher enough time to analyse the responses abstaining from instantaneous decisions. Closed-ended questions on questionnaire help researcher acquire a large spectrum of data and effectively control the variation of responses. However, questionnaires were not that efficient to those respondents who had tight work schedule as they failed to have time to complete the questionnaire.

3.8.3 Construction of questionnaires

The construction of a questionnaire has effect on the response rate, the validity of data collected and the reliability. High response rate, reliability, and validity can be achieved through clear layout of the questionnaire form; careful design of questions; lucid explanation of the purpose of the questionnaire and pilot testing.

The questionnaire was designed to be completed anonymously by the respondents, each with a covering letter to the attention of the respondents. The purpose of the research and the important information for the completion of the questionnaire was contained in the covering letter. It was constructed to include all factors that are related to threats and opportunities of FinTech on commercial banks in Zimbabwe.

A mixture of a five Likert-scale, checklist and close-ended questions was adopted. It was structured based on the objective and research questions of the study to specifically collect data on threats and opportunities of Fintech that can affect Zimbabwean commercial banks. The first section of the questionnaire was developed to include responses of general information and responses in relation to the respondent's age, status, occupation, level of education. The second section of the questionnaire aimed at collecting information about how individuals perceive the threats and opportunities of FinTech on the Zimbabwean commercial banks.

3.8.4 Pilot study

A pilot study is a preliminary small-scale study that researchers conduct in order to help them decide how best to conduct a large-scale research project (Simon, 2011). The purpose of the pilot testing was to establish the accuracy and appropriateness of the research instruments (Cooper & Schindler, 2011). A pilot study was carried to identify and correct imperfection of the questionnaire from few students at the University of Zimbabwe and two emails sent to the industry respondents. This helped in the construction of questions that were easily understood. Corrections were suggested during the process and adjustments were done accordingly.

3.8.5 Administration of questionnaire

Two methods were used in administering the questionnaires. The mailing system was used to send the questionnaire to the respondents. Before emailing the questionnaire, consent was requested through telephone calls. Mail delivery was very efficient and less costly to the researcher as it enables the researcher to send questionnaires in to various respondents without incurring the cost of traveling and printing expenses. However, the telephone expenses were a bit higher incurred while making follow ups and first calls made in notifying the respondents of the emails. Some took up to three weeks to complete, while some took up to one week to complete the questionnaires. Follow-ups were made by visiting the offices or through telephone calls. This method was efficient, with some respondents completing the questionnaires while waiting. Although it was efficient, a lot of time spent in collecting data.

3.9 Secondary data

Secondary data was collected for purposes of drawing valid conclusions on the impact of FinTech on Zimbabwean commercial. Thus, financial statements of the firms were inspected to provide secondary data to compliment primary data. Journals, books, RBZ reports, and newspapers were also studied for the purpose of this research.

3.10 Data processing and analysis

The data collected was first cleaned, sorted and coded using numerical numbers in SPSS V 21. Data analysis can be referred to as the process of compiling, modelling and extracting raw data for the purpose of obtaining meaningful information that can be applied in the formulation of conclusions, predictions, and support in decision making.

3.10.1 Descriptive analysis

A descriptive analysis was firstly carried to each data set (questionnaire sections) before a factor analysis was carried. Descriptive statistical tools used included the mean scores, standard deviation, and the mode. The data collected through interviews was analysed using themes and similarities.

3.10.2 Van Gruenen, Viviers and Venter Scale

The researcher adopted the key from Van Gruenen, Viviers and Venter (2011) in analyzing the mean scores and standard deviations. The following scales were used to measure the respondents' observations in each section of the questuinnaire:

Mean scores ranging from $1.0 \leq M < 1.8$: Very Poor
Mean scores ranging from $1.8 \leq M < 2.6$: Poor
Mean scores ranging from $2.6 \leq M \leq 3.4$: Neutral
Mean scores ranging from $3.4 < M \leq 4.2$: Good
Mean scores ranging from $4.2 < M \leq 5.0$: Optimised)

3.11 Validity

Validity refers to the extent to which an empirical measure accurately reflects the concept it is intended to measure, yielding the scores that reflect the true variables measured. Validity is of great concern to all researchers who gathers educational data. Different validity measures can be adopted such as face validity, content validity, criterion validity and concurrent validity. This study constructed the questionnaire ensuring that the face validity is achieved.

3.11.1 Face validity

Face validity determines if a questionnaire after a superficial assessment looks valid at first glance to a respondent who have to complete it. This means that face validity refers to what items of a questionnaire really measure, rather than what the researcher wants it to measure at the glance (Kumar, 2011). From the general understanding, they should be a logical link between each question on the questionnaire with an objective and this was considered in the construction of our questionnaire were all the questions represent a direct link to the research objectives. To ascertain the validity of the research instruments, the researcher used a suitable probability sampling for the study. And as such, each sample represented the true position of the population such that the sample can be generalised. The researcher made sure that the questions used in interviews and questionnaires were extracted from research objectives and research questions. The questionnaires were rechecked to eliminate biases in formulating questions.

3.12 Reliability

Salkind (2012) refers dependable, consistency, stable, trustworthy, predictable and faithful as synonyms for reliability. Delport and Roestenburg (2011), stated that reliability deals with what is being measured the extent to which test score are free of measurement error. To increase reliability of measures the research takes into account procedures proposed by Salkind (2012), as follow,

- Increase the number of items or observations
- Eliminate items that are unclear
- Increase the level of measurement
- Standardize the conditions under which the test is taken

- Moderate the degree of difficulty of the instrument
- Minimise the effects of external events
- Standardise instructions
- Maintain consistent scoring procedures and
- Use pre-tests, pilot studies, and replications (Salkind 2012).

In light of the above, a pilot study was conducted to measure the reliability of the research instrument and amendments to the research instruments were effected to improve its reliability. A Cronbach alpha coefficient was used to measure the internal consistency reliability of the research instrument.

The Cronbach alpha coefficient

The Cronbach's Alpha test for reliability of the research instrument was used and this was meant to ensure internal consistency, completeness, and reliability of the instrument. Sekaran and Bougie (2010), defined internal consistency as the degree of correlation between the various items of a measuring construct. The Cronbach alpha is based on the inter-item correlations. If the items are strongly correlated with each other, their internal consistency is high, and the alpha coefficient will be close to one. Reliability refers to how free the scale is the random error. Kumar (2011) recommended a minimum alpha coefficient of 0.7. Cronbach's alpha assists in measuring the internal consistency which means the degree to which items in your scale measure the same underlying attribute or construct. The Cronbach's alpha ranges from 0 to 1 with higher value denoting a highdegree of reliability. The researcher went on to test the data for normality using Kolmogorov since the sample size was large (greater than 30).

3.13 Limitation of the study

Limitations refer to those factors that are beyond the researcher's control but may have effects on the results of the study. All studies have some limitation inherent, but it is of great importance to identify such limitation and reduce their effects to the results of the study. In the current study, some of the limitations encountered included the following; firstly, the fintech in Zimbabwe is not yet well developed as compared to developed countries. This was curbed by the use of purposeful sampling technique in choosing respondents. Secondly law response rate as a result of mistrust and this was mitigated through assuring confidentiality of information collected. Thirdly, the perception that data collected through ordinal scale does not give the investigator level of precision required in a study particularly when strong statistical procedures are to be applied to analyse data. However, the use of interviews assisted also in capturing data which might not be included in the Likert scale question.

3.14 Elimination of bias

To eliminate bias in the study researcher, reduce the involvement during the completion of questionnaires by letting respondents completing without interference. Refraining from expressing view or opinion on the question contained in the research instrument.

3.15 Ethical considerations and aspects

Research ethics refers to custom or character and connotes a social code that conveys moral integrity and consistent values. Ethics concerns what is wrong and what is right when conducting research. Regardless of research designs, sampling, techniques, and choice of methods, all studies are subject to ethical considerations (Gratton & Jones, 2010). The ethical issues inherent in this study include confidentiality of information, the anonymity of participants and informed consent. All the above ethics were adhered to and was intrinsic to the research study.

3.15.1 Confidentiality

The right to professional privacy and confidentiality of information obtained was guaranteed by a written statement in the cover letter. Data collected was treated in the strictest of confidence and all questionnaires received were kept in a locked filing cabinet while electronic questionnaires were stored in a password protected computer with which the research only had access to the data.

3.15.2 Research Ethics

Researcher ensured that respondents would remain anonymous. The issue of confidentiality and anonymity is closely connected, anonymity is protected when the subject's identity cannot be linked with personal responses. This was achieved by excluding any question requesting the identity of the respondents or the company they work for. In the case where respondents indicated their identity or the company they work for, the researcher maintained the confidentiality of private information thereby protecting subject's identity.

3.15.3 Informed consent

It was obtained from respondents first before the questionnaires were dropped. Informed consent refers to seeking permission to carry out the research to ensure that a person knowingly, voluntarily and intelligently and in a clear and manifest way gives his or her consent in the research process. Participants and respondents were not subjected to any risk of unusual stress, embarrassment or loss of self-esteem.

3.16 Chapter summary

The chapter outlined the research philosophy, design, strategies, the method and source of data. It went further to explain the how data will be analysed, that is through descriptive analysis, factor analysis and one sample t-test. The following chapter focuses on data, presentation, analysis and interpretation as guided by this chapter.

CHAPTER FOUR: DATA PRESENTATION, INTERPRETATION AND ANALYSIS

4.0 Introduction

The previous chapter focused on the research methodology whereas the current chapter presents, interpret and analyses the collected data. The tables and bar graphs were used for presentation. In addition, means and standard deviations were used for quantities analysis. Thematic formats were used for analysis of data collected through interviews. Some of the closed questions results were intertwined with interview responses so as allow commenting based on probing responses from the interviews carried out. On the other hand, some of the interviews were analysed separately. The following objectives were used as the guidelines.

Objectives revisited

- To determine the drivers behind Fintechs Development
- To establish the opportunities presented by Fintechs to the Zimbabwean commercial banks
- To unearth the threats posed by Fintechs to the Zimbabwean commercial banks
- To establish the strategies being employed by the Zimbabwean commercial banks to cope with this disruptive technology
- To find the implications of Fintechs to the regulation of financial services sector

4.1 Response rate

The response rate is critical in the analysis of academic researches, particulary in the validity and credibility of the study results. Brett, (2012) stated that for reliability and relevance of the research results it is very important to consider the rate at which the sample respond to the questionnaires and interviews. Table 4.1 shows the response rate.

Table 4.1: Data Response Rate

	Issued	Returned	Response rate
Questionnaires	90	85	94.4%

Author's Computation

$$\textbf{Data Response rate} = \frac{\text{Returned Questionnaires}}{\text{Issued Questionnaires}} \times 100\%$$

A response rate of 94.4%, that is, 85 questionnaires returned from 90 distributed was satisfactory for data presentation and analysis. The response rate was in line with recommendation by Leedy (2009) who considered 60% as good enough in determining the outcome. Stat Pac Inc. (2014) postulated that the confidence can be enhanced by recommended response rate.

4.2 Demographic variables

Analysis of the demographic information was very important in this research as it determines the importance, relevance and reliability of the results. The demographic variables that were important in this research are shown in the Table 4.2

Table 4.2: Demographic Variables

Characteristics	**Category**	**Valid Percentage**
Gender	Male	70.6
	Female	29.4
	Total	**100.0**
Age	20 - 30 years	41.2%
	31 - 39 years	41.2%
	40 years and above	17.6%
	Total	**100.0**
Length of service	1-5 years	35.3%
	6-10 years	41.2%
	+10 years	23.5%
Industry	Bank	64.7%
	Fintec	35.3%
	Total	**100.0**

Author's Computation

In this study most of the respondents were male who constituted 70.6% of the population whilst 29.4% of the respondents were female; this is shown in Table 4.2. The domination of male respondents was mainly driven by Fintech sector in which most of the respondents were males and also most senior personnel in banks who responded to questionnaires were males. In addition, all age groups were also considered in the distribution of the questionnaires to obtain varied opinions across all age groups. The data collected indicated that 41.2% of the questionnaires were distributed to the people between 20 - 30 years, 41.2% were people between 31 - 39 years and those above 40 years were 17.6%. The analysis of age groups was essential as it assisted the researcher in hanersing perspectives from young technocrats who are called the 'information age/ digital age' as well as from experienced age groups who witnessed the transition from initiatiation of Fintechs. Experience of the respondents in the banking and Fintech industry was also important as it enhanced the reliability of the results. The results obtained revealed that 35.3% had 1-5 years of experience, 41.2% had 6-10 years of experience

and those with 10 years and above of experience were 23.5%. It was important to analyse experience level of respondents since it infuences the level of understanding of the opportunities and threats brought by Fintechs.

The last aspect on demographic was industry where it was confirmed that 64.7% were from banking industry with 35.3% from Fintech industry. This distribution was mainly influenced by the nature of the companies in Fintech where only five major companies (measured by posted revenue) were distributed with questionnaires, whereas the population for banks was much wider hence results obtained were also reflecting the same.

4.3 Reliability analysis

To assess the reliability of the data collected on the threats and opportunities by FinTech on Zimbabwean commercial banks, the reliability test was done. Table 4.3 shows the Cronbach's alpha reliability statistics for the variables of the study.

Table 4.3: Reliability Statistics

Factor dimension	Cronbach's Alpha	N of Items
Drivers of Fintech in Zimbabwe	.772	6
Digital Banking	.892	11
Mobile Money: Threats	.829	8
Mobile Money: Opportunities	.939	5
Regtech: Opportunities	.840	6
Regtech: Threats	.752	3

Author's Computation

The Cronbach alpha was done to show the extent to which the different items, measure or assessment are consistent with one another and the extent to which each measure is free from measurement error, this is shown on Table 4.3 above. In this study, the Cronbach's Alpha was computed. The alpha for the six variables used to measure the threats and opportunities by FinTech on Zimbabwean commercial banks was found to be suitable for further analysis since the least value was 0.75 which indicates that all the items form a scale that has reasonable internal consistency and reliability. The result is also consistent with what was considered by Nunnaly (2008) who postulated that a Cronbach's alpha which is above 0.7 is recommended for further analysis which is acceptable

4.3.1 Data normality test

Since the sample size was large, Kolmogorov-Smirnov test was the most suitable to test data normality. According to Ghashemi (2012), Kolmogorov-Smirnov test should be applied when the

sample size is more than 30. When the significance value of Kolmogorov-Smirnov Test is greater than 0.05, it means that the data is from a normal population. A hypothesis test was conducted using SPSS to test for normality as shown below.

Table 4.4: Kolmogorov-Smirnov Test

	Kolmogorov-Smirnov[a]	
	Statistic	Sig.
Drivers of Fintech in Zimbabwe	.111	.200*
Digital Banking	.113	.102*
Mobile Money: Threats	.110	.200*
Mobile Money: Opportunities	.115	.150*
Regtech: Opportunities	.112	.200*
Regtech: Threats	.108	.200*

Author's Computation

The significance values obtained were all above 0.05 meaning the data was normally distributed. According to Costello and Osborne (2005) the data which produces a p-value greater than 0.05 is considered to follow a normal distribution qualifying it for further tests which rely on the normality of the data. After finding out that the data was normally distributed and usable, the researcher went on to interpret the means obtained as discussed here under.

4.4 Data analysis and Presentation

4.4.1 Drivers of Fintech in Zimbabwe

One of the objectives of the research was to identify the drivers of Fintech in Zimbabwe and the obtained results are presented in the Fig 4.1.

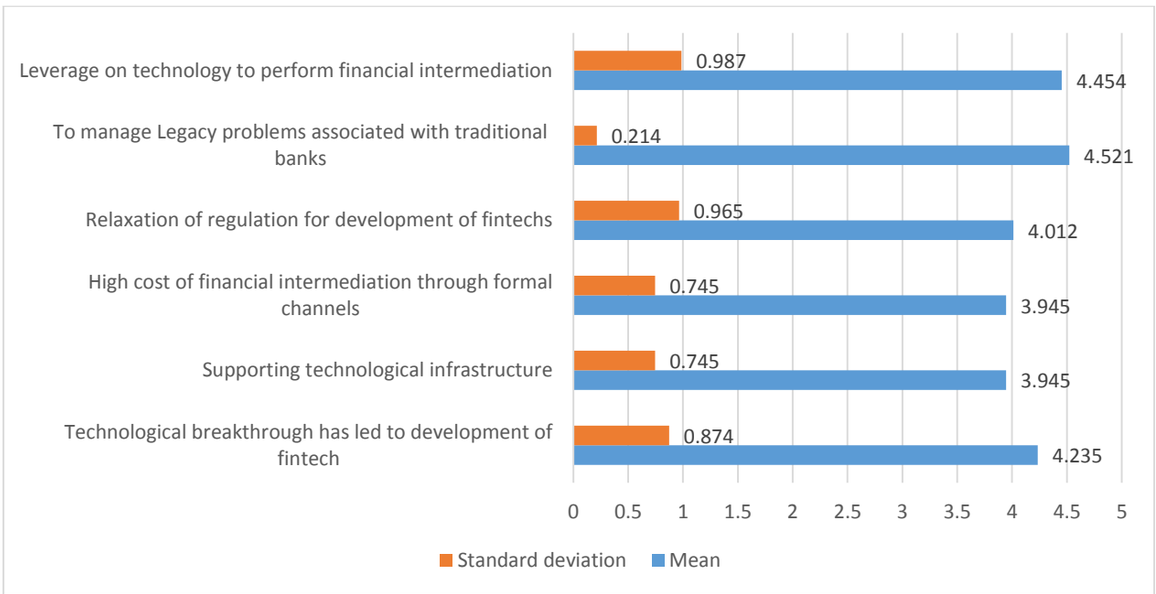


Fig 4.1: Drivers of Fintech in Zimbabwe

Author's Computation

**- (The following scales were used to measure the respondents' observations on drivers of Fintech)*

Mean scores ranging from 1.0 ≤ M < 1.8: Very Poor

Mean scores ranging from 1.8 ≤ M < 2.6: Poor

Mean scores ranging from 2.6 ≤ M ≤ 3.4: Neutral

Mean scores ranging from 3.4 < M ≤ 4.2: Good

Mean scores ranging from 4.2 < M ≤ 5.0: Optimised)

The key was adopted from Van Gruenen, Viviers and Venter (2011).

The first statement in the section of drivers for Fintech in Zimbabwe was on whether the technological breakthrough has led to development of Fintech in Zimbabwe and positive response was obtained indicated by a mean score of 4.24 and standard deviation of 0.87. The follow up interviews carried out indicated that technological breakthrough in Zimbabwe. has led to emergence of new financial instruments and services offered by financial institutions. In addition, the results also revealed that supporting technological infrastructure is playing a pivotal role as a driver of Fintech as shown by a mean score of 3.95 and standard deviation of 0.75. These results affirmed to the literature by Adongo, (2015) who postulated that the rate at which technology is transforming the world and good supporting infrastructure has resulted in the adoption of Fintech. The same responses were obtained from interviews carried out where the majority interviewees indicated that there is need to have supporting infrastructure and technological breakthrough as major drivers. One of the respondents stated that

> "*globalisation which pushes for global village promotes technology in every aspect of service provision hence driving Fintech at the same time promoting good technological infrastructure"*.

The study furthered by asking whether high cost of financial intermediation through formal channels is also a driver. A more balance response rate was obtained where 47.1% disagreed whereas the other 47.1 agreed and 5.8% were neutral. More so, it was confirmed that relaxation of regulations for development of Fintechs is critical in improving the rate high rate of Fintech adoption in Zimbabwe as shown by a mean score of 4.01 and standard deviation of 0.95. Interviews carried out pointed out that regulation is lagging behind hence constraining the development of Fintechs. Alt and Puschmann, (2012) coined that there is a high rate of technological developments in countries where the regulations for technological development are not extra stringent. This point was supported by an interview response where it was indicated that:

"normally government and the institutions that have authority to control the adoption of technology should not play hard balls on companies trying to adopt technology as it kills the momentum"

In the research by Dayadhar, (2015) it was confirmed that high cost in following formal channels was also seen as a stumbling block in the adoption of Fintech. Results obtained on this statement on whether there is need to manage legacy associated with traditional banks resulting in the driving of Fintech were satisfactory as indicated by an optimized mean score of 4.52.

On whether leverage on technology to perform financial intermediation was also a driver, a positive response of a mean score of 4.55 and standard deviation of 0.99 was indicated. A

research carried out in South Africa by KPMG (2017) revealed that the need to manage the legacy has resulted in many banks adopting Fintech to fight completion from Fintech companies and other banks (KPMG, 2017).

4.4.2 Digital banking in the Zimbabwean Commercial banks

The results of the opportunities and threats of digital banking obtained are presented in Table 4.5. An explanation of the same follows under.

Table 4.5: Threats and Opportunities of Digital Banking

Statement	**Mean**	**Standard deviation**
Digital banking Increases the customer base of a bank	3.847	0.548
Digital banking Lower Transaction cost for commercial banks	0.211	0.784
Digital banking brings close proximity to customer	4.101	0.254
Digital banking increase Productivity for commercial banks	3.374	0.745
Digital banking has significantly contributed to the profitability of banks	3.415	0.987
Digital banking has enabled real time transactions for commercial banks	4.421	1.232
Reduced the costs associated with search and markets which is mainly associated with ATMs, Smart Cards	2,987	0.995
It has led to the formation of virtual banks	3.154	0.365
It has reduced the importance of wider branch network	3.965	1.001
It has allowed long banking hours	4.213	0.874
It has allowed convenience to customers	4.121	1.222

Author's Computation

This section of the study dwelled on the opportunities and threats of digital banking in the Zimbabwean Commercial banks. On whether digital banking increases the customer base of a bank, the mean score of 3.85 and standard 0.55 were obtained indicating that digital banking increase customer base of institutions. This may so because of convenience and financial inclusivity brought by digital platforms. In addition, the respondents denied that digital banking lower transaction cost for commercial banks as shown by a mean score of 2.31 and standard deviation of 0.78. Through digitilising most of the banking activities in Zimbabwe, the commercial banks has managed to attract customers far away from their physical structures through the use of technology hence increasing the customer base. Echchabi and Hassanuddeen, (2014) postulated that digital banking promotes convenience hence increasing customer base of Banks but insisted that transactional costs are inherent to the bank. In addition, the results indicated neutrality on digital banking influencing productivity and profitability as shown by a mean score of 3.37 and 3.41 respectively. The role of digital banking on the productivity and profitability of Zimbabwean banks remains unclear. Dietz, *et al*. (2016) is of the opinion that

digital banking alone does not have a significance influence on productivity and profitability but enhance the bank relevance in the industry.

Furthermore, it was also confirmed that digital banking has enabled real time transactions for commercial banks as shown by a mean score of 4.42 and standard deviation of 1.23. The respondents were neutral on whether digital banking reduced the costs associated with search and markets which is mainly associated with ATMs, Smart Cards as indicated by a mean score of 2.99 and standard deviation of 0.99. The results shows that Zimbabwean commercial banks has not reduced the transactional cost but enhance real time transactions through use of digital banking. In addition, a neutral response was obtained indicated by a mean score of 3.15 and standard deviation of 0.37 on whether digital banking led to virtual banks. Moreover, the results revealed that digital banking reduced the importance of wider branch network and allowed long banking hours as indicated by a mean score of 3.97 and 4.21 respectively. The interview responses obtained confirmed the same where all interviewees gave the example of Standard Chartered Bank Zimbabwe which closed most of its branch network as it is now mainly focusing on delivering its products and services through digital platforms. This result is in line with Goyal and Vishal (2017) who coined that digital banking has reduced the need to open several branches for convenience and also enables the banking transactions to take place 24 hours a day.

Additionally, on the issue opportunities and threats the following interview questions was posed: 'What is the effect of digital banking on the performance of Zimbabwean Commercial banks?" The people responded differently some positing positive effects and some at the negative effects. Many respondents indicated that digital banking and the rise of Fintech companies resulted in fierce competition to the commercial banks. Respondent 5 gave the following view:

> *"the convenience and flexibility brought by mobile banking has negatively affected our performance financially and in terms of customer base since some customers are not preferring Ecocash platform".*

The bulk of the respondents (76%) indicated that digital banking in Zimbabwe has improved several aspects of the banking such as quality service provision, convenience, flexible transactional hours and enhances productivity. A response by a manager in the banking industry summed up most of the responses from services providers point of view where he stated that:

> *"nowadays our clients can easily make banking transactions at home benefiting the bank since transactions can be done 24 hours a day through the phone".*

4.4.3 Opportunities and Challenges of Mobile Money in the Zimbabwean Commercial Banks

In line of the objectives, the study proceeded by drawing the opportunities and challenges posed by mobile money. The obtained results on the threats and challenges of mobile money are presented in Table 4.6

Table 4.6: Threats and Challenges of Mobile Money

Statement	**Mean**	**Standard deviation**
Informal savings groups are using mobile money than commercial banks		
It reduced the need for physical banks unlike the traditional commercial banks	4.215	2.145
It has washed away the wide branch networks competitive advantage of commercial banks	3.945	0.987
It brought Financial inclusion than traditional commercial banks	3.875	0.745
Increased competition with commercial banks	4.125	0.654
It brought convenience than commercial banks	3.988	0.874
Introduced Pseudo banking	3.125	1.021
Reduced transaction costs than commercial banks	3.124	0.584
Interference of payment systems	3.454	1.022
Deposit mobilisation than the traditional commercial banks	2.758	1.021
Enhancement of the multiplier effect through the use of mobile money	3.112	0.584
An avenue of achieving a cashless society	4.214	0.874
Complementing the banking system	3.987	1.022

Author's Computation

Nearly every adult in Zimbabwe owns a mobile phone hence it was critical to have the aforesaid dimension on threats and challenges of mobile money. The results obtained confirmed that informal groups now prefer mobile money to commercial banks as shown by a mean score of 4.23. Through the development of innovative banking services on small phones as well as applications on smart phones to which people can transact, mobile banking in Zimbabwe has become a real deal to many people. In addition, through mobile money, the need of commercial banks by several people has reduced as revealed by a mean score of 4.21. The results qualifies that the citizens of Zimbabwe are now preferring doing the banking transactions using the mobile phone which in return deal away with the need to have more bank branches. Nowadays people in Zimbabwe can easily make bank tranfers using a mobile phone reducing the need of a bank branch everywhere. Foy, et al., (2015) pointed out that mobile money banking greatly influences the way informal groups save their monies and also determines the operations of commercial banks.

The study furthered by asking whether mobile money has washed away the wide branch networks competitive advantage of commercial banks and brought financial inclusion than traditional commercial banks and the results obtained were positive as shown by (mean=3.945 sd=0.987) and (mean=3.875 sd=0.745) respectively. Due to the economic tumoil being experienced in Zimbabwe, banking institutions are persuing an objective of cost minimization, hence the use of wide branchnetwork has been losing mememntum gradually. These results are

similar to what was postulated by Ionescu, (2012) who confirmed that mobile money outclassed the benefits created by opening commercial bank branches and also it brings financial inclusion. Furthermore, from gathered data it was revealed that mobile banking increased competition with commercial banks and brought convenience than commercial banks as indicated by (mean=4.125 sd=0.654) and (mean=3.988 sd=0.874) respectively. Through mobile banking, the competition of adopting technology by commercial bank increased to capitalize on the benefits brought by the mobile banking. KPMG, (2016) revealed that through mobile money a lot of pressure on banks increased due to convenience it brought.

Respondents did not buy the idea that mobile banking reduced transaction costs than commercial banks as shown by a mean score of 3.12 and standard deviation of 0.58. Follow up interviews carried out indicated that bank customers are complaining about high transactional cost which has become a burden to themselves. Respondent 2 indicated that services providers are reaping of customers and due to the cash crisis currently being experienced customers are left with no option but to use these digital platforms. Respondents confirmed that mobile banking is an avenue of achieving a cashless society and it also complements the banking system as shown by (mean=4.21 sd=0.87) and (mean=3.99 sd=1.02).

There was an interview question on the threats and complements of Ecocash, Telecash and One Money to commercial banks. The responses were different but both acknowledging the role of these network companies in making their business viable. Some of the respondents indicated that more ham has been brought than good by these services to the banking sector. The following is one of the response from interviews:

> *"Ecocash has created competition to the banks where some business are now using Ecocash services as a banking facility creating unfavourable environment to our bank".*

In addition, some acknowledged the role of ecocash in enhancing the banking facilities of commercial banks in Zimbabwe where almost 90% of the banks are linked to Ecocash. Respondent 10 was of the view that the linking between banks and Ecocash services is improving the performance of the banks where one can easily transact. However it is also worth noting that respondents complained about issues of system failuires and cyber crime as drawbacks in service experience through mobile banking.

4.4.4 Threats and Opportunities Presented by Regtech on Commercial Banks.

Modern progressive technologies can assist economic establishments comply with regulatory requirements and pursue regulatory targets. Banks can gain from Regtech with extra wonderful approaches to improve their cost containment approaches, survival strategies as well as compliance and risk management spectrums. Figure 4.2 presents the results of threats and opportunities of Regtech on commercial banks.

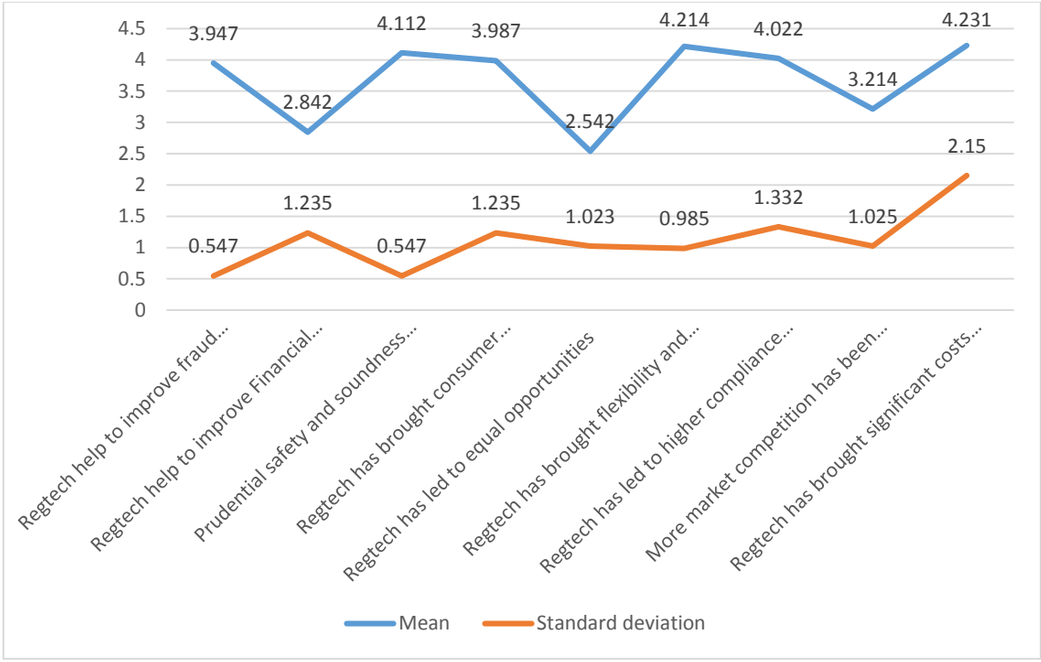


Fig 4.2: Threats and Opportunities of Regtech on Commercial Banks

Author's Computation

The respondents indicated that Regtech helps to improve fraud prevention but were not very sure on whether it enhances the financial stability as shown by (mean=3.94 sd=0.547) and (mean=2.842 sd=1.235) respectively. Probing through interviews indicated that management of the business can be easily done through the use of technology. Respondent 4 was of the view that in Zimbabwe regulatory transparency though technology is laggig behind as it is essential in reducing the rate of fraud. However it was also indicated that regtech does not necessary result in the financial stability. Kama & Adigun,(2013) pointed at improvement in the prevention of fraud as one the major benefits of Regtech and also stated that it plays a role in stabilizing the financial aspects of the banks. Furthermore, results also confirmed that prudential safety & soundness (AML, KYC) has been improved and consumer protection and market integrity also improved as indicated by (mean=4.11 sd =0.54) and (mean=3.99 sd=1.23) respectively. Banking practitioners who were interviewed indicated that through utilizing technology in management and monitoring, banks in Zimbabwe can enjoying the safety and soundness in the running of their activities due forced compliance. The use of Regtech by banks improved the customer protection in the market hence achieving market integrity (Roy, 2014).

Respondents denied that Regtech has led to equal opportunities as shown by mean score of 2.54 and standard deviation of 1.02. In a follow up interview carried out it emerged that some players are complaining about regulatory arbitrage which has brought by Fintechs in Zimbabwe. Companies in the telecommunications sector and bulding societies are now offering services which were previously exclusively bank's products or services. This has led to some companies benefiting at the expense of others. On whether the compliance system of the bank was improved, the results were positive as shown by mean score of 4.02 and standard deviation of 1.33. However, on the vein, stakeholders in the Zimabwean banking industry were of the view

that Regtech is improving at a much slower rate as compared to the driving forces for Fintech. Regtech has also brought significant costs of standardising systems used by banks as shown by a mean score of 4.23 and standard deviation of 2.15. The commercial banks in Zimbabwe are complaining about costs associated with standardizing systems in line with the associated Regtech is the benefits sought are not as expected on their perspective.

4.4.5 How are banks coping up with the changes brought about by fintech and the respective reactions?

This was an open-ended question on the questionnaires requesting for solutions on how best the banks can deal with threats of Fintech. Out of 85 returned questionnaires only 40 managed to respond to that question. Different responses were obtained giving different strategies being used by banks in surviving threats posed by Fintech. Majority of the respondents indicated that partnership is the solution to the issue of technology especially when the bank is not well equipped in technological advancement. In addition, it was also confirmed that some banks engage in different services as a solution (diversification). The following are some of the responses summarising all responses on partnership with Fintech companies and network companies like Econet, Telecel and Netone.

> "*some of our banks have taken a big step in creating partnerships or business combinations with Fintech companies and Econet in an effort to improve the business at the same time reducing the threat of Fintech".*

On the issue of diversification, it was noted that banks are no longer relying on banking services only but have also entered the insurance industry, estate industry and many other activities. It was confirmed by banking experts that almost 70% of the banks are also involved insurance business and some are also building houses for sale. Respondent 3 indicated that:

> *"because of changes in the business environment, many banks ventured into insurance industry and some like CABS and CBZ are into housing as a way of surviving in the business and dealing with threats of Fintech".*

In addition to the two solutions above, some respondents indicated that there is need for investment in supporting technological infrastructure to remain relevant in the business industry. Almost 90% of those who respondent to this question indicated that investment in technology is not an option to all commercial banks in Zimbabwe but it is a prerequisite. Respondent 2 indicated that:

> *"yes we can have different solutions to Fintech but as banks investment in technology is inevitable".*

The results obtained on this question are similar to those by Adongo, (2015) who pointed out that changing world calls for technological advancements and diversification in any industry to remain relavant. Futhermore, investment in technology, patnerships are believed to be the solution to mordern business world not only Fintech (Aglionby, 2016).

4.5 Discussion of results

Financial technology in the banking industry in Zimbabwe has become a focal area where strategies for the foreseeable future should be based on, to achieve profitability and survival. Technological breakthrough in Zimbabwe has led to the development of Fintech inevitably albeit a myriad of challenges that are being faced by companies particulary in supportive technological infrastructure as well as regulugatory rigidity. From the obtained results it was also found that banks are by all means trying leverage on technology to perform financial intermediation and deal will high cost of financial intermediation through formal channels.

The foregoing presented results proved that in Zimbabwe financial technology acted as a solution to the scarcity of cash in banks and the inability of Zimbabwean banks to provide financial services in other areas as well as other people. In addition, the shortage of cash has also resulted in innovations by banks to overcome the negative effect of cash shortages by introducing swiping and Ecocash link. Banks are adopting financial technology to survive the current environment of globalization where technology is the only way to go.

Results obtained indicated that digital banking in Zimbabwe has increases the customer base of most banks as it solves the proximity challenge and allowed unlimited banking hours. It emerged that customers are complaining about higher transactional when transacting on mobile and digital banking platforms. On the bank's perspective, it came out that digital banking increases productivity for commercial banks as it enables real time transactions.

Respondents from the banking fraternity indicated that at the end of their financial years the main focus is on financial technology so as to improve the quality of the services and enhance competition. Mutandagayi, (2018) the ZB financial holdings chief executive acknowledged the need to make use of financial technology in engendering efficiencies and responding to the changing customer demands. Competition from Fintech companies has been seen to be escalating. It has emerged from the presented results that informal savings groups in Zimbabwe are using mobile money than commercial banks and this has reduced the need for physical banks. The issue of wide branch networks for competitive advantage of commercial banks has been seen as losing momentum. Inclusively, digital banking and mobile banking has brought financial inclusion than traditional commercial banks to a greater extent n Zimbabwe.

Continual improvements and development of the financial institution's online and cell banking platforms are underneath in Zimbabwe to give the consumer extra control of their finances. The issue of systems reliability, consumer friendly and handy technologies is a major concern for both customers and custodians of these Fintechs in Zimbabwe as clients always complain about poor service and system challenges. FBC Holdings' Chairperson, Nkala,(2018) stated on the institution's outlook, that they are investing in ICT abilities and strengthening their compliance and risk control frameworks to remain relevant and forward looking.

The Zimbabwean banking fraternity has welcomed financial technologies as it improves prudential safety and soundness. Regtech is yet to bring equal opportunities as well as flexibility

and innovation in the financial markets as issues of transparency are still being talked of. It also emerged that there are costs that digital enlargement creates as the bank additionally spends money on educating their personnel and customers such that its revolution can well be maximized and allows to hold pace with market disruptions and consumer needs.

4.6 Summary of the Chapter

The results analysed focused on the drivers of Fintec, threats and opportunities of Fintec (mobile banking, Regtech and digital banking). Technological breakthrough and good supporting infrastructure were found to be the major drivers of fintech. Several opportunities were noted which include the enhancement of customer base, reduction of real time transactions, convenience and reduced expenditure in terms of building many branches. Fintech companies were found to be threat to commercial banks in the country. In terms of threats, it emerged that cyber risks and systems challenges are the major setbacks being experienced by customers when using digital platforms, however the cash crisis has been partially eased by both mobile and digital banking.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The precedent chapter dealt with the presentation and analysis of data. The current chapter gave a summary of the results obtained in the previous chapter. In addition, the conclusion and recommendations were also based on the obtained results. The chapter began by giving the summary of the findings then conclusion and recommendations follows.

5.2 Summary of the Findings

5.2.1 Drivers of Fintech

The research confirmed that the technological breakthrough and supporting infrastructure were the major drivers of Fintech. On whether high cost of financial intermediation through normal traditional channels is also a driver which brought more confusion to the respondents whereas the relaxation of regulations for development of Fintechs has resulted in high rate of Fintech adoption in Zimbabwe. It was also confirmed that leverage on technology to perform financial intermediation was also a driver.

5.2.2 Threats and Opportunities of Digital Banking

Results confirmed that digital banking increases the customer base of a bank, but respondents denied that digital banking lower transaction cost for commercial banks. In addition, the results indicated neutrality on digital banking influencing productivity and profitability. Furthermore, it was also confirmed that digital banking has enabled real time transactions for commercial banks. The respondents were neutral on whether digital banking reduced the costs associated with search and markets which is mainly associated with ATMs, Smart Cards. Furthermore, the results revealed that digital banking reduced the importance of wider branch network and allowed long banking hours.

5.2.3 Threats and Opportunities of Mobile Banking

It was revealed that informal groups now prefer mobile money to commercial banks and the need for commercial banks is being negatively impacted. The results positively confirmed that mobile money washed away the wide branch networks competitive advantage of commercial banks and brought financial inclusion than traditional commercial banks. Furthermore, from gathered data it was revealed that mobile banking increased competition with commercial banks and brought convenience than commercial banks. Respondents did not buy the idea that mobile banking reduced transaction costs than commercial banks.

5.2.4 Threats and Opportunities of Regtech

The results indicated that Regtech helps to improve fraud prevention but were not very sure on whether it enhances the financial stability. It can be furthered that the improvement in detering fraud is one the major benefits of Regtech and as it plays a role in stabilizing the financial aspects of the banks. Furthermore, results also confirmed that prudential safety and soundness (AML, KYC) has been improved and consumer protection and market integrity also improved. The use of Regtech by banks improved the consumer protection in the market hence achieving market integrity. In addition, the respondents denied that Regtech has led to equal opportunities whereas confirming that Regtech has brought flexibility and innovation in the financial markets. Regtech has brought significant costs of standardising systems used by banks.

5.2.5 How are banks coping up with the changes brought about by fintech and the respective reactions?

Different response was obtained giving different strategies being used by banks in surviving threat posed by Fintech. Majority of the respondents indicated that partnership is the solution to the issue of technology especially when the bank is not well equipped in technological advancement. In addition, it was also confirmed that some banks engage in different services as a solution, that is diversification. On the issue of diversification, it was noted that banks are no longer relying on banking services only but have also entered the insurance industry, estate industry and many other activities. It was confirmed by banking expect that almost 50% of the banks are also insurance companies and some are also building houses for sale. In addition to the two solutions above, some respondents indicated that there is need for investment in supporting technological infrastructure to remain relevant in the business industry. Futhermore , investment in technology and patnerships are believed to be the solution to mordern business world not only Fintech (Aglionby, 2016).

5.3 Conclusions

It can be concluded that technological breakthrough and supporting infrastructure are the major drivers of Fintech. The rate at which technology is transforming the world and good supporting infrastructure has resulted in the adoption of Fintech. It can also be concluded that deregulation and harmonization or relaxation of can help facilitate the growth of Fintech. Alt and Puschmann,(2012) postulated that there is a high rate of technological developments in countries where the regulations for technological development are not stringent.

In relation to digital banking, it can be concluded that Fintech increases the customer base of a bank but however there could be a possible tradeoff on transaction cost for commercial banks. Echchabi and Hassanuddeen, (2014) postulated that digital banking promotes convenience hence increasing customer base of the customers but insisted that transactional costs are inherent to the bank. Furthermore, the results revealed that digital banking reduced the importance of wider branch network and allowed long banking hours where informal groups prefer mobile money to commercial banks.

The study \ concludes that mobile money banking greatly influences the way informal groups save their monies and as well determines the operations of commercial banks. With this at hand one can safely conclude that the benefits brought by commercial banks are outweighed by mobile banking. Based on the gathered information, a conclusion was reached that mobile money washes away the wide branch networks competitive advantage of commercial banks and brought financial inclusion than traditional commercial banks. This conclusion was similar to that of Ionescu, (2012) who confirmed that mobile money outclassed the benefits created by opening commercial bank branches and also it brings financial inclusion.

It was also concluded that Regtech improves the prevention of fraud; however, it was not clear whether Regtech enhances financial stability as there are a myriad of factors which determines financial stability for example political and social frameworks of a society/ economy. Kama and Adigun (2013) pointed at improvement in the prevention of fraud as one the major benefits of Regtech and also stated that it plays a role in stabilizing the financial aspects of the banks.

5.4 Recommendations

The commercial banks are recommended to have good supporting infrastructure since modern business environment calls for innovation especially in terms of technology to sustain competition. The banking infrastructure should be conducive for adoption of technology especially in the current environment dominated by mobile and digital banking. In addition, due to competition from Fintech companies, commercial banks are advised to diversify their operations to spread risk. There are a number of commercial banks that have engaged in the building of houses and insurance business as a way of relieving pressure from banking services only. Furthermore, extensive marketing backed with excellent digital and mobile banking can also help the commercial banks to overcome competition from Fintech companies and mobile network companies like Econet. The rate of innovation by Fintec

companies is difficult to withstand hence it is advisable for commercial banks to have partnerships with these companies especially those dominating the industry.

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Reserve Bank of Zimbabwe Report 2017

Reserve Bank of Zimbabwe Report 2013

Reserve Bank of Zimbabwe Report 2018

Appendix 1: Questionnaire

Date 12 /01/ 2020

To whom it may concern:

Dear Sir/Madam,

Ref: Request for information for a research.

My name is Linnet Vimbai Mafinyori, Student Number R169739R a final year student at The University of Zimbabwe studying towards Master of Business Administration. I am undertaking a research titled "**Threats and opportunities by FinTech on Zimbabwean commercial banks: An open innovation perspective".** The main purpose is to analyses the threats and opportunities presented by Fintech to the Zimbabwean commercial banks. This information will be solely for academic purposes and will be in complementary partial fulfilment of the requirements for the Master of Business Administration.

I would like to thank you in advance for your positive contribution to the success of the project by your participation in completing this questionnaire. Your participation is optional.

If you have any concerns, please contact the undersigned;

Linnet Vimbai Mafinyori
Email address: linnetmafinyori@gmail.com
Cell: +263 772 990165/ +971501008638

INSTRUCTIONS:

i) Please answer all questions fully and honestly.

ii) Where boxes are provided indicate your answer by ticking the appropriate box.

iii) Do not write your name or identity on the questionnaire.

SECTION 1: PERSONAL DETAILS

1. **Gender**

Male	
Female	

2. **Age group**

20 - 30 years	
31 - 39 years	
40 years and above	

3. **Please state the industry**

Bank	
Fintech	

4. **Please state your work experience**

1 – 5 years		6 – 10 years		11 – 15 years		Above 15 years	

Section 2: Drivers of Fintech in Zimbabwe

Please tick the appropriate response in the boxes provided

State your level of agreement to the following statements on the extent to which you think they are key drivers of development and growth of fintech in Zimbabwe, by ticking the appropriate box.

Key: Strongly Disagree (SD); Disagree (D); Neutral (N); Agree (A); Strongly Agree (SA);

Statement	Rating				
	SD	**D**	**N**	**A**	**SA**
1. Technological breakthrough has led to development of fintech					
2. Supporting technological infrastructure					

3. High cost of financial intermediation through formal channels					
4. Relaxation of regulation for development of fintechs					
5. To manage Legacy problems associated with traditional banks					
6. Leverage on technology to perform financial intermediation					

Section 3: Digital Banking

Please tick the appropriate response in the boxes provided on the opportunities and challenges digital banking in the Zimbabwean Commercial banks

Key: Strongly Disagree (SD); Disagree (D); Neutral (N); Agree (A); Strongly Agree (SA);

Statement	**SD**	**D**	**N**	**A**	**SA**
1. Digital banking Increases the customer base of a bank					
2. Digital banking Lower Transaction cost for commercial banks					
3. Digital banking brings close proximity to customer					
4. Digital banking increase Productivity for commercial banks					
5. Digital banking has significantly contributed to the profitability of banks					
6. Digital banking has enabled real time transactions for commercial banks					
7. Reduced the costs associated with search and markets which is mainly associated with ATMs, Smart Cards					
8. It has led to the formation of virtual banks					
9. It has reduced the importance of wider branch network					
10. It has allowed long banking hours					
11. It has allowed convenience to customers					

Section 4: Mobile Money

Please tick the appropriate response in the boxes provided on the opportunities and challenges of mobile money in the Zimbabwean Commercial banks

Key: Strongly Disagree (SD); Disagree (D); Neutral (N); Agree (A); Strongly Agree (SA);

Statement	SD	D	N	A	SA
Threats					
1. Informal savings groups are using mobile money than commercial banks					
2. It reduced the need for physical banks unlike the traditional commercial banks					
3. It has washed away the wide branch networks competitive advantage of commercial banks					
4. It brought Financial inclusion than traditional commercial banks					
5. Increased completion with commercial banks					
6. It brought convenience than commercial banks					
7. Introduced Pseudo banking					
8. Reduced transaction costs than commercial banks					
Opportunity					
9. Interference of payment systems					
10. Deposit mobilisation than the traditional commercial banks					
11. Enhancement of the multiplier effect through the use of mobile money					
12. An avenue of achieving a cashless society					
13. Complementing the banking system					

Section 5: Regtech

Please tick the appropriate response in the boxes provided on the threats and opportunities presented by Regtech on commercial banks.

Key: Strongly Disagree (SD); Disagree (D); Neutral (N); Agree (A); Strongly Agree (SA);

Opportunities	**SD**	**D**	**N**	**A**	**SA**
1. Regtech help to improve fraud prevention					
2. Regtech help to improve Financial stability					
3. Prudential safety and soundness (AML, KYC) has been improved					
4. Regtech has brought consumer protection and market integrity					
5. Regtech has led to equal opportunities					
6. Regtech has brought flexibility and innovation in the financial markets					
Threats					
1. Regtech has led to higher compliance standards					
2. More market competition has been enabled by the use of Regtech					
3. Regtech has brought significant costs of standardising systems used by banks					

Section 7

What are other opportunities and threats posed by Fintech to Zimbabwean commercial banks?

Opportunities

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Threats

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How are banks coping up with the changes brought about by fintech

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What is the reaction of banks towards Fintech.

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Interview Guide

1. What do you understand about FinTech?
2. What do you think are the major drivers of FinTech development in Zimbabwe?
3. How would you commend on the effect of Fintech on commercial banks?
4. a) What is the effect of digital banking on the performance of Zimbabwean Commercial banks?

b) Do you see it as a complement of a competitor to commercial banks?

5. a) What is the effect of mobile money on the performance of Zimbabwean Commercial banks?

   b) Do you see mobile money like Ecocash, Telecash and One money as threats or complement to commercial banks?
6. What are the opportunities and threats posed by FinTech to Zimbabwean commercial banks?
7. How banks are reacting towards Fintech