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Financial technology as a driver for financial inclusion: an assessment and case study of WhatsApp banking in South Africa

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A research report submitted to the Wits Business School in the University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Innovation Studies

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ABSTRACT

The development of innovative technology can bring new ways of providing access to financial services, particularly to those who have either not had or have had very little access to the formal financial system, more commonly known as the underbanked or unbanked.

The ubiquity of mobile phone technology, due to the increased coverage and quality of mobile network operators, makes this technology an attractive platform for the delivery of financial services, known as fintech. One example of such technology is a mobile based-financial service, WhatsApp banking, a service developed by one of South Africa's ("SA") major retail banks (the "Bank").

The first major contribution of the study is the positive assessment of WhatsApp banking, as a socially sustainable fintech tool in SA, measured against the LASIC (low margin, asset light, scalable, innovative and compliance easy) framework. Several other frameworks were considered, however none were selected, as they each lacked specificity in respect of measuring the potential success of a fintech. This is evidenced and supported by a growing user base in excess of 59 000 clients of WhatsApp banking, which exceeded the combined several thousand customers on previous social media banking services offered by the Bank.

Secondly, while the WhatsApp banking service is a global first and a pioneering technology in the financial services industry, it does not address financial inclusion in its current state. The WhatsApp banking service is only available to the Bank's existing clients and does not cater for new-to-bank clients. This is despite the resultant effects of reduced traveling time and costs of banking at a physical branch or automated teller machine and a greater diffusion of technological capability. However, the strategic thinking behind the development of this service is to leverage newfound technological capabilities, in order to deliver further fintech services or products.

The study uses a case study methodology, combined with a desktop analysis of publicly available Bank documents and information on WhatsApp banking. This is supported by semi-structured interviews with key personnel at the Bank responsible for the development, implementation and management of the service.

KEY WORDS

Financial technology (“fintech”); financial inclusion; LASIC; mobile financial services; innovation management; WhatsApp Banking.

DECLARATION

I, Yashiv Maharaj, declare that this research proposal is my own unaided work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Innovation Studies at the Wits Business School in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other University.

Signature:

On this ____ day of _____ 20___

DEDICATION

"*Our deepest fear is not that we are inadequate. Our deepest fear is that we are powerful beyond measure. It is our light, not our darkness that most frightens us*…"
Marianne Williamson

To my late baby brother, despite leaving us in darkness, if your light was not extinguished, I would never have realized how bright and powerful my light could shine.

ACKNOWLEDGMENTS

To my dearest wife and father, thank you for your unconditional love, support and guidance. This would not have been possible without you.

To the rest of my village people, I am here today because of you and will be eternally grateful.

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LIST OF ABBREVIATIONS AND ACRONYMS

CTF – Counter terrorism financing

Fintech – Financial Technology

KYC – Know Your Customer

LASIC - Low margin, asset light, scalable, innovative and compliance easy

LSM – Living Standards Measure

MFS – Mobile financial services

MNOs – Mobile operator networks

NPD – New product development

NSD – New service development

SA – South Africa

UI – User interface

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CHAPTER 1: INTRODUCTION

1.1 PURPOSE OF THE STUDY

Economic inequality in SA has, for the most part, been an embedded trait, which has been part and parcel of the country's history, development and transition to democracy. However, despite SA having general living standards that are above average compared to other developing countries, "*where chronic poverty is assumed to be most severe*", the question of why SA is considered a polarised society, arises (Adato et al., 2006, p. 244).

Recent statistics reveal that more than 50% of SA's population, which translates into more than 28 million people, live below the upper-bound poverty line of R1 183 per person per month (Statistics South Africa, 2018). Population groups living below or in close proximity to this upper-bound poverty line are therefore considered to be a low-income population group. These statistics illustrate the importance of enabling and providing greater access to financial services. This shift will not only ensure the sustainability and development of existing banking service providers, but also create an environment for new players to enter the market and provide more efficient and effective ways to conduct banking activities.

Meiring et al. (2018) argues that disadvantaged population groups, defined by the European Institute for Gender Equality (2019) as "*groups of persons that experience a higher risk of poverty, social exclusion, discrimination",* are often closely associated with, if not the same as, those who are classified as a low income population group. Irrespective of the definitional difference between the two groups, this study focuses on the provision of financial services to either low income or disadvantaged population groups or both.

The growing socio-economic divide between the banked (formal) and the unbanked (informal) sounds the call for there to be a shift in the delivery and accessibility of financial services. This shift should be aimed at increasing access to formal financial services.

At this juncture, it is important to identify and note the difference between 'unbanked' and 'underbanked'. Unbanked has been defined as "*customers who*

do not have a bank account or a transaction account at a formal institution". Underbanked, on the one hand, has been defined as "*customers who may have access to a basic transaction account offered by a formal financial institution, but still have financial needs that are unmet or not appropriately met*". (GSM Intelligence Database, 2016)

Globally, 1.7 billion adults are considered unbanked and do not have access to formal financial services. As is evident from Figure 1 below, South Africa has approximately 10 million unbanked adults (Demirguc-Kunt et al., 2017). The high number of unbanked adults in South Africa highlights the necessity for there to be increased access to financial services.

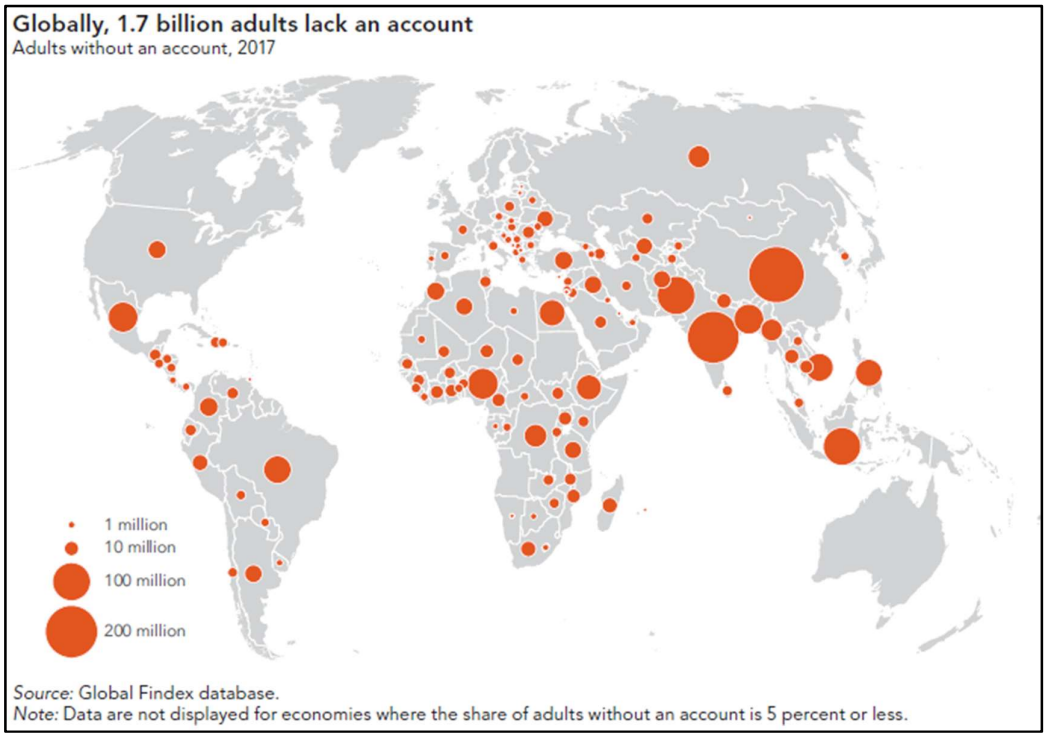


Figure 1: Global unbanked population

Malisetty (2018) indicates that as of 2016, there were over 7.6 billion mobile subscriptions globally with over 2.4 billion people using smart devices. Of these mobile users, over 850 million were active monthly users of WhatsApp, a popular messenger service.

The world is experiencing the emergence of financial technology, which technology involves computer programs and other technology used to support or enable banking and financial services (Oxford English Dictionary, 2018). Another definition of fintech is "*a new financial industry that applied technology to improve financial activities*" (Schueffel, 2016).

The disruptiveness of fintech has been demonstrated by block chain technologies and cryptocurrencies such as Bitcoin and fintech applications such as the mobile finance service application in Kenya, known as M-Pesa. Although fintech is in its infancy, several fintech developments have the potential to address issues such as financial inclusion and economic development, one of them being mobile financial services ("MFS''). However, fintech applications still require a great deal of development, financing, technological soundness and most importantly, legislative and regulatory reform. The framework within which fintech applications can operate will be determined by legislative and regulatory imperatives. Ultimately, Government will be required to provide decisive guidance, rules and regulations in the event of fintech applications being adopted, developed and implemented.

This is a case study on the implementation and assessment of the Bank's MFS, through the WhatsApp messenger platform, to establish whether the service is socially sustainable and successful. This study involves reviewing publicly available documents and conducting semi-structured interviews with key personnel employed at the Bank that are closely related to the development, implementation and supervision of the WhatsApp Banking service.

1.2 CONTEXT OF THE STUDY

The World Bank (2017) and Kim et al. (2018) have identified one of the major enablers of economic growth to be the provision of affordable financial services to either the disadvantaged or low-income population groups or both.

Mobile phone technology has become a key driver of financial inclusion, owing to its unique features such as mobility, always-on availability, varied and

personalised devices and most importantly, its rapid diffusion among both developed and developing countries (Kim et al., 2018, p.17)

Kim et al. (2018) and Evans & Pirchio (2014) point out that despite the growing usage and adoption of MFS, the provision of MFS is yet to become sustainable and profitable. This is due to the fact that no such service has been able to offset the cost of setting up the infrastructure and maintenance costs as yet.

The world experienced a century, during which, the traditional or formal financial services industry was developed and established. The financial services industry has had to adapt constantly to technological advancement that is fast encroaching on its existing business models. This technological advancement seeks to disintermediate traditional financial services and service providers, while potentially addressing socio-economic issues such as financial inclusion and economic development.

The successful development and implementation of M-Pesa in Kenya has demonstrated the capability of fintech to deliver financial services to those who would not ordinarily have had access to such services. This may translate into potential markets that have not yet been explored, offering opportunities for financial service providers, depending on their investment and risk appetite.

Developments in fintech and the delivery of formal financial services, through non-traditional means such as mobile banking and cash remittance services, may prove to be relatively easy mechanisms to deliver and provide access to financial services. These developments can be readily taken advantage of.

There are potentially longer-term solutions that may disrupt the financial services sector on a global scale, however, none have proven their capability or viability for a myriad of reasons, including, the lack of regulatory and legislative frameworks.

1.3 PROBLEM STATEMENT

The provision of and access to financial services predominantly consists of middle to upper income population groups, to the exclusion of lower income

population groups which are also, in most circumstances, historically disadvantaged population groups. These population groups who have limited access, or no access at all, to financial services require solutions, products or services that suit their socio-economic and geographic conditions.

Innovative developments in fintech are enabling greater access and provision of financial services, to population groups that previously had limited access or no access.

However, the sustainability and potential success of a fintech based product or service cannot be guaranteed and can only be determined with a certain degree of probability against a suitable framework.

Therefore, this study seeks to determine whether the Bank's WhatsApp banking service is a socially sustainable and potentially successful fintech, with reference to addressing financial inclusion.

The sustainability of the service will be assessed using the LASIC framework and its attributes, namely: low margin, asset light, scalable, innovative and compliance easy.

The potential success of the service will be determined by conducting semi-structured interviews and desktop analysis, to ascertain whether the service has a growing user base.

The combined determination will assess whether the Bank's WhatsApp banking service addresses financial inclusion.

1.4 RESEARCH QUESTIONS

1. To what extent is the Bank's WhatsApp banking service a sustainable fintech service in terms of the LASIC framework?
2. How successful is the Bank's WhatsApp banking service? and
3. To what extent does the Bank's WhatsApp banking service positively contribute towards financial inclusion?

Other questions that will also be answered in this report will be:

a. What does the WhatsApp banking service provide?
b. What was the technological, economic, geographical, social and financial rationale in selecting WhatsApp as the platform to integrate banking services with?

1.5 RESEARCH PROPOSITIONS

1. The Bank's WhatsApp banking service will be considered a socially sustainable fintech service according to the LASIC framework;
2. The Bank's WhatsApp banking service is a successful fintech service that will be evidenced by and supported with semi-structured interviews, secondary documentary evidence and statistical data, obtained in respect of the number of customers who have made use of the service; and
3. A positive determination on both the sustainability and success of the service will be made, in that providing financial services on the WhatsApp platform leads to higher number of clients, affiliated with the Bank, performing financial transactions or receiving financial assistance via mobile phones. The assessment of this MFS will demonstrate that the increased uptake in its usage, will positively contribute towards financial inclusion by (non-exhaustive list):
    a. reducing traveling time to a physical branch;
    b. ensuring easy and readily available access to financial services; and
    c. Enabling a greater diffusion of technological capability, in order to understand and make use of fintech applications.

1.6 SIGNIFICANCE OF THE STUDY

The world has seen the rapid development of fintech, which stands to challenge age old institutions and industries. As these developments become mainstream, it becomes important to take heed and be aware of the disruptions

that such developments can unleash. The formal financial sector is concerned about its continued relevance and sustainability in the face of such innovations. The creation of new players in the market will offer alternatives to financial service providers, which will allow for strategic alliances and innovations to ensure adaptability and sustainability of these innovations over the long term.

Therefore, this can be seen as technological innovation of fintech, in order to address financial and societal challenges such as financial inclusion, which has the potential to increase economic development and growth (Fagerberg, 2013), by decreasing the costs of accessing financial services and conducting financial transactions.

The term ”digital disruption” has been defined as “*the rapidly unfolding processes through which digital innovation comes to fundamentally alter historically sustainable logics for value creation and capture by unbundling and recombining linkages among resources or generating new ones*” (Skog et al., 2018). The term “digital disruption” therefore is relevant to the topic of fintech. This is demonstrated by the potential ability of fintech applications to shrink the role and relevance of today’s banks. While simultaneously helping the banks to create better, faster, cheaper services that make them an even more essential part of everyday life for institutions and individuals (Lee & Teo, 2015, p.3).

Open innovation, as well as open source innovation, is at the heart of the digital revolution, which has supported so much of the new technology development in recent years. For large organisations, this translates as a process of engaging with external technology solutions, knowledge capital and resources early on in an innovation process. Often it involves opening up the organisation’s own intellectual property (IP), assets and expertise to outside innovators to help generate new ideas, change organisational culture, identify and attract new skills, and discover new areas for growth (Lee & Teo, 2015, p.3).

This new trend of collaborative innovation is seen in the emergence of varied types of innovation hub set-ups, each with their unique objectives and spheres of influence (Adesida et al., 2016).

Innovation itself has been defined by Schumpeter as the introduction of a new product or a new combination, whereas he saw invention as belonging to science and technology. The profit motive is what drives entrepreneurs and organisations to convert inventions into innovation. The research agenda is shaped and driven by the investment decisions of these entrepreneurs. It is when technology, the economy and the social context converge, that a paradigm or trajectory of innovation comes to fruition (Schumpeter, 1911, 1961 and Perez, 2010), as depicted in Figure 2 below.

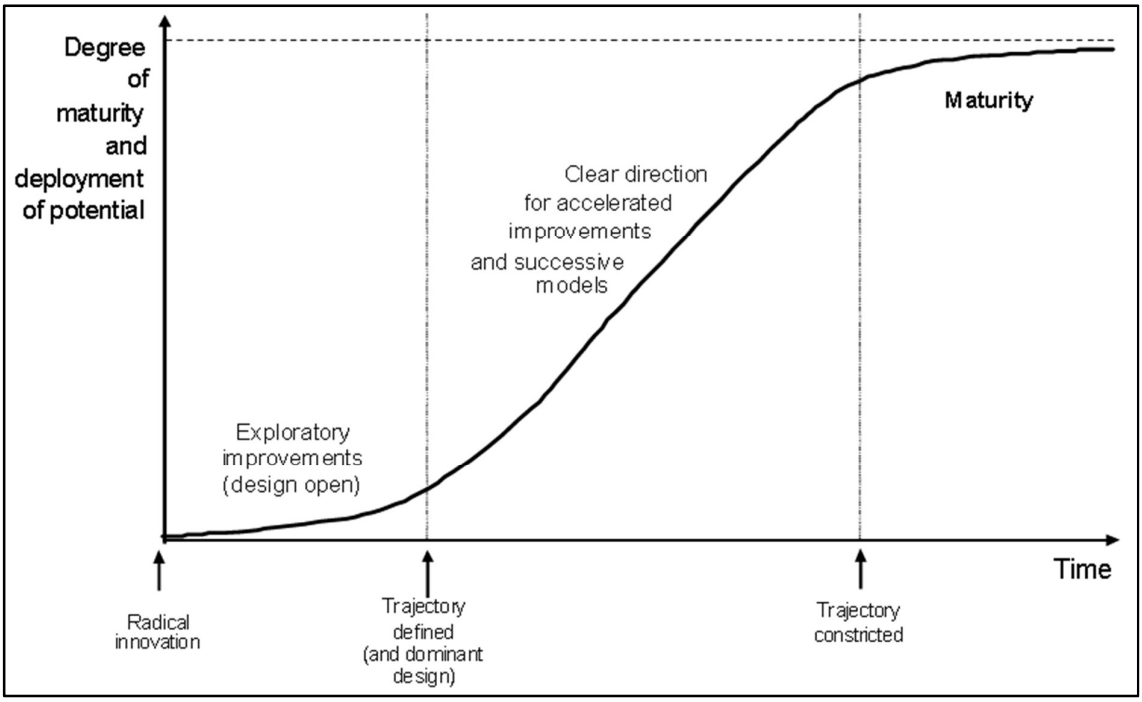


Figure 2: The trajectory of an individual technology (Perez, 2010)

Innovation is not the discovery of a single product or service but rather a collective process that brings together changes across a system which includes suppliers, distributors, other change agents and consumers which makes the innovation a success. Within this system of innovation, a paradigm is the collectively shared logic at that point at which technological potential, cost, market adoption and functional coherence together with other factors come together. Within this paradigm, there is tacit agreement on what a new development is and what might be enhancements or a better version of a

technology, product or service. Significant innovations tend to create further spin-offs in further innovations, some of which are similar to the original innovation, while others are complimentary or even competitive alternatives. (Perez, 2010, p. 5)

With the advent of new technology systems, significant shifts or changes occur in the business and institutional environment and even within the cultural context. A prime example of this today is the Internet and how it has changed the manner in which business is done, the manner in which the regulatory environment has evolved to respond to the Internet and the changes it has made to our daily lives (Perez, 2010, p. 7).

The system reaches maturity when the possibilities for innovation of the system as a whole is limited and the market is saturated. It stands to reason that individual technologies cannot be seen in isolation but rather within the context of what innovation has gone before and the context within which they are released which then plays a huge role in the success or otherwise of the technology. Invariably, the latest innovations tend to be minor within the particular system. With each iteration of development within the system, the continuous learning within the system feeds successive innovations. However, whilst this shortens time to market, it also reduces product life cycle and thus profitability (Perez, 2010, p. 7).

Flowing from this system of innovation approach, Perez (2010) defined a technological revolution as a set "*interrelated radical innovations that form a major constellation of interdependent technologies, or a system of systems*". These systems tend to feed off each other with learning loops that continuously impact on the technology and markets.

Two criteria distinguish a technology revolution from a random collection of technologies (Perez, 2010, p.9):

1. The reliance on and interconnectedness of the technologies within the system and the markets; and
2. The ability to have a profound impact on the economy and society.

The new industries that emerge tend to drive long term economic growth whilst the techno-economic paradigm is contributing to a reorientation of the global economy and rising productivity. The technological revolution is redefining the wealth creating potential of economies with the opportunities for innovation and associated technologies and infrastructure which has the potential to vastly improve the effectiveness and efficiency of economic activity (Perez, 2010, p.9).

The power to transform is what distinguishes a revolution from a set of dynamic technologies. Due to the continuous development and evolution of new technologies, the world is witnessing the techno-economic paradigm that is shifting socio-economic structures and impacting the global economy. The combination of the most profitable and efficient supply chains defines a meta-paradigm. Redefining more efficient and effective processes, procedures and structures are driven by the principles and criteria that arise from the use of new technology (Perez, 2010, p.15).

Ultimately, the relative cost structure of products or services is what underpins the new techno-economic paradigm. To take this further, four key factors define the criteria of a revolutionary system (Perez, 1984):

1. It is inexpensive and the price continues to decline;
2. It is readily available and will be in the foreseeable future;
3. It is ubiquitous; and
4. It has the potential to improve the cost of labour and capital.

Meta-paradigms tend to inculcate good organisational practices as the introduction of new technologies reconfigure how work is done, and the manner in which products or services are consumed in the marketplace. The way of work tends to be redefined, as is the way in which businesses are structured (Perez, 2010, p.15).

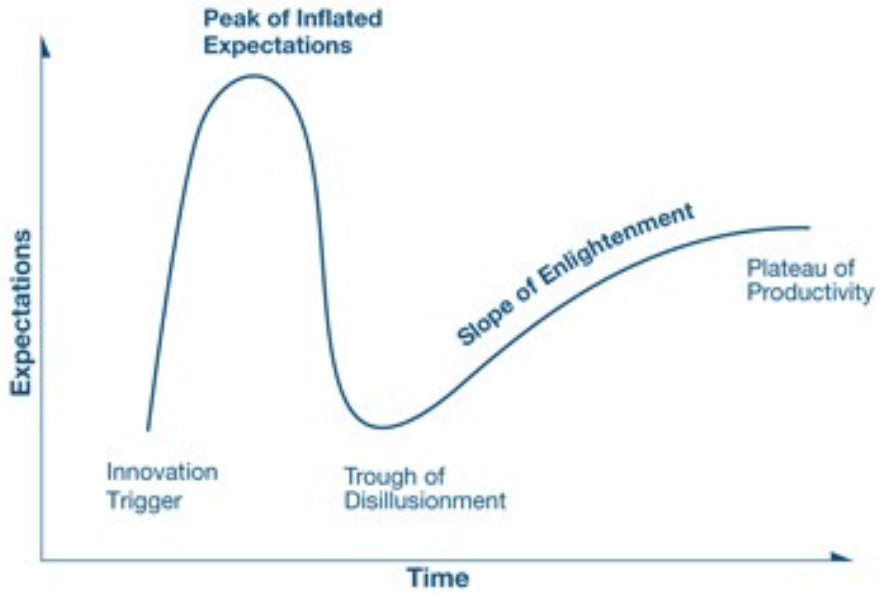
A techno-economic paradigm is the outcome of a collective and complex process of learning that is reflected in the most efficient economic, technological and organisational practice that occurs during the period of time that a technological revolution is being embraced by society. This allows for optimal

efficiency and returns and provides for shared understanding amongst role players (Perez, 2010, p.18).

The techno-economic paradigm articulated by Perez (2010) is further expanded by the Gartner “Hype Cycle” (Figure below). Technological innovations have also historically tended to follow the Hype Cycle depicted in Figure 3 below. A prime example is the Internet, which went through a boom-bust cycle around the turn of the century. When the dotcom bubble burst in 2001, it seemed to blow away the promise of the Internet as a major marketplace. Today, the Internet has become a major platform for business and large parts of the global population could not envisage their lives without it. Similarly, fintech in general may well be hyped and some innovations may already be entering the “trough of disillusionment”, however, as history shows, this does not necessarily mean that fintech will have no lasting effect on the banking sector.

The Hype Cycle

The hype cycle was formulated by Gartner, an IT consultancy. It represents the maturity and adoption of technologies and applications.



Innovation trigger: A potential technology breakthrough kicks off. Early proof-of-concept stories and media interest trigger significant publicity. Often no usable products exist, and commercial viability is unproven.

Peak of inflated expectations: Early publicity produces a number of success stories — often accompanied by scores of failures. Some companies take action; many do not.

Trough of disillusionment: Interest wanes as experiments and implementations fail to deliver. Producers of the technology shake out or fail. Investments continue only if the surviving providers improve their products to the satisfaction of early adopters.

Slope of enlightenment: More instances of how the technology can benefit the enterprise start to crystallise and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious.

Plateau of productivity: Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology's broad market applicability and relevance are clearly paying off.

Source: Gartner, retrieved 15 July 2018, www.gartner.com/technology/research/methodologies/hype-cycle.jsp.

Figure 3: The Hype Cycle

Despite its introduction 25 years ago, the Hype Cycle still receives growing interest from academics, scholars and practitioners. However, there are a number of uncertainties associated with technological development that have been observed. Some of these examples include: "*application realms, customer groups, technical feasibility and performance potentials…innovating firms, governments, research institutes, finance providers*", as well as social and environmental factors (Dedehayir & Steinert, 2016).

The Hype Cycle provides a well-reasoned foundation, which explains the general path or cycle a technology may take over time and during the course of its development. However, the Hype Cycle has become limited in its applicability to the various technologies, digital developments and innovation management strategies that have since matured over the years. Therefore, Dedehayir & Steinert (2016) proposes that the Hype Cycle should take a more tailored and nuanced approach when dealing with a particular technology. This should include but not be limited to the particular technology's hype activity, industry developments and the relevant contexts (social, environmental, economic and political). This would then enable an organisation to analyse, assess and forecast a technology with greater accuracy.

The Gartner Hype Cycle for Digital Banking Transformation (2019) provides a view of the technologies within the financial services industry, based on the Hype Cycle in Figure 3 above. This provides a holistic view of the fintech ecosystem, in which the Bank's WhatsApp banking service may be located at the peak in Figure 4 below, overlapping between Chatbots and Conversational User Interface.

Therefore, the Hype Cycle continues to serve as a basic, well-reasoned and foundational understanding that explains the development of a technology and its expected trajectory. It may also be extended, tailored and modified to take

into account various other factors that are more industry and technologically specific.

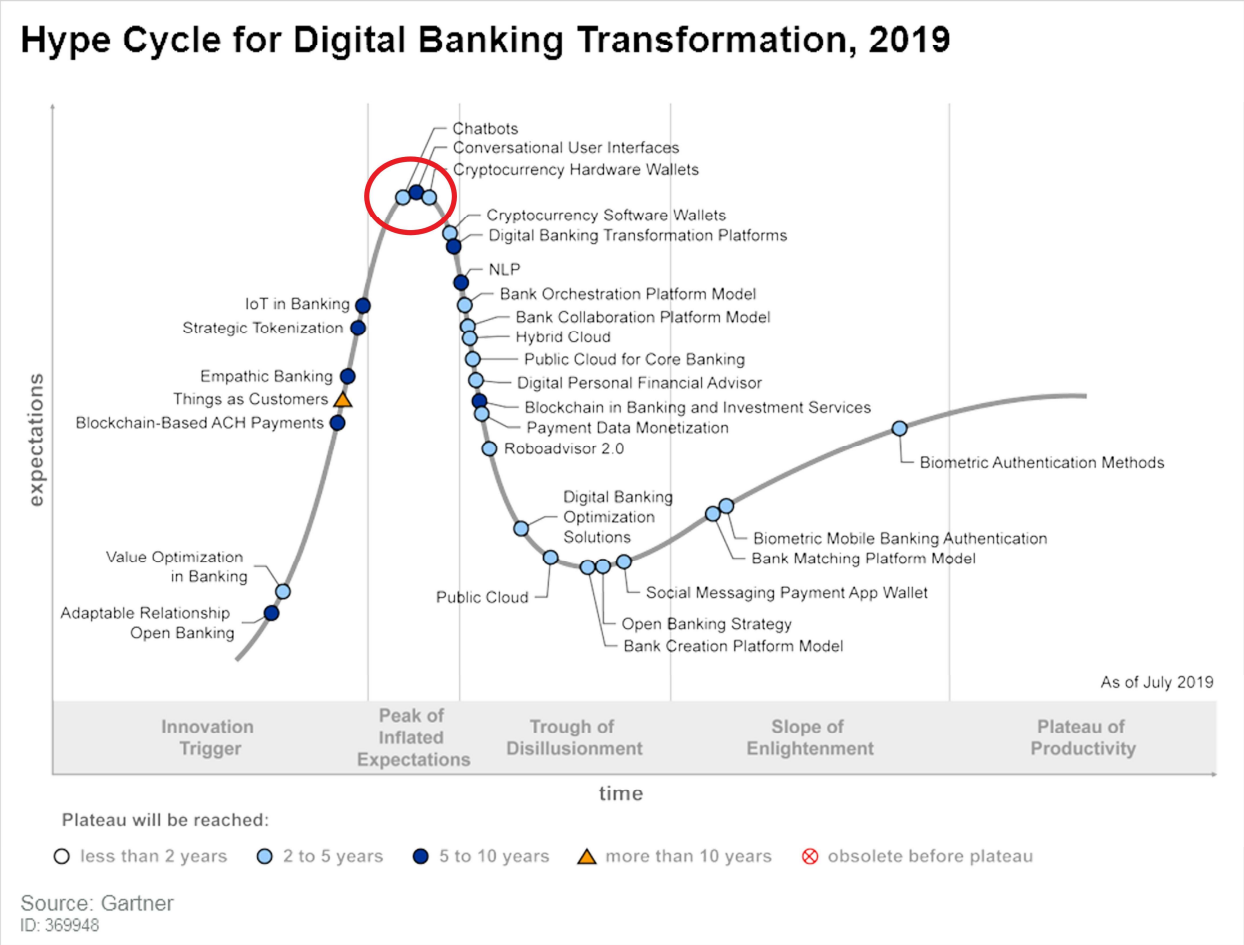


Figure 4: Hype Cycle for Digital Banking Transformation (2019)

1.7 DELIMITATIONS OF THE STUDY

There are several delimitations with regard to the proposed study and methodology, namely:

- The case study is confined to the Bank and the development of the WhatsApp banking service. This takes cognisance of time constraints in the submission of this report;

- The semi-structured interview process will not be conducted with everyone in the employ of the Bank, but only key personnel or individuals closely related to the subject matter;
- There are numerous intellectual property restrictions that will prohibit the publication of various aspects and details of the WhatsApp banking service and its operation, however statistical data on its usage may be made available;
- Further personnel will be interviewed as and when they are identified by the key personnel, who have indicated their involvement and/or interaction with the subject matter; and
- This study is only focused on the business model, ideation and implementation of a mobile based financial service, which falls within the realm of fintech. Statistics obtained on the usage of the service during the desktop analysis and interview process will be used to demonstrate the various attributes of the LASIC principles (Lee & Teo, 2015) and determine its success.

1.8 ASSUMPTIONS

Key assumptions made in conducting the study are:

- By only interviewing key personnel responsible for the development of the WhatsApp banking service of the Bank, it is assumed that the response of the management hierarchy that had to approve the solutions deployment will not add any further insights other than those already captured;
- There is a tacit assumption that government and the regulators will provide an enabling environment for the development and implementation of fintech; and
- The SA population has an adequate level of technological knowledge and can operate a mobile telephone device.

1.9 DEFINITION OF KEY TERMS

Fintech – *a "new financial industry that applies technology to improve financial activities*" (Schuffel, 2016, p. 45).

Financial inclusion – refers to the process by which all members of an economy are able to access and make use of a formal financial system (Sarma, 2008, p.3).

Technological revolution - as a set "*interrelated radical innovations that form a major constellation of interdependent technologies, or a system of systems*" (Perez, 2010).

Techno-economic paradigm – "*a best practice model for the most effective use of the new technologies within and beyond the new industries*" (Perez, 2010, p.9).

1.10 OUTLINE AND STRUCTURE OF THE REPORT

CHAPTER 1: INTRODUCTION

Notwithstanding the sustained period of growth that SA has experienced following the advent of democracy and the opening up of the economy in 1994, SA is still characterised by significant income inequality with more than half the population living below the upper-bound poverty level of R1 183 per month, as reported by Statistics South Africa (2018). The expansion of financial services to the underbanked and the unbanked could have a positive impact on income equality. Fintech applications specifically utilising mobile technology can play a significant role in expanding financial services.

CHAPTER 2: LITERATURE REVIEW

The last five years has seen the emergence of financial technology which a combination of banking and modern management science and technology is to provide innovative new products and services that are targeted at new market segments and are competing with traditional banks. Cryptocurrencies, digital mobile payment platforms and money remittance services have been successful in different parts of the world. Traditional banks have responded to this in SA by investing in and developing innovative solutions. The techno-economic paradigm described by Perez (2010) is not just a single technology that creates a technology revolution, but rather the manner in which changes occur across the entire supply chain, as well as the market. A technology revolution, Perez (2010) argues, has the potential to re-orientate the global economy and impact positively on the efficiency of the economy. Kim et al. (2018) defined six major players (MNO's, banks, agents, merchants and customers and regulators) that are necessary for the development of a successful MFS, giving credence to Perez's model of techno-economic paradigm. Five important attributes have been identified for business models that would most likely be able to leverage fintech in a socially sustainable manner while addressing financial inclusion, namely: low margin, asset light, scalable, innovative and compliance easy, more commonly referred to as LASIC.

CHAPTER 3: RESEARCH METHODOLOGY

The proposed study will follow the case study approach in order to determine whether the WhatsApp banking service expands financial services to the underbanked and unbanked, by assessing it against the LASIC attributes. The study will involve a critical analysis of all public documents, reports and communications of the Bank regarding the topic of innovation and more specifically, the WhatsApp banking service, which will then be corroborated by

semi-structured interviews with key personnel at the Bank who were directly responsible for the WhatsApp banking service development and management. Finally, an analysis of the numbers and take up of WhatsApp banking will be done. The final report will be qualitative.

CHAPTER 4: PRESENTATION OF FINDINGS AND RESULTS

This chapter details the data collected as part of the research using semi-structured interviews with key personnel who served and continue to serve integral roles in the development, implementation, management and monitoring of the WhatsApp banking service. The purpose of the study is to assess whether the WhatsApp banking service is considered to be a sustainable fintech application against the LASIC attributes, whether it has been or is a successful service and whether it has the ability to positively address financial inclusion in South Africa. The findings, based on the research questions, are presented and discussed.

CHAPTER 5: ANALYSIS AND DISCUSSION OF THE RESEARCH FINDINGS

This chapter reviews the findings of the data presented in Chapter 4 underpinned by the various rationales in the conceptualisation, development, implementation and management of the WhatsApp banking service. This chapter also aims to analyse, as well as synthesise the findings based on the literature in Chapter 2. There are four underpinnings that will be analysed in this chapter, namely: technological rationale, economic and financial rationale, geographical and social rationale and regulatory and legislative considerations. Lastly, the emergent themes collected during the interview process will also be highlighted at a high level, and an assessment will be made of whether the WhatsApp banking service was successful or not.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

This chapter summarises the findings of the study based on the desktop evaluation on the adoption rate and user base of the WhatsApp banking service, the semi-structured interviews conducted on key personnel, as well as the literature review. The purpose of the study is to assess whether the WhatsApp banking service is considered to be a sustainable fintech application against the LASIC attributes, whether it has been or is a successful service and whether it has the ability to positively address financial inclusion in South Africa.

1.11 CONCLUSION

Economic inequality can be positively impacted and addressed by the development of fintech applications, through a MFS such as the Bank's WhatsApp banking service, which utilises mobile technology as a platform. This may be an example of how the financial services industry can employ co-creation initiatives that will enable the development and implementation of financial products and services at a quicker rate, which will have a further reach among the customer base. It can then be inferred that with higher rates of financial inclusion, in other words more adults having access to formal financial services, there will be higher rates of economic development and growth.

CHAPTER 2: LITERATURE REVIEW

2.1 FINANCIAL INCLUSION: A SOUTH AFRICAN CONTEXT

The term financial inclusion refers to the process by which all members of an economy are able to access and make use of a formal financial system (Sarma, 2008, p.3). However, with more than half of SA's population living in poverty, many do not have the means nor the access to such services.

By contrast, the term financial exclusion simply means the inability to access financial services (Sinclair, 2001). The use of either inclusion or exclusion is dependent on the focus of the study and its measurement tools or factors. This paper will limit its use to financial inclusion as defined above.

Despite limiting this study to financial inclusion, it also useful to note the various factors provided by Kabakova & Plaksenkov (2018) that have an influence on financial exclusion in Sub-Saharan Africa. These factors are:

- Socio-demographic
    - These factors refer to the social health of a country's population, specifically aligned to the manner in which financial decisions are made. Therefore, the social health of a country is measured by the reach or penetration, level of difficulty and quality of financial services in the country and whether it is aligned to social development.
    - Literacy is another factor that has an influence and direct impact on financial exclusion, for example, the language in which financial services are provided in Chikalipah (2017) and Demirguc-Kunt et al. (2017) stress that "*using the local language as a medium of communication could breach the banking apathy and language barrier currently being witnessed among rural residents*".
- Technological/digital
    - This refers to the use of technology to access and make use of financial services, which will only be useful once there is enabling infrastructure,

complemented with increased technological capabilities and access to the technology itself.

- Economical
    - These factors refer to high transaction costs and bank charges (Chikalipah, 2017).
- Environmental (Chikalipah, 2017)
    - These factors refer to poor, or lack of, infrastructure that enables or promotes access to financial services. Such infrastructure includes road networks, transportation systems, telecommunication facilities and security facilities.
- Political
    - These factors refer to the political, legislative and regulatory will of a country to either promote or impede access to financial services, through robust and progressive reforms and developments.

The Global Findex Database 2017 (Demirguc-Kunt et al., 2017) is the most recent data set that is able to track the progress, on a global scale, of providing basic financial services to all. The study highlights the impact that digitalisation has had on financial inclusion, through account ownership, digital payments and the use of formal banking accounts. However, it also notes that the most common reason why nearly two thirds of adults without a banking account remain unbanked is due to a lack of having enough money. Some of the other reasons include: they do not need a banking account (31%); cost are too high (26%); someone in their family already has an account (26%); distance to a banking institution or office (22%); distrust in the financial system (16%) and religious reasons (6%) (Demirguc-Kunt et al., 2017, p. 40). Figure 5 below graphically represents the aforementioned statistics.

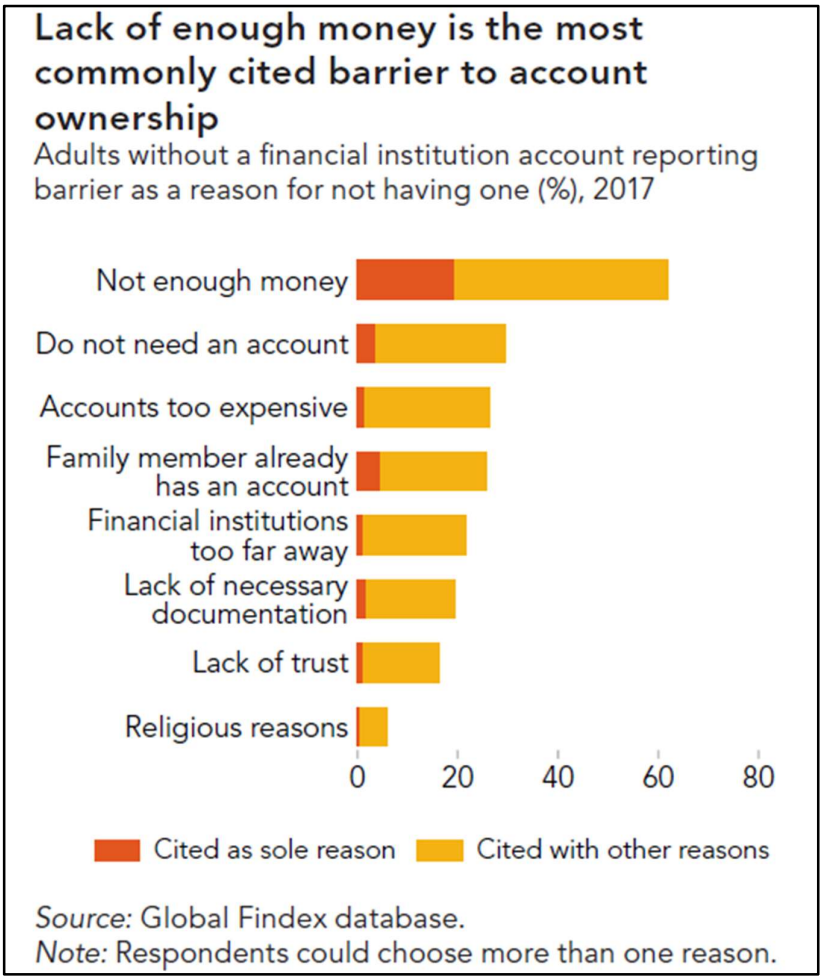


Figure 5: Globally cited barriers to bank account ownership

SA's National Treasury (2011) has identified financial inclusion as a top policy priority, despite South Africa having a relatively well-developed financial services industry.

A South African consumer survey conducted by Finmark (2019) illustrates the various issues that drive or hinder financial inclusion. The emerging trend was that South Africans are facing challenging economic pressures. The results reveal that one in five adults having to borrow money to purchase food, with more and more adults becoming vulnerable to accumulating debt by taking out credit facilities, due to an increase number of dependant/s on remittances and grants.

The Figure below illustrates that there is a positive increase in the number of formally served and banked population. However, there is also a growing population of

informally serviced and unbanked population. While the population of those financially excluded has decreased, it is clear that not all of those individuals are accessing financial services through a formal and regulated service provider.

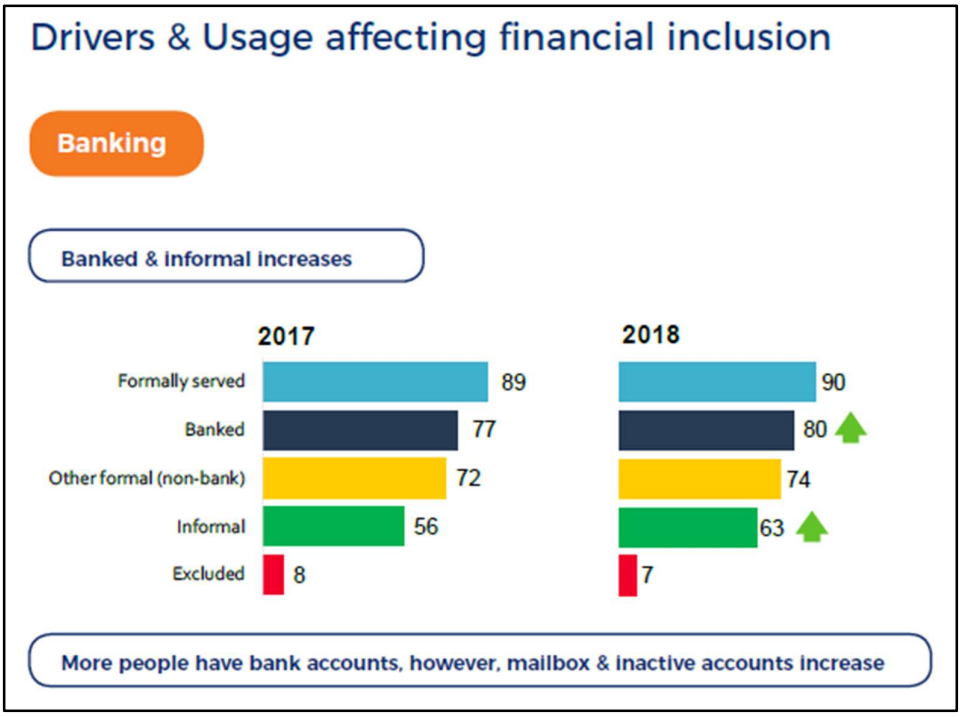


Figure 6: Drivers and Usage affecting financial inclusion (Finmark, 2019)

The Figure below, illustrates that while there has been a positive growth and uptake in the formally served and banked population, there has also been an increase in the number of dormant accounts. Despite a growing population of formally served and banked individuals, many are resorting to informal methods and means to access financial services, with reference to Figure 5 above, and the various barriers to account ownership.

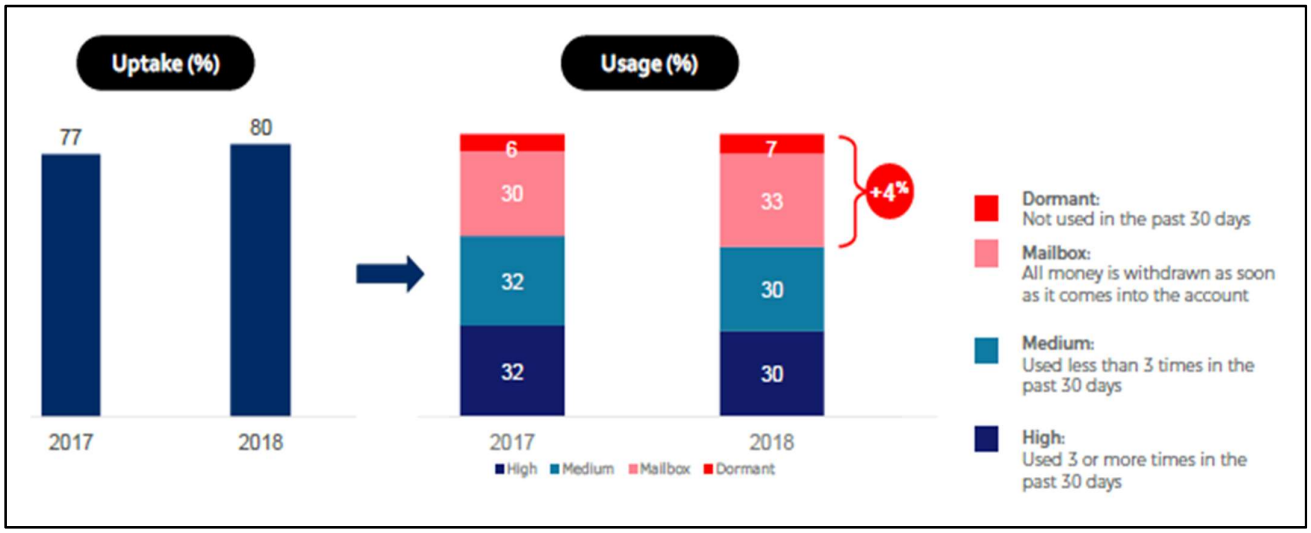


Figure 7: Uptake and Usage Survey Results (Finmark, 2019)

2.2 WHAT IS FINTECH

As early as 1972, the term fintech was defined as an "*acronym that stood for financial technology that combined bank expertise with modern management science techniques and the computer*" (Bettinger, 1972, p. 62).

Internet search-related queries of the phrase 'fintech' has seen a drastic increase in the past five years, indicative of the fact that it is an area that is building a great deal of interest, importance and influence. Figure 8 below illustrates the increasing interest in the phrase fintech, while Figure 9 states that SA ranks 21 out of 66 regions that show an interest in the phrase fintech (Google Trends, 2020).

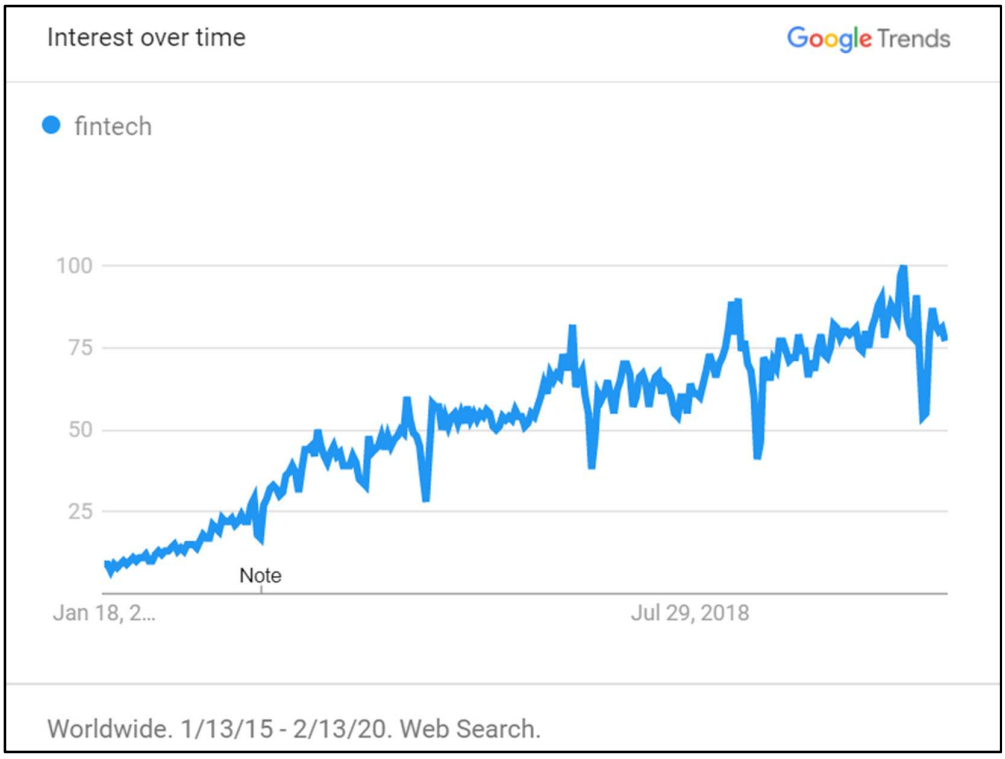


Figure 8: Google Trend – Interest over time "fintech"

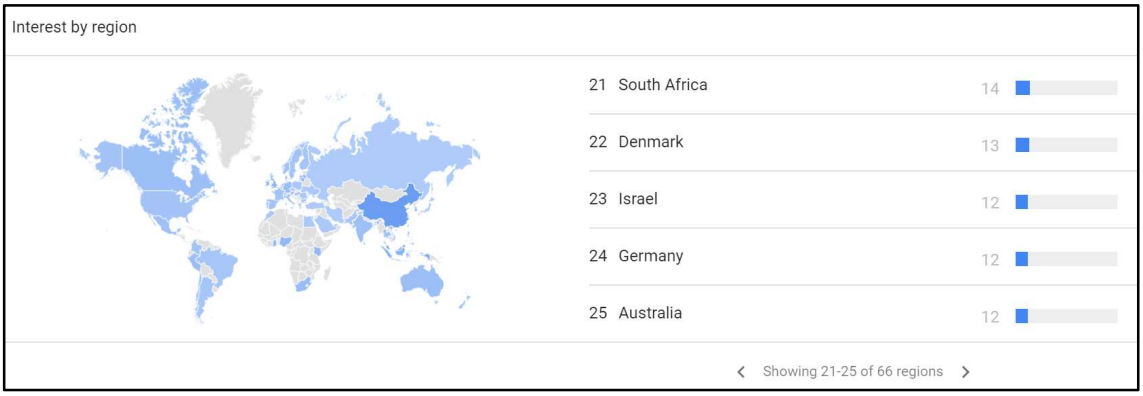


Figure 9: Google Trend – Interest by region "fintech"

The prominent work of Schuffel (2016), an epistemological study of the definition of fintech spanning more than 200 scholarly articles and covering a period of more than 40 years, provides a useful, amalgamated and encompassing definition. It defines fintech as "*a new financial industry that applies technology to improve financial activities*" (Schuffel, 2016, p. 45). This is similar to the working definition preferred by

the Financial Stability Board (2017): "*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*".

This definition is posed broadly enough to encompass qualities of an object, as well as narrowly enough to allow comparisons between objects, to the exclusion of reference to traditional banking business models (Schuffel, 2016, p. 45).

The fact remains that the "*Fintech phenomenon has become too important and too pervasive over the past years to be neglected*" (Schuffel, 2016, p. 45). It is a challenge that all existing financial service providers need to identify, assess and adjust to in order to ensure their relevance.

The provision of financial services through mobile phone technology is therefore considered to be fintech, and a possible solution to address financial inclusion.

2.3 MOBILE APPLICATIONS

Nickerson et.al (2007) defines mobile applications as "*a use of a mobile technology by an end-user for a particular purpose*". These applications are developed by organisations or individuals, provided to the end-user through the use of a mobile service operator with the necessary infrastructure.

2.3.1 TAXONOMY OF MOBILE APPLICATIONS

The proposed taxonomy of mobile applications by Nickerson et. al (2007;2009) is categorised into several dimensions, which is based on the interaction between the end-user and the mobile application itself. However, it is also possible for a single mobile application to overlap onto two or more dimensions.

2.3.1.1 TEMPORAL DIMENSION

Mobile application services are almost immediately available to the end-user, upon their request. Therefore, the end-user may interact with the mobile application in real time.

2.3.1.2 COMMUNICATION DIMENSION

This dimension describes the flow of information between the mobile application and the end-user. It may be a one directional flow, or it may be a bi-directional flow.

2.3.1.3 TRANSACTION DIMENSION

The end-user is able to process a transaction through the mobile application, for the purchasing of goods or services.

2.3.1.4 PUBLIC DIMENSION

This dimension describes the accessibility of the mobile application by either the general public, specific groups or specific individuals.

2.3.1.5 MULTIPLICITY (OR PARTICIPATION) DIMENSION

This dimension describes whether the end-user is one of many other end-users accessing and utilising the mobile application at

the same time, or whether it is solely an interaction between the end-user the mobile application.

2.3.1.6 LOCATION DIMENSION

This determines the mobile application's functionality and operability depending on the location of the end-user.

2.3.1.7 IDENTITY DIMENSION

Similar to the location dimension, the mobile application's functionality and operability is dependent on the identity of the end-user.

2.3.2 TYPES OF MOBILE APPLICATIONS

The below Figure is a non-exhaustive list of the various types of mobile applications:

- Mobile communications
- Mobile messaging
- Mobile navigation
- Mobile TV
- Purchasing location-based contents
- Mobile inventory management for a company
- Product location and tracking for individuals
- Mobile auctions & financial services
- Mobile games – individual
- Mobile games – group
- Mobile advertisement user – specific
- Mobile advertising – location-specific
- Mobile entertainment services (contents-on-demand, live events)
- Mobile personal services (mobile dating)
- Mobile distance education – offline
- Mobile distance education – online
- Mobile product recommendation
- Mobile telemedicine and patient monitoring
- Mobile ticketing
- Mobile communities
- Mobile emergency/safety management
- Mobile habitat/environmental monitoring
- Mobile social networking

Figure 10: Generic non-exhaustive list of mobile applications (Nickerson et. al, 2009)

MFS overlaps onto all dimensions, except multiplicity, for the following reasons:

- Temporal
  - The user can interact with the mobile application at their request, in real time.
- Communication
  - Information flows bi-directionally.
- Transaction
  - The end-user may perform transactions through the mobile application, depending on the service offering
- Public
  - The mobile application would be accessible to the end-user through a registration or membership process managed by the MFS operator.
- Multiplicity
  - While the interaction only occurs between the end-user and the mobile application, there are other end-users accessing the mobile application, however within their own private interaction. Despite many interactions occurring at the same time, each interaction is private and independent of each other.
- Location
  - This would depend on the end-user's location and whether their location allows them access to the mobile application, dependent on the provision of mobile data access and mobile network service providers.
- Identity
  - The end-user's identity may impact the functionality and operability of the mobile application.

2.4 MOBILE FINANCIAL SERVICES AND FINANCIAL INCLUSION

MFS is the term used to describe a variety of financial services that are accessible through a mobile telephone device. Some of these services include mobile banking, mobile payments, mobile money transfer and mobile international remittance services.

Barnes & Corbitt (2003) identify mobile banking as a service "*that provides customers with a channel to interact with a bank via a mobile device*". KPMG (2011) identify mobile payments as "*the use of a mobile device to make payments for goods or services either at the point of sale or remotely*". Mobile money transfer is the sending and receiving of money between people, such as M-Pesa in Kenya. And lastly, an internal remittance service is the sending and receiving of money to and from people across borders.

Upadhyay and Jahanyan (2016), as well as Okello (2018), describe "mobile money" as essentially a mobile-based money transfer service that uses information and communication technology tools and non-banking channels to offer and extend financial services to subscribers who are not profitable to be reached by formal and traditional financial services providers like banks. Merritt (2011) is of the view that money remittance services has the potential to change the market from traditional providers to wireless carriers, who would then be able to compete for market share based on "technological ubiquity and lower costs of services".

The economic benefits of mobile device usage and its proliferation is well evidenced (Waverman, Meschi & Fuss, 2005) and can be simplified into two dominant characteristics, namely mobility and flexibility. Mobility allows the mobile device user to access services regardless of physical location, thus reducing the costs it would have ordinarily taken to access those services in person. This means that the provision of services is not restricted to geographical locations any longer. Flexibility refers to the multitude of applications that can be run on a single mobile device that will provide the user access to, or enable the provision of, various services across many industries. Therefore, mobile devices increase access to information while also expanding the coverage of service applications and user base (Kim et al., 2010, p. 2).

Kim et al. (2018) has identified six main players in an MFS ecosystem and delivery of financial services, namely: customers, mobile network operators (MNOs), banks, merchants, agents and the regulators. Their interconnectedness can be described as follows and is depicted in Figure 11 below:

- Customers – perform transactions using applications developed and supported by mobile network operators;
- Mobile network operators – MFS providers;

- Banks – convert virtual money into physical money;
- Merchants – generate and pay fees to banks as the facilitators of financial transactions;
- Agents – act as over-the-counter service points for customers; and
- Regulators – responsible for the development, regulation and supervision of the mobile money ecosystem, to ensure enforcement and compliance with value creation, innovation and efficiencies.

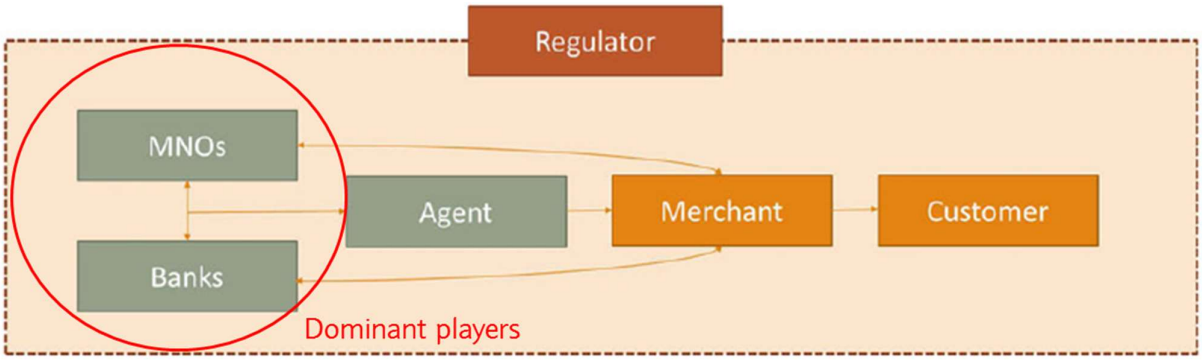


Figure 11: Adapted from Ecosystem of mobile finance services (Kim et al., 2018)

The growing trend of accessing financial services through digital technologies has seen a remarkable increase across Sub-Saharan Africa (Demirguc-Kunt et al. 2017). These digitally accessible financial services enable remittances using mobile phones. This is particularly important in the Sub-Saharan African context, where it was reported that on average 45% of people either sent or received such remittances.

Figure 12 below illustrates the percentage of adults with mobile phones globally. As seen below, South Africa is reported to have 70-79% of adult mobile phone ownership, which is among the highest in Sub-Saharan Africa.

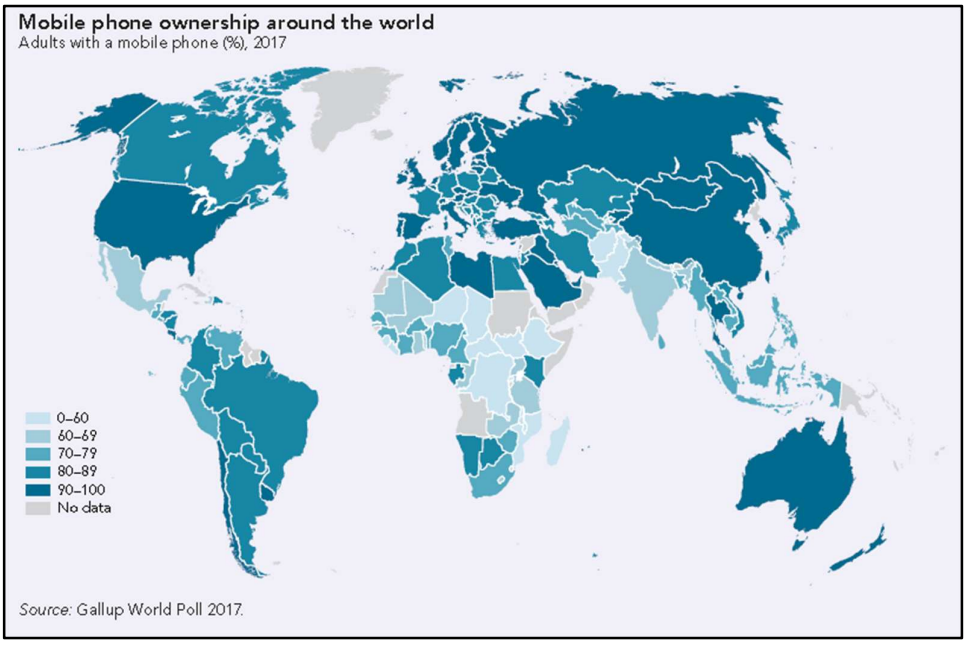


Figure 12: Mobile phone ownership around the world (Demirguc-Kunt et al., 2017)

Alipay in China is an example where mobile financial services are offered primarily through third-party payment service providers linked to a formal bank account at a financial institution. On the other hand, M-Pesa in Kenya is done through mobile network operators where there is no linked account at a financial institution (Demirguc-Kunt et al., 2017, p. 7).

According to the Global Findex Database (Demirguc-Kunt et al., 2017), among the most common reasons for not having a formal bank account, are: insufficient cash flow, costs and distances associated with physically travelling to a financial service providers facilities and lack of documentation.

Therefore, mobile finance offers alternatives to those who do not have access to formal banking services, in that it introduces previously unbanked individuals to making cash withdrawals from automated teller machines and using their mobile phones to conduct their financial business, thus increasing financial inclusion (Demirguc-Kunt et al., 2017, p. 58).

Mobile communication has seen a rapid growth, especially across the developing world and Africa in particular. This growth is seen as an enabler of the development of services such as Alipay in China and M-Pesa in Kenya. In SA, there are more of the

population that have access to mobile communication devices than the proportion that live below the poverty index.

There is a body of existing empirical evidence that suggests mobile phones can potentially serve as a tool for economic development in Africa, especially in promoting financial inclusion (Aker & Mbiti, 2010; Bray, 2015). Indeed, Gosavi (2018) submits that mobile money, which is a mobile-phone-based financial tool, can transfer money safely and quickly across a wide geographical area. However, evidence on the moderating effect of social networks in the relationship between mobile money usage and financial inclusion is lacking in this region.

Accordingly, Duncombe (2009) observes that mobile phones have considerable potential in providing a new and rapidly developing technological means to facilitate monetary payments and transfers in under-banked and unbanked communities. In addition, the United Nations Capital Development Fund (UNCDF, 2015) also reveals that innovations, such as the use of digital financing through mobile money, have led to increased access to affordable, safe, accessible, adaptable, and usable financial services by the poor.

Moreover, Consultative Group to Assist the Poor (2009) argues that mobile phones offer the possibility of revolutionising the traditional labour-intensive banking model into a more agile, robust and cost-effective mechanism capable of delivering the small financial transactions that the low-income groups usually deal with.

Additionally, the Ranjan Committee (2009) contends that the use of appropriate technology such as mobile money with low-operational cost can promote outreach of financial services in remote areas. This is supported by Kochhar (2009) who observes that the leveraging of technology creates channels beyond branch networks that helps in extending banking services to the unbanked similar to those dispersed by branches.

The World Bank (2014) concludes that high rates of mobile phone network penetration and adoption, lack of affordable alternatives, especially among rural communities, and lower service fees relative to conventional bank accounts have resulted in rapid use of mobile money, especially in developing economies (Mas & Radcliffe, 2010; World Economic Forum Report, 2011). This is further supported by Lukonga (2018), who states that approximately 40 out of 45 Sub-Saharan African countries are actively

using fintech, making Sub-Saharan Africa a global leader in respect of mobile money innovation adoption, as well as usage. Indeed, the use of digital financing reduces the cost associated with conducting financial transactions and the costs incurred by the banks to provide those financial services.

Therefore, the manner in which innovation is developed, implemented and managed, has a direct impact on the potential success or failure of the product or service offering.

2.5 COSTS OF MOBILE DATA AND SMART PHONE PENETRATION

Taking into account that more than 50% of SA's population, which translates into more than 28 million people, live below the upper-bound poverty line of R1 183 per person per month (Statistics South Africa, 2018), it is important to contextualise the cost of mobile data in relation to accessing MFS. This further contextualises the cost of mobile data in relation to using WhatsApp.

The figures below represent the varying costs of data in South Africa, spanning across all mobile network operators, providing the lowest and highest price for each. There are two types of tariffs, namely: prepaid and post-paid. Prepaid is the purchasing of a mobile network operators services upfront, loaded onto the mobile phone and utilised. Post-paid on the other hand, is the purchasing of a mobile network operators services, while being sent an invoice at the end of the month for payment.

Prepaid data Bundle prices		
Data Bundle (MB)	Price Range per MB	
	Lowest price	Highest price
100 (MB)	R29	R29.25
250 (MB)	R39.50	R63
300 (MB)	R60	R60
500 (MB)	R69.60	R100
600 (MB)	R99	R99
750 (MB)	R100	R120
1024 (MB)	R100	R149
1536 (MB)	R149	R189
2048 (MB)	R140	R249
2560 (MB)	R249	R249
3072 (MB)	R201	R299
4608 (MB)	R299	R299
5120 (MB)	R301	R405
6144 (MB)	R399	R399
6656 (MB)	R399	R399
10240 (MB)	R499	R605
20480 (MB)	R799	R1,010

Figure 13: Prepaid data bundle prices (ICASA, 2020)

Post-paid data price		
Data Bundle (GB)	Price Range per GB	
	Lowest price	Highest price
1 GB	R40	R79
2 GB	R60	R110
3 GB	R149	R171
4 GB	R100	R100
5 GB	R199	R221
6 GB	R129	R129
10 GB	R200	R332
14 GB	R259	R259
20 GB	R355	R504
30 GB	R605	R699
50 GB	R907	R999
100 GB	R1,210	R1,699
200 GB	R2,099	R2,099

Figure 14: Post-paid data bundle prices (ICASA, 2020)

McKane (2018) performed a series of tests on both the data usage of various WhatsApp services and its respective costs. Data usage was measured using WhatsApp's built-in network usages tools, which is available to all WhatsApp users on their mobile phone. Data cost for its respective data usage was determined by comparing the amount of data used for each WhatsApp service, against the cost of one gigabyte ("GB") of data, further calculated per megabyte ("MB"). These results are represented below:

WhatsApp	Data Usage
Text Message	**0.3kB**
Voice Note (30 seconds)	**62kB**
Photo	**95kB**
Voice Call (1 minute)	**400kB**
Video (10 seconds)	**2.2MB**
Video Call (1 minute)	**5.05MB**

Figure 15: WhatsApp data usage test (McKane, 2018)

WhatsApp Message	MNO 1	MNO 2	MNO 3	MNO 4	MNO 5
Text	R0.00005	R0.00005	R0.00005	R0.00003	R0.00002
Voice Note (30s)	R0.009	R0.009	R0.009	R0.006	R0.003
Photo	R0.014	R0.014	R0.014	R0.010	R0.005
Voice Call (1m)	R0.06	R0.06	R0.06	R0.04	R0.02
Video (10s)	R0.33	R0.33	R0.33	R0.22	R0.11
Video Call (1m)	R0.75	R0.75	R0.75	R0.51	R0.25

Figure 16: Adapted Cost per WhatsApp service (McKane, 2018)

Therefore, it can be concluded that the cost associated to using WhatsApp is very economical and affordable, which is supported by its large user base, making it one of the most widely used social messaging services in the world. However, this must be

contextualised against the usage and penetration rates of smart phone that would ordinarily be able to use WhatsApp and require mobile data.

A smartphone has been defined as "*a mobile phone with advanced features, such as: wi-fi connectivity, web browsing capabilities, a high-resolution touch screen display and the ability to use mobile applications*" (ICASA, 2020). The Figure below represents the penetration rate of smartphones in South Africa. It is important to note that smartphone penetration was 81.7% in 2018 and 91.2% in 2019.

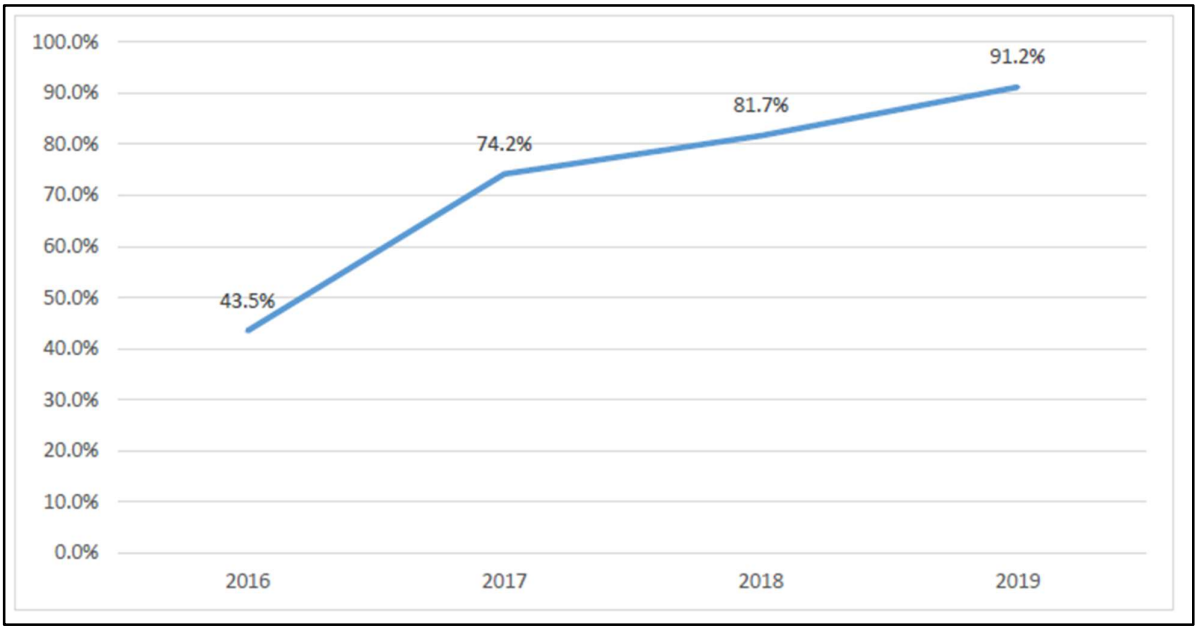


Figure 17: Smartphone penetration (ICASA, 2020)

South Africa has seen an increased smart phone penetration rates, with WhatsApp's data usage and costs thereof being relatively low. It is imperative to note that both a smart phone and WhatsApp, along with mobile data, is required to access WhatsApp banking services. However, a further analysis and assessment of the cost of mobile data, smart phone penetration and its potential influence on financial inclusion is beyond the scope of this study and may be subject to further research.

2.6 MANAGEMENT OF INNOVATION

Innovation in its most simplistic definition is the “introduction of something new” that increases or improves the status quo, whereas an innovation system is one that brings together different players that use science and technology to drive development effectively and extract value. This is not a linear process (Soumonni, 2016).

Freeman (1987) defined an innovation system as “*the network of institutions in the public and private sectors whose activities and interactions initiate, import, and diffuse technologies*”.

A number of African countries have adopted the National System of Innovation as a framework to aid their economic development strategies, in order to expand and grow their economies following the postulation of such a system as being based on the modern nation state (Jenson et al., 2007). SA, Nigeria, Ghana and Kenya, are some of the countries that have adopted such a system.

The adoption of a National System of Innovation as a framework is demonstrated through South Africa’s Department of Science and Technology Draft White Paper on Science, Technology and Innovation (2018), which has recognised the need to renew its Science, Technology and Innovation (“STI”) Policy. This need for renewal is mostly due to the fact that the current policy has not changed for 20 years since its adoption in 1996 and has not taken account of socio-demographic shifts, technological developments and advancements, and environmental degradation. The White Paper seeks to focus on and address the following:

- Local innovation environment;
- Policy cohesion and complementarity related to innovation;
- Strengthen support to businesses, with a focus on small and medium enterprises;
- Revitalise the South African Government’s role in innovation;
- Support and foster enabling legislative frameworks for innovation;
- Development of local innovation ecosystems; and

- Vertical and horizontal innovation integration for inclusive development among all stakeholders.

The African Union (AU, 2014) has also adopted the Science, Technology and Innovation Strategy for Africa 2024. Notwithstanding these developments however, most African countries have not been successful at innovation-based development, according to Oyelaran-Oyeyinka (2014). Some of the reasons point to a lack of "*collective vision at the level of leadership, incoherent systems of innovation, and a perennial dependence on raw minerals and commodities*" (Soumonni, 2016, p. 19).

Stinchcombe (1990) argues that for a system of innovation to work it has to take risks and invest in incubating ideas in such a way as to appease the requirements of investors on the one hand and incentivise staff to develop the competencies to commercialise ideas on the other.

There is no one approach to manage innovation or the types of facilities necessary to nurture innovation. Each organisation or entity is dependent on each set of unique circumstances and requirements (Comins et al., 2016, p. 39).

There are three emergent categories of innovation hubs, namely:

a. Traditional science parks:

   "*A science park is an organisation managed by specialised professionals, whose main aim is to increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions. To enable these goals to be met, a science park stimulates and manages the flow of knowledge and technology amongst universities, R&D institutions, companies and markets; it facilitates the creation and growth of innovation-based companies through incubation and spin-off processes; and provides other value-added services together with high quality space and facilities*" (IASP 2002).

b. Activity-based innovation hubs:

   "*Defined by a profile with less emphasis on developing new infrastructure but more on accessibility (location) and the provision of targeted value-*

added services… they are designed to offer services to meet explicit local and regional needs and have an emphasis on business cooperation – networking, exchanging experiences, market creation and lowering costs" (Comins & Kraemer-Mbula, 2016, p. 65).

c. Co-creation initiatives:

   Also known as co-creation models.

   "*The main idea is that institutions ought to be rooted in its specific local context and help build businesses by bringing in the necessary partners and moulding the incubator around existing launching platforms. The promotion of innovation in this context encompasses innovation for both societal and commercial purposes and recognises that innovation does not come purely through scientific and technological developments but can also emerge through creative or organisational changes."* (Comins & Kraemer-Mbula, 2016, pp. 77-78)

This case study is an example of a co-creation initiative whereby the Bank has strategically partnered with WhatsApp to deliver financial services through its social chat platform. This partnership may also be construed as collaboration, whereby the product or service offering has already been created by each respective partner. However, the collaboration is demonstrated by combining both standalone products and service offerings into one. The result is access to the Bank's products and service offerings via WhatsApp. Hence the reference to co-creation initiative may be used interchangeably with collaboration.

The categorisation of innovation hubs above is a high-level overview, with each type of innovation hub being sub-categorised, depending on the industry and sector. However, for the purposes of this study, the above categorisation is sufficient to provide a conceptual understanding of the various innovation hubs.

2.7 CONCEPTUAL FRAMEWORK FOR THE ASSESSMENT OF FINTECH INNOVATION

The financial services industry has, more often than not, adapted to the market and demands of the people, as and when there have been advancements. Technology is developing and advancing at rapid rates with mobile communication and interconnectivity having the most impact on people.

In combining these industries, a multitude of new income streams become possible, however, its realisation is dependent on the appetite of financial institutions. Numerous authors have described the marrying of the financial services and mobile technology as undoubtedly being disruptive to the financial services industry (Ferreira et al., 2015), and having an exponential and fundamental impact on it (Heap & Pollari, 2015).

Given the limited literature and analysis on fintech and financial services, Lee & Teo's (2015) LASIC framework serves as a tool to assess a fintech in a socially sustainable manner while addressing financial inclusion. The reasoning behind the development of these principles was to provide a framework within which any business, including a fintech application, may be assessed, in order to create "*sustainable business with the social objective of improving income and wealth inequality*" (Lee & Teo, 2015, p.2). The LASIC principles and their presence was demonstrated through two case studies, namely Alipay in China and M-Pesa in Kenya.

Guild (2017) believes that fintech is often more successful when the technology solution is ground-breaking and innovative and meets some unfulfilled need. This allows fintech to achieve broad penetration and can bring financial services to large parts of the population. These five principles are considered to successfully control and guide the business model of a fintech product or service in creating a sustainable social business, product or service for inclusive finance (Abubakar & Handayani, 2018).

Each attribute will be briefly discussed below.

2.7.1 LOW PROFIT MARGIN

The first challenge for any business, especially one that is steeped in technology, requires a significant user base that will make the business model profitable. This involves growing a user base or critical mass accumulation (Lee & Teo, 2015, p.2).

This would be achieved through rigorous marketing campaigns and service offerings that are competitively priced, with the most customer value. The objective is to create a big user base and high demand. The alternative may also be the accumulation of a big user database that can then be packaged and monetised to third party service providers or for developing new service offerings. An example would be how Alipay in China has used data analytics to identify credit worthy customers based on their spending patterns (Lee & Teo, 2015, p.2).

2.7.2 ASSET LIGHT

An asset light business model entails moving away from traditional business models that required substantial amounts of investment in premises and physical infrastructure, maintaining an asset light business model enables greater flexibility and dynamism. This creates a business model that is more responsive and adaptive to market trends, enhancing relevance and profitability within the industry.

2.7.3 SCALABILITY

This refers to the ability of the fintech application to be readily available to increase in scale without impairing the functionality, utility, operability and profitability of the application itself.

2.7.4 INNOVATIVE

Innovation is mandatory across the business model, be it product, process or organisational level. This ties in with Schumpeter's (1912) and Mthanthi and Ojah's (2017) conception that fintech business models, akin to that of an entrepreneurial firm, must display a combination of risk taking, innovativeness and proactiveness, in order to realise true economic growth and impact.

2.7.5 EASE OF COMPLIANCE

The success of any fintech business model depends on either the rigidity or flexibility of a regulatory landscape. Balanced and fair trade-offs must be the result of ensuring financial stability, consumer protection, as well as economic development, growth, inclusion and participation.

2.7.6 APPLICATION OF LASIC TO FINANCIAL INCLUSION

The application of the LASIC principles on their own does not create long term sustainability of fintech applications. A critical element of the success of fintech application lies in investment to address financial inclusion and providing services to the underbanked and unbanked. The regulatory requirements faced by the formal banking sector, such as capital adequacy and compliance, adds to the growing cost of doing business. This, against a backdrop of a saturated upper end of the market, means that revenue is plateauing for banks and there is a growing competition for the clients at the top of the pyramid.

The size of the potential market, coupled with the potential low cost fintech applications, creates significant business opportunities. New business models for payments, remittances and credit extension can lower transaction costs for

consumers and retailers. Accessing information on social media through the use of big data analytics to understand risk profiles can be used to extend credit to the underbanked and unbanked and develop micro insurance products.

Fintech companies and start-ups networking with large mobile telecommunications entities and other e-commerce platforms to leverage existing infrastructure, can increase financial and economic inclusion thereby reducing income inequality. Addressing financial inclusion is not a social responsibility objective but a business imperative (FST Media, 2015, pp. 12-13).

Reddy et al. (2017) refer to the LASIC principles as a tool to measure the potential success or failure of a technology-based business that may have unique features, which defies the status-quo of doing business in an established industry. The application of the LASIC principles seeks to provide an assessment of whether a business will survive during this period of digital disruption and transformation. It allows for a business to either transform itself or provide opportunities for a business to reinvent itself.

Soriano (2017) applied the LASIC principles to understand the role played by digital technologies in addressing financial inclusion. In doing so, and by applying strategy management theories, he identified key attributes that could be the driver of success of Fintech start-ups.

This framework was selected for its specificity on assessing whether a fintech will be successful or not, while addressing financial inclusion. The framework also consisted of measurable variables that could be supported and corroborated by statistical data, desktop research and semi-structured interviews. Lastly, this framework did not include a customer segment or sentiment, which is beyond the scope of this study and stated as a delimitation.

2.7.7 OTHER FRAMEWORKS

Several other frameworks that were considered but not selected for this study include: the net valence framework theoretically grounded theory of reasoned action, the role of networks theory, framework for disruptive innovation, absolute innovation management framework and the business model canvas.

2.7.7.1 NET VALENCE THEORY

The net valence framework theoretically grounded theory of reasoned action was used in Ryu's (2018) study, which observed that the intention of a customer to adopt a fintech product or service is based on a balance of both benefit and risk associated with that particular product or service, further influenced by their behavioural belief and social system. This framework was not selected as it contained a customer segment and sentiment component, which was excluded from this study.

2.7.7.2 ROLE OF NETWORKS THEORY

The role of networks theory, which "*posits that node centrality, density and robustness that enhances the strength and level of interaction between actors affects the degree of information flow and sharing*" (Bongomin et al., 2018). This means that most poor people rely on their social networks, either physically or through technology, to supplement and increase their access to formal or informal financial services. The most common uses of mobile phone technology among poor people with regard to financial services include saving, transferring and sending money (cash remittances). This framework was not selected as it contained a

customer segment and sentiment component, which was excluded from this study.

2.7.7.3 FRAMEWORK FOR DISRUPTIVE INNOVATION

Rasool et. al (2018) proposed a five-step framework that allows an organisation to assist with the generation of ideas for products that have disruptive potential. This was considered to be an anticipatory approach to disruptive theory. The five-step framework includes; market observations and customer identification, latent needs of the customers identified, customer value, idea generation and disruptive potential index. In the event of a product or service passing all five stages, it is indicative that the product is ready for execution or market delivery. This framework was not selected as it focused on disruptive innovation, which in its simplest form is innovation that displaces an already existing product or service. Furthermore, the execution or market delivery was beyond the scope of the study and therefore not applicable to a product or service that was executed and delivered to the market.

2.7.7.4 ABSOLUTE INNOVATION FRAMEWORK (“AIM”)

Aslam et. al (2020) sought to provide an innovation management framework that focuses on both the customer and entrepreneurial value through user/human-centred products, synchronised and embedded into an overarching organisation strategy. By ensuring a synergy between the AIM and organisation strategy, it creates a universal responsibility among employees to be involved in the innovation process. This in turn drives a culture of innovation across the organisation, producing user/human centred products

that would be desirable by a customer. The study argues that maximum benefits of innovation are achieved when the framework is implementable, practical, useful and easy to understand. This also enables the organisation to cope with the rapid rate of development and technological advancement. This framework was not selected as it closely linked to an organisation's strategy and overarching principles of innovation of the organisation. While it is very useful, it was not apt for this study on assessing a fintech.

2.7.7.5 BUSINESS MODEL CANVAS

Osterwalder & Pigneur (2010) proposed the business model canvas consisting of nine building blocks, which is designed to assess and determine value creation, generation, provision and management for an organisation. The nine building blocks are: key partners, key activities, key resources, value propositions, customer relationships, channels, customer segments, cost structure and revenue streams. While the business model canvas is a useful tool to map an organisation's competencies and value purpose, it is not specific enough to allow for an in-depth and critical assessment of a fintech. Although the nine building blocks are ostensibly "fixed", credibility may be lost due to overlapping between some of these blocks. Therefore, this framework was not selected.

2.8 CONCLUSION

As appropriately concluded by Chuen in FST Media (2015), the world is experiencing rapidly changing financial services with customers craving greater personalisation and convenience but heightened levels of security. FST Media (2015) believes that

building on financial inclusion, the next big thing in financial services is “connectivity inclusion” which is about being connected via smartphones and wearables. Finmark (2019) highlighted the fact that even though South Africans are experiencing economic hardships and are becoming increasingly credit vulnerable, smart phone penetration is increasing, while the mobile data costs associated with WhatsApp remain low.

This is the coming together of financial and social inclusion with the use of innovative new technologies that embrace social networks and lowers costs. Inclusion is necessary for sustained global economic growth and disruptive new businesses that strive to adhere to the LASIC principles, as the core building blocks, can be successful both as a fintech and a MFS.

However, the development of a successful MFS requires co-ordinated and synchronised efforts by all the necessary players defined by Kim et al. (2018). These include customers, banks, mobile network operators, merchants, agents and regulators. This forms the basis of the techno-economic paradigm described by Perez (2010), a systemic change that impacts on the entire supply chain and also on markets and the economy as a whole.

The role of governments and regulators becomes critical in the fast-changing landscape. First mover advantage for fintech applications may be hindered by slow-reacting regulators. The notion of development-led regulation rather than development lagged regulations may become a key element of the new era, with governments and regulators only stepping in when the industry reaches a critical mass or maturity as is happening now in China with Alipay.

India serves as a good example of how regulation hinders the desired outcome in the short term. It requires that telecommunication companies (“telcos”) or financial start-ups partner with existing banks to offer financial services, which has meant that there has been only 4% of the population reported to be using mobile phone-based remittance services. Know your customer (KYC) and Counter terrorism financing (CTF) combined with other compliance requirements add to the costs and makes the services unviable. However, regulation is only one element of the story. Cultural and social practices also hinder the take up of services, such as social health, literacy, high cost of financial services, inefficiencies experienced with financial service providers,

widespread use of informal investment schemes and lack of trust in the financial services industry (Ulwodi & Muriu, 2017).

The success of M-Pesa because they had first mover advantage and started out as a monopoly, or the dominance of Alipay that makes it almost untouchable, points to the initial conditions that contribute to that success.

Alternative business models in the financial sector, as demonstrated by M-Pesa and Alipay that exhibit the LASIC principles, can be successful. However, as is demonstrated by both, the LASIC principles in themselves are a necessary but not sufficient condition for success. Both applications are successful because central to the business model is financial inclusion which garners the support of government.

CHAPTER 3: RESEARCH STRATEGY AND METHODOLOGY

3.1 INTRODUCTION

This study follows the interpretative paradigm, which views the world through the subjective experiences of individuals. This paradigm is often connected with Schutz (1962), Cicourel (1964), Garfinkel (1967) and Malinowski (1967). The methodology relies on methods that include interviewing, observation and analysis of existing texts and documents that ensure a dialogue between the researcher and participants, in order to construct a meaningful reality. Generally, in interpretative studies, qualitative methods are used.

3.2 RESEARCH STRATEGY AND DESIGN

The case study method was used to determine whether the Bank's WhatsApp banking service is deemed to be a sustainable fintech service, using the LASIC framework as a measure of success.

The study includes the critical examination of publicly available documents, reports and material published by the Bank on the development and usage of the WhatsApp banking service. The data obtained above was supplemented with semi-structured interviews of key personnel involved in the management of the WhatsApp banking service at the Bank. Statistical data obtained on the usage of the service during the desktop analysis and interview process is used to demonstrate the various attributes of the LASIC principles.

3.3 SELECTION OF PARTICIPANTS

The development of the WhatsApp banking service at the Bank was the unit of focus for this study. Semi-structured interviews with the following key personnel within the

Bank, who are directly responsible for the development of the WhatsApp banking service and the management of innovation, was conducted:

- Head of Mobile - Retail and Business Banking (one participant)
- Head of Emerging Channels (one participant)
- Development Head (one participant)
- Technology Developers (three participants)
- Legal Officers (two participants)
- Compliance Officers (one participant)
- Quality Assurance (two participants)

3.4 RESEARCH METHODOLOGY

The case study methodology is often used in exploratory research (Hussey & Hussey, 1997) as it is considered as an in-depth examination of an issue. It is an approach that is commonly used in the information systems space (Alavi & Carlson, 1992; Orlikowski & Baroudi, 1991). Yin (2017) postulates that the case study approach is the study of a practical phenomenon within its real-life context where invariably the link of the phenomenon and the context is not particularly clear. This is especially relevant in studying financial inclusion as a means to addressing income equality as research shows the clear link that expanded financial access can reduce income inequality (Barr et al., 2007, p. 175).

The case study was considered to be a holistic strategic approach to research rather than just defining specific aspects of the research (Stoecker, 1991). It is the understanding of all dimensions of the context and application of approaches to address problems.

Neuendorf (2002) points to the fact that the research unit under investigation can be the individual thing or it can be an entity and building on Hatcher et al. (2009), who argued for the unit of study to be broadened to the level of the organisation.

This research proposes to adopt an interpretative case study approach which is based on designing and implementing field work (Walshman, 2006). The case study

approach for this research comprises a holistic mode of enquiry, using a combination or variety of methods, including but not limited to "*its own logic of design, data collection techniques, and specific approaches to data analysis*" (Yin, 2017).

3.4.1 DATA COLLECTION AND INSTRUMENT

The plan for this study is as follows:

- Document the services provided by the WhatsApp banking service;
- Collect published statements and reports of the Bank on the take up and success of the WhatsApp banking service;
- Assess the WhatsApp banking service against the LASIC attributes;
- Develop a semi-structured interview template and questions;
- Set up interviews with each identified participant;
- Record each interview and make notes of answers to the predetermined questions;
- Transcribe the interviews;
- Analyse the answers, emergent threads and draw conclusions; and
- Provide recommendations for further research of the topic, taking into account the delimitations of this study.

3.5 DATA ANALYSIS

In order to investigate the research question, a series of semi-structured interviews was set up and conducted with identified key personnel of the Bank. The results produced by conducting these semi-structured interviews was summarised, analysed, compared, interpreted and described, and in doing so followed a series of logical techniques that have been applied appropriately, equally and coherently (Strauss, 1987).

The purpose of analysing the data collected above enabled the researcher to determine whether there was any relationship between the elements identified in the

research question, being the WhatsApp banking service, the management of this innovation process at the Bank, and whether the WhatsApp banking service expands financial services to the underbanked and unbanked by assessing it against the LASIC attributes.

Bearing in mind that the data collected, results and interpretation thereof is dependent on the views expressed by individuals, it was therefore imperative to ensure that the correct tools and methodologies be applied to be able to arrive at a logical, reasonably sound and scientifically proven conclusion that was consistent with the data collected from the interviewees (Strauss, 1987).

Transcriptions of the semi-structured interviews were analysed and articulated into emergent themes, threads and the overall assessments that this study attempted to determine.

3.6 LIMITATIONS OF THE STUDY

There are some key limitations that are associated with this study. The timelines and submission date for this report leave little time for an extensive research agenda and hence the number and scope of interviews was limited to the key individuals at the Bank.

The researcher, being an employee of the Bank, could introduce the risk of researcher bias. Johnson (1997), describes this as data collection that is influenced by the viewpoints of the researcher that then influences the interpretation of the data and the conclusions reached. Doolin & McLeod (2005) argue for a more reflexive approach, one in which the researcher actively pursues attempts to monitor and counter any such bias and engage in critical self-reflection as this facilitates the disruption of existing assumptions and uncertainties. Furthermore, researcher bias is countered in that the researcher has two years of service at the Bank and works in the legal department, with no exposure to the innovation management functions or virtual channels department at the Bank. Therefore, the risk of researcher bias is negligible or insignificant.

3.7 ETHICAL CONSIDERATIONS

The results of this study have been presented truthfully (Campbell, 1997). In order to ensure more open, truthful and honest responses from respondents to make the study meaningful and relevant, confidentiality and anonymity was offered (Hussey & Hussey, 1997; Campbell, 1997). The full nature of the study was disclosed to the participants, before their acceptance to participate in this study was provided.

The only information that has been divulged is that the participants are in the employ of the Bank. All information has been treated with confidentially and no information has been presented in any way that could link any individual to specific responses and where appropriate, information has been presented in an aggregate form.

All information was obtained through legal channels, without violating confidentiality standards. Approval was obtained from the Bank to conduct the study, and document sources was limited to those that are in the public domain or of public record.

3.8 RELIABILITY AND VALIDITY

LeCompte & Goetz (1982) suggests that any researcher must be able to justify and demonstrate the credibility of their research, analysis and findings based on taking account of various criteria that pertains to their particular research.

3.8.1 RELIABILITY

The content, data collected, analysis thereof and conclusions drawn must be able to withstand close scrutiny in order for it to be deemed reliable (Hussey & Hussey, 1997). The study and methodology used should be able to be employed by either the same researcher or not, who would arrive at similar observations and interpretations at another point in time.

3.8.1.1 PROCESS VISIBILITY

The process of this study was thoroughly detailed and consistently documented to ensure reliability throughout the study (Sykes, 1991).

3.8.1.2 EVIDENTIARY TRAIL

This process provided the reader with a sense of confidence when following the study, to ensure that everything involved in conduct, preparation and finalisation of the study was detailed and not left out due to a flawed system (Yin, 2017).

3.8.1.3 INTER-JUDGE RELIABILITY

The use of this process ensured that there was a degree of convergence or agreement between the interviewees, which was gathered from interviewing various key personnel across the business who were involved with various elements of the research question, each with their own field of expertise and experience (DeVellis, 1991).

3.8.1.4 INSTRUMENT RELIABILITY AND VALIDITY

An instrument's reliability and validity may be assessed on three pillars as posed by Straub et al., (2004), namely: content validity, contrast validity and reliability. In other words, it must be

demonstrated that the selection of the instrument must be reasonably and logically connected to the object of the study that is also able to adequately capture the desired results of the study. The interview process in this study was repeated several times with various interviewees. Each interview session provided feedback from other interviewees, which was reviewed and fed back into the data collection process culminating in a refined and consolidated assessment.

3.8.1.5 REPLICABILITY

This measure of replicability was used to prove that the study can be repeated by a researcher, who will be able to arrive at the same or similar result (LeCompte & Goetz, 1982). However, it must be noted that with the rapid development of fintech, the results may not be the same, but may have a similar interpretation, depending on the technologies available at the time of the study.

3.8.2 VALIDITY

Research must be "*plausible, trustworthy and therefore defensible*" in order for qualitative research to be considered as valid (Johnson, 1997, p. 282). While others (Stenbacka, 2001; Campbell, 1997) provide further indicators such as generalisability, carefulness, replicability, transferability, dependability and confirmability as alternatives to assess the validity and reliability of a study.

3.8.2.1 DESCRIPTIVE VALIDITY

This measurement is the factual accuracy to which a response from an interviewee is correctly recorded during an interview (Maxwell, 1992). All interviews for this study have been audio recorded, professionally transcribed and objectively reviewed.

3.8.2.2 GENERALISABILITY

This measurement is the degree of similarity that will be arrived at should the study be applied to a larger set of interviewees (Neudendorf, 2002). By only interviewing key personnel responsible for the development of the WhatsApp banking service at the Bank, it was assumed that the response of the management hierarchy that had approved the solutions deployment would not add any further insights other than those already captured.

3.8.2.3 EXTERNAL VALIDITY

This speaks to whether the information used to make generalisations are in fact credible and reliable (Cook & Campbell, 1979). Details of how the interviewees were selected, how many were selected, reasons for their selection, the data collection process and reasons for their utilisation are some of the many elements to ensure the study has external validity. All of these details have been provided in this study, whereby:

- the researcher is in the employ of the Bank and therefore has access to the technological platforms and professional networks to identify the key personnel; and

- succinct and high-level overviews of each participant's role and function at the Bank have been provided, highlighting their involvement with the WhatsApp banking service.

3.8.2.4 REFERENTIAL ADEQUACY

Lincoln & Guba (1985) refer to the utilisation of mechanically recorded data. In this study, all interviews were digitally recorded using an appropriately selected audio recording device.

3.9 SUMMARY

The case study follows the interpretative paradigm and is a qualitative study. The semi-structured interview methodology, coupled with a desktop analysis of publicly available documents, reports and articles on the development of the WhatsApp banking service formed the basis of the conclusions and recommendations that have been drawn.

CHAPTER 4: PRESENTATION OF FINDINGS AND RESULTS

This chapter details the data collected as part of the research using semi-structured interviews with key personnel who served and continue to serve integral roles in the development, implementation, management and monitoring of the WhatsApp banking service. The purpose of the study has been to assess whether the WhatsApp banking service is considered to be a sustainable fintech application against the LASIC attributes, whether it has been or is a successful service and whether it has the ability to positively address financial inclusion in South Africa. The findings, based on the research questions, have been presented below.

4.1 WHATSAPP SERVICE OFFERING AND ADOPTION

The Bank launched the WhatsApp banking service on 11 July 2018, which saw more than 10 000 customers registering for the service and a total of 300 000 messages from customers all within the first 20 days (Bank, 2018).

The service is only available to Bank account holders i.e. only clients of the Bank are able to use the service, after having followed a registration process. However, it is a prerequisite to have the Bank's mobile application installed and activated on the mobile device, in order to receive secure confirmations and conduct secure authentications and authorisations (Bank, 2019). Therefore, the mobile device must have the capability to run both the WhatsApp application and Bank's mobile banking application.

The registration process is as follows:

1. Add the Bank as a contact on the mobile device using the designated number 08600 XXXXX;
2. Open WhatsApp on the mobile device and locate the contact you have just added above;
3. Start a conversation with the contact above by saying "Hi", which will then guide the client through a series of prompts and processes.

The following transactions may be conducted using the service (Bank, 2019):

1. Request a balance on a transactional account;
2. Purchase airtime, data or SMS bundles for the cellular number already registered to the account;
3. Request a mini statement displaying the last three transactions on the transactional account;
4. Purchase pre-paid electricity for selected municipalities;
5. Pay a beneficiary provided that the beneficiary has been paid at least twice before;
6. Review and redeem customer rewards; and
7. Request a free mini credit report powered by TransUnion.

It is also important to note that the above service offerings are already available and accessible to the Bank's customers, through the mobile banking application, internet banking services, physical branches and automated teller machines. The provision of financial services through WhatsApp provides an additional access point for the Bank's customers.

4.2 BACKGROUND OF INTERVIEWEES

In order to holistically evaluate the WhatsApp banking service that would provide reliable and accurate results, a variety of key personnel who performed an integral part in its development, implementation and ongoing evaluation needed to be interviewed and consulted.

A total of 11 participants who were identified as key personnel were interviewed using a face-to-face approach.

The below table illustrates the variety of the participants, as well as their seniority in the Bank.

Participant	Position
1.	Head of Mobile Banking for Virtual Channels (Retail and Business Bank)
2.	Head of Emerging Channels for Virtual Channels (Retail and Business Bank)
3.	Security Architect / Technology Architect
4.	Senior Java Developer
5.	Junior Java Developer
6.	Lead: Transition and Quality Assurance for Virtual Channels (Retail and Business Bank)
7.	Quality Management for Virtual Channels (Retail and Business Bank)
8.	Senior Legal Counsel for Commercial Legal (Shared Services)
9.	Compliance Officer for Virtual Channels (Retail and Business Bank)
10.	Legal Counsel for Virtual Channels (Retail and Business Bank)
11.	Consultant Operational Risk for Virtual Channels (Retail and Business Bank)

Participants 1 and 2

The product owners who were and are responsible for the end-to-end strategy, including, but limited to, the development, methodology, implementation and monitoring of the WhatsApp banking service. Among the core tasks was the development of the chat robotics functionality and capability on which the WhatsApp banking service is built, as well as the integrating components and systems that enabled services and facilitates the interaction between the Bank and WhatsApp.

Participants 3, 4 and 5

These participants are the information technology team who developed the actual service and integration systems that enables chat banking services for the Bank, more commonly known as application programming interface (“API”) and conversational framework. This is the foundational system, platform and framework that WhatsApp

Banking was later built on. The development includes the technological building of the functionality, aesthetics and customer/user experience, both pre and post implementation.

Participants 6 and 7

These participants were and are responsible for pre- and post-implementation quality assurance testing and reporting for the WhatsApp banking service. This includes ensuring that the functionality and aesthetics is acceptable and easy to use for the client, delivering the correct services and integrating with the correct systems within the Bank.

Participant 8

This participant represented the Bank by negotiating, entering into and executing the service level agreements and contracts governing the relationship between all the necessary parties in the development, implementation and monitoring of the WhatsApp banking service.

Participant 9

This participant performed a regulatory and conduct risk advisory role, by assessing and providing regulatory, conduct risk, reputational risk, data privacy and fraud risk advices related to the WhatsApp banking service.

Participant 10

This participant performed a legal risk advisory role, by assessing and providing legal advices related to delivering the WhatsApp banking service.

Participant 11

This participant performed a post-implementation function by assessing, reporting and advising on any operational risks that were identified, captured, remedied and monitored. Furthermore, participant 11 also ensured that there are adequate resilience protocols to ensure the functioning and stability of the WhatsApp banking service, as well as its integration with the Bank's systems.

4.3 UNDERSTANDING OF CORE CONCEPTS: FINTECH AND FINANCIAL INCLUSION

A preliminary assessment was conducted on all the participants' understanding of the core concepts this study is premised on, namely 'fintech' and 'financial inclusion'. This preliminary assessment was conducted without prior engagement or consultation and before each participant was asked to evaluate the WhatsApp banking service against the LASIC principles.

This assessment was conducted in order to establish a benchmark that would then inform their evaluation of the WhatsApp banking service.

The measurement of understanding was set as per below, using the key terms identified and stated in Chapter 1.9 of this study:

- Basic
    - Accurately describes and understands the concepts in a very succinct and functional manner.
- Intermediate
    - Accurately describes and understands the concepts, while also being able to provide limited contextual background and examples.
- Experienced/knowledgeable

- Accurately describes and understands the concepts in detail, while also being able to provide knowledgeable and insightful contextual background and examples.

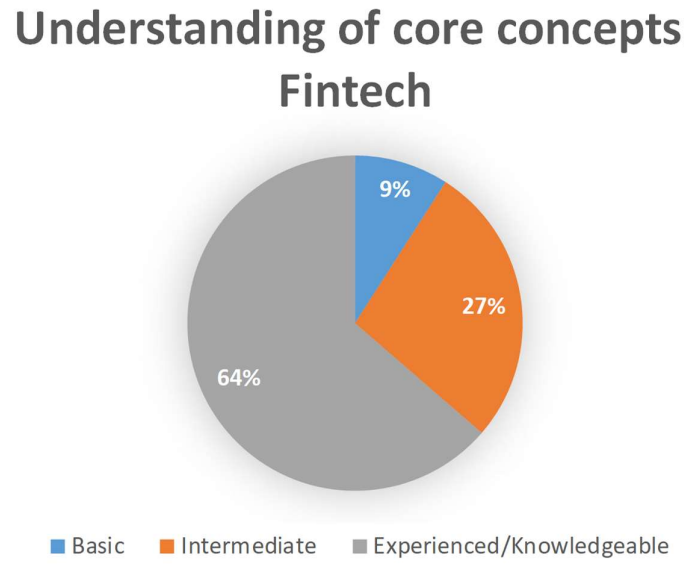


Figure 18: Understanding of core concepts: Fintech

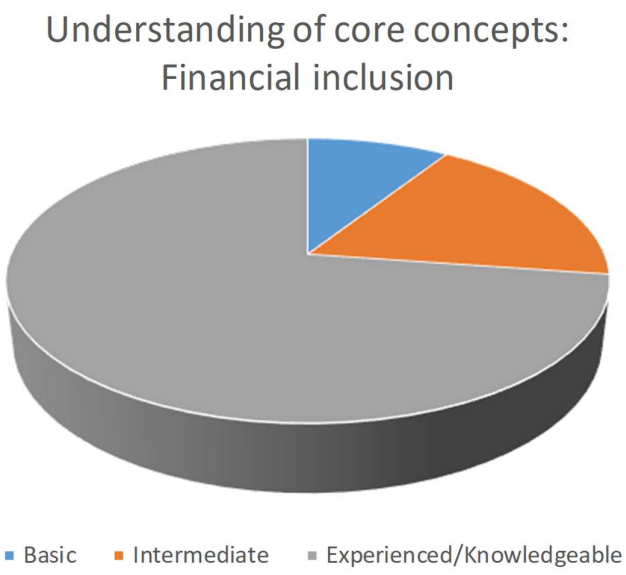


Figure 19: Understanding of core concepts: Financial inclusion

4.3.1 FINTECH

A total of 7 out of 11 participants were assessed to have an experienced/knowledgeable understanding of fintech, with the Head of Emerging Channels for Virtual Channels (Retail and Business Bank) advising that they are considered to be an expert in the field after being a "*co-founder/CTO of a fintech… lecturing part time for MIT and Oxford*". These participants also displayed "*not only an understanding of fintech from a technology perspective but also from a business perspective*". The participants' understanding was also not limited to or directly as a result of their seniority within the Bank, however it was more apparent that the closer each participant was to the subject matter, the deeper and more knowledgeable their understanding was. Most of these participants were able to easily describe fintech as being offering "*financial services through the use of technology*".

A total of 3 out of 11 participants were assessed to have an intermediate understanding of fintech. One of these participants having expressed a view of "*financial technology solutions, innovations within the financial sector*".

Only one participant had a very basic understanding of fintech, after being asked to express a view before proceeding with the interview, despite the initial response being uncertain and unknowing.

4.3.2 FINANCIAL INCLUSION

A total of 8 out of 11 participants were assessed to have an experienced/knowledgeable understanding of financial inclusion. The Head of Emerging Channels for Virtual Channels (Retail and Business Bank) referred to the "*two billion, bottom of the pyramid, $2 a day population group that most traditional incumbents not being geared to serve their financial needs*". Senior Legal Counsel for Commercial Legal (Shared Services) made reference to the "*previously disadvantaged from the regime that we have come from, that weren't for instance educated from a financial standpoint and the concept of financial inclusion seeks to address that*". Financial inclusion was also described as having access to financial services, including but not limited to, "*advisory, investments, credit, storage and movement of money*".

Only 1 out of 11 participants were assessed as having an intermediate understanding of financial inclusion, expressing a view of" including *all sectors, all walks of life*".

A total of 2 out of 11 participants were assessed to have a basic understanding of financial inclusion, with one referring to a "*profit and loss system*", as well as using a "*low-cost platform to inject revenue*". While not being able to accurately describe the concept, it becomes apparent during the interview that they are able to adequately evaluate and assess the WhatsApp banking service using the LASIC principles.

4.4 EVALUATION OF THE WHATSAPP BANKING SERVICE USING THE LASIC ATTRIBUTES

4.4.1 OVERVIEW

The scale of measurement used for this assessment is set out below:

- N/A
    - The participant was hesitant to express a view or opted to not pass an assessment or rating based on their role or position within the Bank. The participant also refused to express any view, rating or assessment citing a lack of qualification and expertise or was not adequately knowledgeable on the subject matter.
- Low
    - Barely meets the attributes.
- Medium
    - On average, meets the attributes.
- High
    - Fully meets the attributes.

4.4.2 LOW-MARGIN

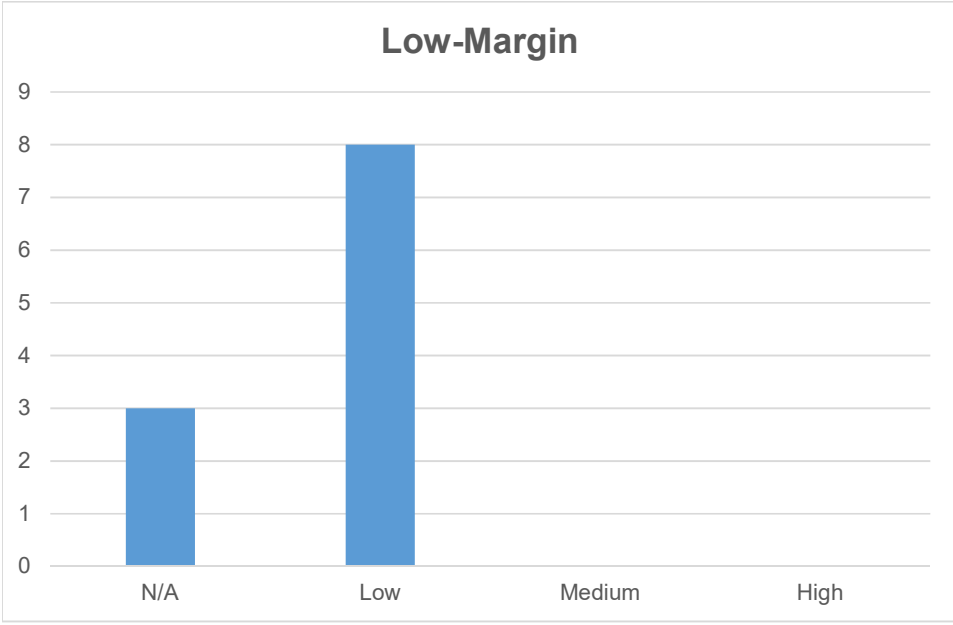


Figure 20: Low-Margin

A total of 8 out of 11 participants assessed the WhatsApp banking platform to have a low margin. The strategic intent, as expressed by the Head of Mobile Banking for Virtual Channels (Retail and Business Bank), or "*the plan is to only scale to a return of positive cash flow in 3 to 4 years from now*". However, the WhatsApp banking service currently does generate a revenue, albeit very small. The purpose of this was largely to create a learning and knowledge base, also serving as capability building exercise that would be of value in years to come. This was absolutely necessary "*to attract and build a critical mass*", therefore fully meeting this attribute.

A total of 3 out of 11 participants expressed a N/A assessment or view, as these participants are not aware of nor privy to the business case and commercial viability of the WhatsApp banking service, which falls outside of their role and function at the Bank. However, one of these 3 participants shared their personal view by stating that anything in the Bank has to have a business case with a revenue generating objective

behind it, in order for it to be approved, developed and implemented or launched.

4.4.3 ASSET LIGHT

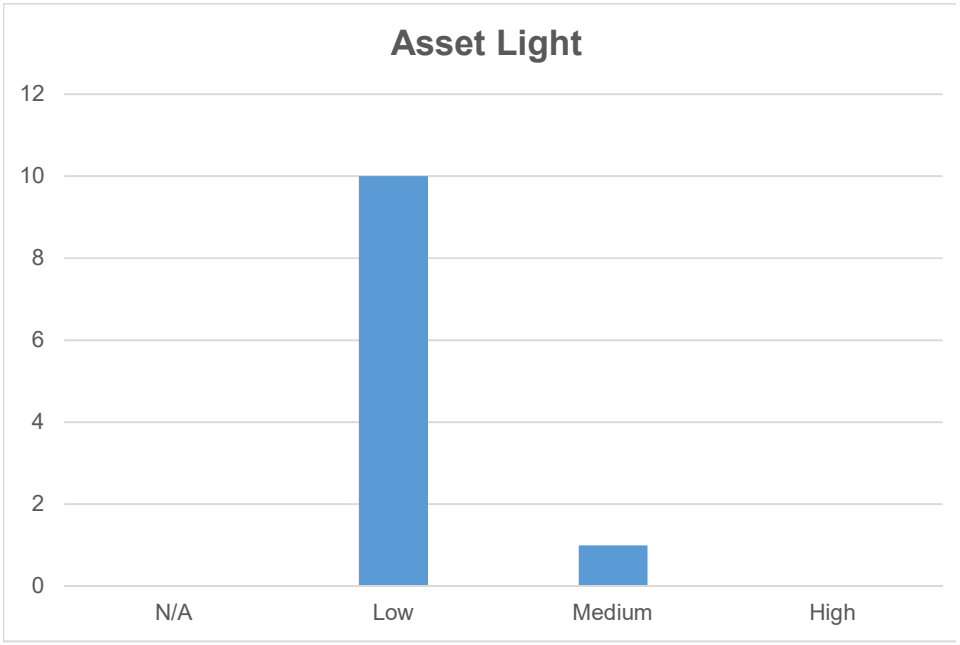


Figure 21: Asset Light

A large majority of 10 out 11 participants assessed the WhatsApp banking service to being asset light. The need for new hardware was "*extremely low, because we were reusing a lot of the things that we already have and although there's a lot of codes that had to be developed, which can be seen as part of the asset, there is no physical infrastructure that needed to be added." It was a matter of "leveraging and extending legacy systems*", therefore the need for new infrastructure was very low, as expressed by the Head of Mobile Banking for Virtual Channels (Retail and Business Bank).

Only 1 out of 11 participants have expressed a medium assessment for being asset light, for similarly the same reasons stated above, however based their assessment on the human resource element which required many man hours to code and develop.

4.4.4 SCALABILITY

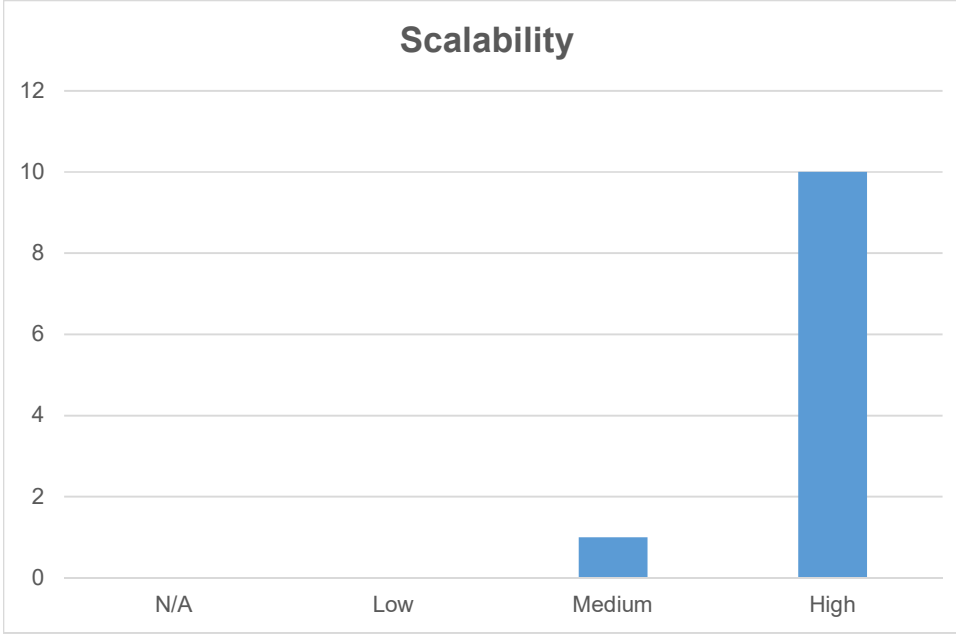


Figure 22: Scalability

A large majority of 10 out of 11 participants assessed the WhatsApp banking service to being highly scalable. The current user base growth was restricted due to the process of capability and knowledge base building. However, the belief is that it could be scaled and made available to "*millions*", as the technology and WhatsApp itself is "*planet scalable*".

The WhatsApp banking service has the capability to scale "*horizontally on its own within its virtual environment… and also expand on its scope of service offering*" (vertical upscaling), according to the Senior Java Developer.

Only 1 out of 11 participants having expressed a medium assessment for being scalable, as it is the extension of services to already existing Bank clients, with a transactional account.

4.4.5 INNOVATIVENESS

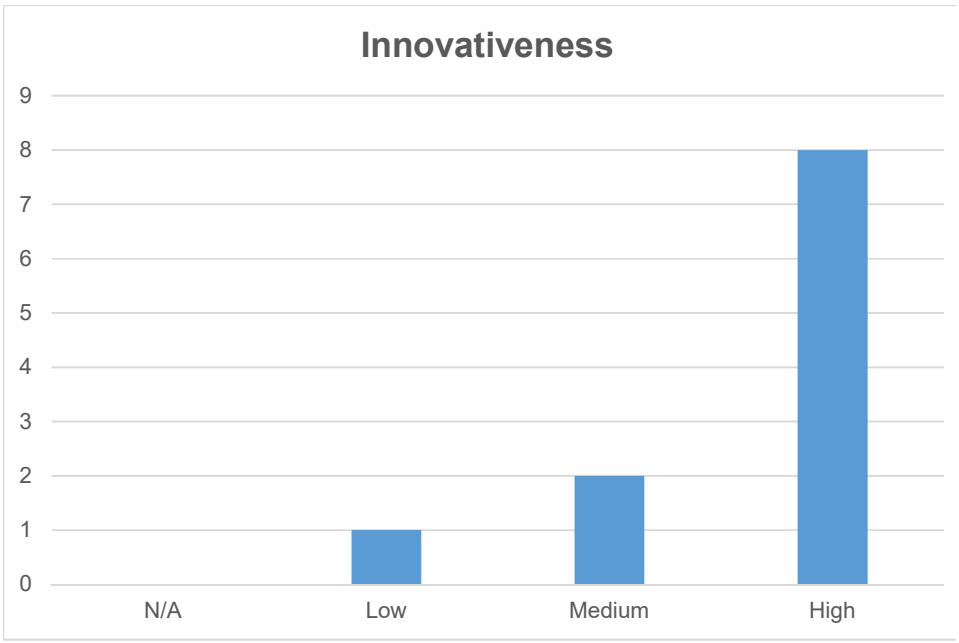


Figure 23: Innovativeness

A total of 7 out of 11 participants assessed the WhatsApp banking service to be innovative, citing that "*WhatsApp banking was not just our first. And we didn't want to just make it a marketplace, we wanted to show the world that a pan-African bank can be a global player not just a South African player. So, when we launched WhatsApp banking, our first thing was it had to be a first in the world",* according to the Head of Mobile Banking for Virtual Channels (Retail and Business Bank).

Conversational banking itself is considered to be very innovative, as it challenges most banking traditions, whereby one can perform certain transactions without a password or pin, provided that the registration

process, terms and conditions of usage are adhered to and complied with.

A total of 3 out of 11 participants expressed a medium assessment for being innovative. "*In terms of the actual technology, it's not innovative…but in terms of being first to market, that's where the edge comes from*."

Only 1 out of 11 participants expressed a low assessment for being innovate, citing that it is the extension of a current service offering "*on a different platform, on a different method of communication*". It is, in other words, the same or similar service offering on a "*different screen*". While conversational banking is highly innovative, the core functionality behind the WhatsApp banking service is low on the innovation scale.

4.4.6 COMPLIANCE EASY

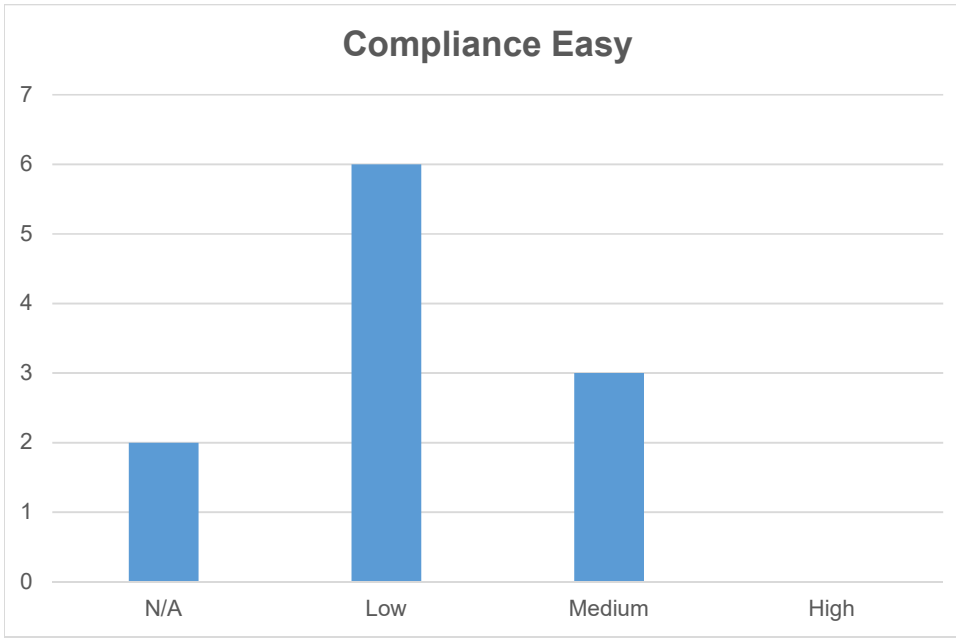


Figure 24: Compliance Easy

A total of 6 out of 11 participants assessed the WhatsApp banking service to being easily compliant. Most of the compliance, regulatory and legislative issues were dealt with on previous services, which the Bank was already familiar with.

The Head of Mobile Banking for Virtual Channels (Retail and Business Bank) is of the view that "*most of the time people believe that banking regulations…are strict and insurmountable. Actually, when you speak to the regulator… they are simply there to safeguard the economies and safeguard the customer*". Many of the data privacy, protection of personal or sensitive information concerns were alleviated by virtue of WhatsApp's end-to-end encryption.

A total of 3 out of 11 participants expressed a medium assessment for being compliance easy. An increase in service offering would have a direct impact on the compliance and regulatory concerns, as each and every financial offering has its own governing regulations and legislation. Therefore, the onus to comply increases with the increase in service offering. Hence, the current offering on the WhatsApp banking service was strategically designed, taking into consideration the compliance, regulatory and legislative controls that needed to be adhered to.

The Compliance Officer for Virtual Channels (Retail and Business Bank) expressed that "*the anxiety was a bit higher in the beginning, because we didn't know about it, we didn't know how it interacted and there were all these initial concerns that we had…but then going through, understanding the various elements*" that needed to be built, there was no longer such high levels of anxiety.

A total of 2 out of 11 participants expressed a N/A assessment or view, as these participants are not aware of nor privy to the compliance and regulatory aspects of the WhatsApp banking service, which also falls outside of their role and function at the Bank.

As part of on-going monitoring, management, compliance and regulatory processes, very few issues have been reported on the functionality,

usability and operability of the WhatsApp banking service. The service has been described as a "*very robust system…with very few issues*", with the quality assurance participant stating that they "*are not aware of customer complaints*".

4.5 DOES WHATSAPP BANKING ADDRESS FINANCIAL INCLUSION?

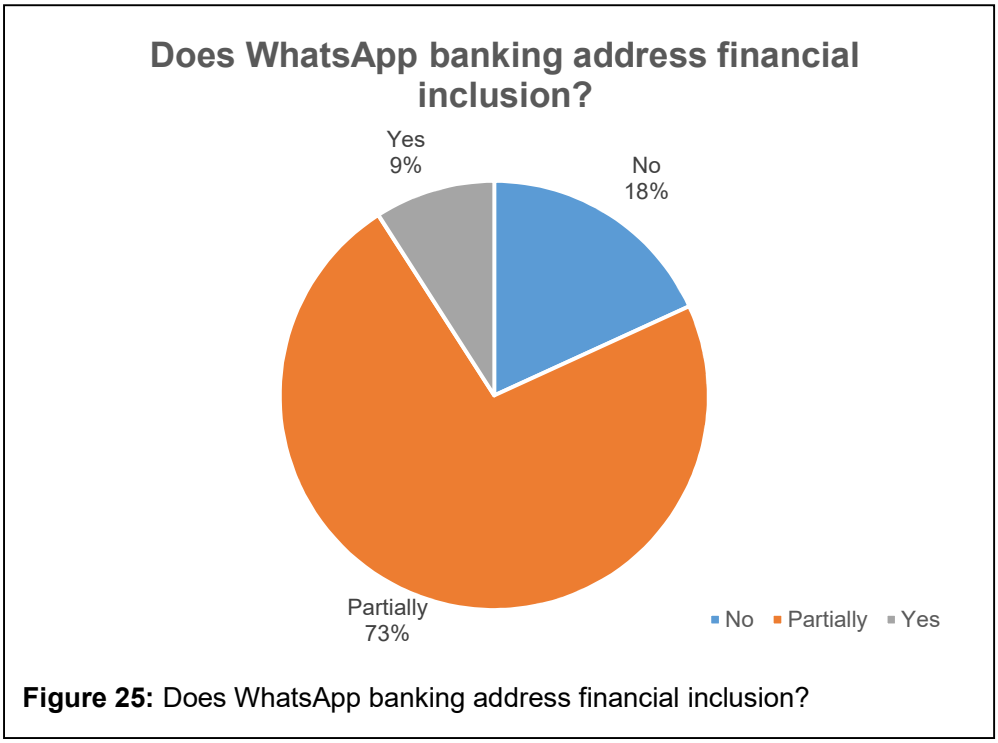


Figure 25: Does WhatsApp banking address financial inclusion?

A total of 8 out of 11 participants assessed WhatsApp banking to partially address financial inclusion, citing that while there is a greater access to financial services via a new medium, it does not have the potential to provide access to financial services for those who are not banked in the formal economy.

A reasonable explanation for this assessment may also lie in the fact that, according to the Head of Emerging Channels for Virtual Channels (Retail and Business Bank), the "*existing customer base as well on the… lower living standards measure ("LSM") are not necessarily technologically astute in terms of you know going to WhatsApp,*

registering, going to the mobile app and then coming back. So, they typically might not even have the mobile app. Then your higher LSM there are going to be also potentially not that technologically astute. I mean it is well known that the average age of the Bank's customer is 49."

All of these participants further stated that the WhatsApp banking service definitely has great potential to address financial inclusion, more specifically of the unbanked population of South Africa. This would be possible if new-to-bank clients could be processed or on-boarded through the WhatsApp banking service, apply for loan facilities, credit facilities and other products. The great potential to address financial inclusion is aided by the fact that there is no need to "*build a distribution…a telecoms network to get leverage*".

It was suggested that "*those every day 80% things which 90% or 100% of the people does…those 80% should be on most of the channels*". However, the "*other 20% which is very rarely used why have that on all your channels, have that on a specific online channel*".

A total of 2 out of 11 participants stated that WhatsApp banking does not address financial inclusion, as both of these participants stated that while it has great potential to address financial inclusion, it however currently does not.

Only 1 out of 11 participants cited that it was not primarily built to address financial inclusion, instead the driving force behind the WhatsApp banking service was to develop a "*learning capability*", which is conversational banking.

The issue of financial inclusion is "a much bigger problem", that has to address, among other things, "*the amount of money we charge for service fees…; the movement of cash and the availability of systems in the economy…; the ability to have Wi-Fi and free, and cheap data…; access to mobile data and mobile eco-systems in remote areas that we can't, that our market place currently does not cater for*". Therefore, the issue is far too complex and deeply interwoven into the fabric of society that one fintech application would not be capable of single-handedly solving, despite its positive contribution and effect. Factors such as literacy levels, numeracy skills, documented and undocumented people of society are among the many that have a hindering effect on addressing financial inclusion.

As long as the "*focus is still profit*" or underpinned by a bank's "*business rationale*", or a business case, then the issue of financial inclusion will never entirely be addressed.

Only 1 out of 11 participants, the Consultant Operational Risk for Virtual Channels (Retail and Business Bank), was of the view that WhatsApp banking does address financial inclusion, stating that "*from a mobile network operator ("MNO") perspective…They allowing a lot of customers from the lower LSMs to enter into the smartphone sector and what's the first thing you do… to get you onto social media platform, your Facebook, your Instagram, and your WhatsApp. So, yes if those people start banking with [The Bank] or they are our customers, it will of course allow financial inclusion*."

4.6 SUMMARY OF COLLECTED DATA

4.6.1 CONCEPTUAL UNDERSTANDING OF CORE CONCEPTS: FINTECH AND FINANCIAL INCLUSION

The majority of participants were sufficiently and adequately knowledgeable on the subject matter, as well as core concepts, allowing for meaningful engagement and assessment of the WhatsApp banking service based on their role and experience.

4.6.2 ASSESSMENT OF WHATSAPP BANKING USING THE LASIC ATTRIBUTES

The majority of the participants assessed the WhatsApp banking service to be a highly sustainable fintech application that has the potential to positively address financial inclusion.

4.6.3 WHATSAPP BANKING'S IMPACT ON FINANCIAL INCLUSION

The majority of participants assessed the WhatsApp banking service to only partially address financial inclusion, with several participants firmly rejecting that it addresses financial inclusion at all. The most common reason for this result is that the WhatsApp banking service does not make any provision for new-to-bank clients, therefore the service is only made available to existing Bank clients. Therefore, one cannot open an account via the WhatsApp banking service, effectively excluding the unbanked population from the service. The service as it currently operates only makes provision for financial access to the already banked population of South Africa.

CHAPTER 5: ANALYSIS AND DISCUSSION OF THE RESEARCH FINDINGS

5.1 RATIONALES BEHIND THE WHATSAPP BANKING SERVICE

This chapter reviews the findings of the data presented in Chapter 4 underpinned by the various rationales in the conceptualisation, development, implementation and management of the WhatsApp banking service. This chapter also aims to analyse, as well as synthesise the findings based on the literature in Chapter 2. There are four underpinnings that will be analysed in this chapter, namely: technological rationale, economic and financial rationale, geographical and social rationale and regulatory and legislative considerations. Lastly, the emergent themes collected during the interview process will also be highlighted at a high level, as well as the assessment of whether the WhatsApp banking service was successful or not.

5.1.1 TECHNOLOGICAL RATIONALE

The most cited response to why WhatsApp was selected was based on the fact that it is one of the most widely used social media platforms in the world by virtue of its large user base. Therefore "*WhatsApp's distribution, how broad WhatsApp is, how many subscribers WhatsApp has*" is the lead driving force behind the technological business case. In addition, the fact that WhatsApp has end-to-end encryption provides a secure communication platform on which to build banking services.

From a product point of view, the Head of Mobile Banking for Virtual Channels stated that research was conducted into "*market impression, social trends, enhanced customer experiences and what the competitors are doing*", which observed that consumers are "*moving from what you call form fill user interface ("UI"), to conversational UI. So, form fill UI, is a typical application where you go, and you fill information in and fulfil a particular transaction. We know that human beings work in*

conversations and in our view the app of the future will not be a form fill UI based, but, but rather be conversational in base". Hence the investment and strategic intent of development is geared towards conversational robotics and capability building.

From a design and application architecture point of view, there was very little input from the Bank's side as most of it was pre-defined and pre-determined by WhatsApp itself. While this may be seen as a limiting factor, it made the technological business case selection process easier, based on the ease of integration. Therefore "*in terms of selling or providing your product, a product is always consumed on a channel*", being WhatsApp in this case, "*so your distribution strategy needs to be spot on in order to get people to come to your channel to use it*", as quoted by the Head of Emerging Channels for Virtual Channels. This reduced the capital investment required to develop and implement the WhatsApp banking service.

Another dominant view as to why WhatsApp was selected was premised on the fact that a third-party supplier held the relationship and access rights to the WhatsApp service. This led to positive engagements between WhatsApp, the Bank and the third-party supplier who all expressed an interest in collaborating to develop and initiate a world first chat banking service. This speaks to the innovativeness element as well.

5.1.2 ECONOMIC AND FINANCIAL RATIONALE

The strategic intent was not to yield significant profits from the WhatsApp banking service. However, it was designed for capability building into conversational computing, which is expected to be a key technology in years to come.

The Head of Mobile Banking for Virtual Channels confirmed that market research revealed that WhatsApp has a "*very high growth rate even now in terms of further market penetration. We also know that the number of*

interactions you have on WhatsApp per day, is a lot higher than some of the other social platforms. If you do compare that to for example, social media, Facebook has significantly higher penetration rates and significantly higher interaction rates. However, as a messaging channel, Facebook messenger has not been as successful in our market as WhatsApp is".

The cost of developing the capability and integration of WhatsApp was considered to be one of the smaller supplier deals, both "*price wise and cost wise*".

Facebook and Twitter are other social media platforms that have previously been used to deliver financial services by the Bank. However, due to relatively low uptake and usage in comparison to WhatsApp, the delivery of financial services through these platforms were decommissioned. The focus has solely shifted to the WhatsApp banking service.

5.1.3 GEOGRAPHICAL AND SOCIAL RATIONALE

The technological rationale in Section 5.1.2 above also forms the basis for the geographical and social rationale, due to the fact that it is one of the more popular social media platforms in the world, owing to its large user base. "*In terms of the scale of WhatsApp…you are looking at something like a 67% penetration rate…So, it's already in the hands of everybody*", as quoted by the Head of Emerging Channels for Virtual Channels.

Leveraging a global social media platform, with a large user base and deep penetration rate in various markets, it became the "*holy grail*" partner to collaborate with. This was the view expressed by the Security Architect / Technology Architect of the WhatsApp banking service.

5.1.4 REGULATORY AND LEGISLATIVE CONSIDERATIONS

The biggest regulatory and legislative considerations were centred on data privacy and data protection. Despite the Bank having previously dealt with similar considerations during other initiatives, the strategic partnership and collaboration with the third-party supplier and WhatsApp brought its already built system to the table. This was achieved through WhatsApp's end-to-end encryption, whereby neither the cloud-based service providers, the Bank, the third party nor WhatsApp are able to view or access the content of any message. The only data any of the parties are able to view is that messages were sent and received at specific times. "*Broadly speaking the compliance aspects are no different to what any other channel whether it's a physical or virtual, it would have to go through in terms of lifting out our products through a channel, so it's no different*", as expressed by the Head of Emerging Channels for Virtual Channels, who was responsible for the end-to-end strategy of the WhatsApp banking service.

The issues, considerations and hurdles are guided and steered by various internal bodies such as governance forums, compliance and regulatory committees, as well as product and service development processes and control mechanisms.

Part and parcel of the contractual agreement between the Bank, the third party and WhatsApp were that the Bank had to accept certain terms and conditions in order to conclude the agreement. The most important term and condition is to ensure that the Bank's client has to initiate the conversation in order to activate the service and before any communication or transactions may be performed. This process is detailed in Section 4.1 above.

5.2 EMERGENT THEMES

These are common themes or threads of information and feedback that was collated from the participants during the interview process.

5.2.1 LITERACY AND TECHNOLOGICAL CAPABILITY LEVELS IN SOUTH AFRICA

Despite the assumption this study posited in Section 1.8 above, namely that the SA population has an adequate level of technological knowledge and can operate a mobile telephone device, it was commonly recorded that a large section of the population is "*not necessarily technologically astute*", in the opinion of the Head of Emerging Channels for Virtual Channels. Therefore, they are most likely to neither use the WhatsApp banking service nor the Bank's mobile application.

Financial inclusion and any solution that seeks to address it should, among others, include addressing or positively contributing towards the literacy and numeracy levels in South Africa. Senior Legal Counsel for Commercial Legal (Shared Services) commented that "*financial inclusion requires that you need more programmes that are actually concentrated in the areas where people need to understand what it is to bank, why it is important to bank, what is the function of the bank, where does banking come into play*".

Taking into consideration that the WhatsApp banking service is only offered in English to its large user base, it also serves as an exclusionary factor for people not fluent or converse in English, making it a barrier to entry (Chikalipah, 2017 and Demirguc-Kunt et al. 2017).

5.2.2 AFFORDABILITY AND ACCESS TO DATA AND MOBILE TECHNOLOGY

Two of the most critical elements of mobile financial solutions require the user to have a smart-enabled mobile device and access to data from an MNO, which will include "*coverage of your network*". Recent statistics released by ICASA (2019) reveal the following:

- National Population coverage for 3G remained stable at 99% in 2018 and National population coverage for 4G/LTE increased from 76.7% in 2017 to 85.7% in 2018.
- Smartphone penetration in 2018 is at 81.72%.

This has to be considered in the context of the stark reality that more than 50% of SA's population, which translates into more than 28 million people, are living below the upper-bound poverty line of R1 183 per person per month (Statistics South Africa, 2018).

A reasonable deduction, which may be subject to more scrutiny and study, is that despite sufficient network coverage and smart phone penetration, affordability remains a high barrier to entry.

5.2.3 DATA PRIVACY AND DATA PROTECTION

The financial services industry is heavily regulated, especially with regard to the protection of personal information as an example. There are various legislative documents, such as Protection of Personal Information Act (2013) and the Financial Intelligence Centre Amendment Act (2017) that regulate the protection, transmission, storage, dissemination and destruction of personal information and data. This is one of the major challenges that the WhatsApp banking service has

encountered. However, this was overcome by WhatsApp's imposition of a system infrastructure that enabled end-to-end encryption.

This means that neither WhatsApp nor any third party was able to view any messages or sensitive information being transmitted through the platform thus protecting personal information and data in accordance with the above legislative requirements.

5.2.4 CONVERSATIONAL BANKING

The strategic intent that drove the WhatsApp banking began before this service, with the intention of building technological, social and human resource capabilities within the Bank, in anticipation of the market progressing to conversational banking. Head of Mobile Banking for Virtual Channels confirmed that the Bank's "*vision was, and the vision is, not only even WhatsApp banking, the vision is much bolder than that…It is conversational banking on any kind of platform. Not necessarily driven only with WhatsApp*". However, conversational banking and conversational UI was not the focus of this study and may be a topic of further research and investigation.

It's imperative to stay abreast of trends in the market, in the industry and in the economy, to ensure any organisation's longevity, sustainability and profitability.

The Bank's strategic partnership with WhatsApp is a good example of a co-creation initiative in respect of innovation management. This also proves to be a good case study of an interconnected, functional and sustainable MFS ecosystem for the provision of financial services, as described by Kim et al. (2018).

5.2.5 CULTURAL AND SOCIAL PERCEPTIONS

Customer perception plays a big role in the success of any product or service, driven by many elements including trust. Head of Mobile Banking for Virtual Channels cited that “one *of the main barriers to entry is people associate their phone with their money. I lose my phone, I lose my money. And it's a kind of risk that most people don't want to take*”. This may also be a result of a lack of understanding, knowledge and literacy.

Despite regulation and legislation being one of many elements, cultural and social practices also hinder the take up of services, such as social health, literacy, high cost of financial services, inefficiencies experienced with financial service providers, widespread use of informal investment schemes and lack of trust in the financial services industry (Ulwodi & Muriu, 2017).

5.2.6 PREVIOUSLY OR CURRENTLY DISADVANTAGED PERSONS

The WhatsApp banking service is only available in English, therefore any person who is not fluent or does not converse in English will not find the WhatsApp banking service user friendly.

This theme feeds into the bigger question of financial inclusion, which is not entirely achieved through the WhatsApp banking service, mainly due to that fact that it does not cater for any new-to-bank clients.

This then also refers to the marginalised population groups, such as migrants, foreigners, illegal immigrants or undocumented people. These groups are most often excluded from the formal financial services industry due to a lack of or insufficient documentation, that is required in order to obtain financial services.

5.3 ASSESSMENT OF THE WHATSAPP BANKING INITATIVE

The majority of the participants considered the WhatsApp banking service to have been successful for various reasons, depending on the involvement and level at which the participant engaged or interacted with the WhatsApp banking service journey.

The statistics quoted by Head of Emerging Channels for Virtual Channels (Retail and Business Bank) stated that on the morning of their interview, there were 59 077 registered users on the WhatsApp banking service. "*Organically without any sort of campaigns we take on I would say 50 to 60 new customers every single day and bearing in mind these are existing Bank customers…when we do campaigns and we do targeted messaging we able to drive that number up to about 2 thousand a day*".

In addition, the Head of Mobile Banking for Virtual Channels (Retail and Business Bank) also stated that "*it was incredibly successful because we set ourselves certain goals, and we then, we refined those goals and we have achieved all of those particular goals*" for example "*we needed to change the way we get seen as a brand in the marketplace*".

Despite the success of the WhatsApp banking service, which has a great amount of potential, the Head of Emerging Channels for Virtual Channels (Retail and Business Bank) stated that they "*would still call it an emerging channel versus a channel that has emerged" with the financial industry and market identifying winners and losers…in 2, 3 years' time*".

The WhatsApp banking service is considered to be an example of a business model that is likely to leverage fintech in a socially sustainable manner while addressing financial inclusion, using the LASIC attributes proposed by Lee & Teo (2015). This is achieved through the following:

- Penetration of financial services offered by the Bank through one of the largest social media platforms globally at no additional cost;
- Minimal physical infrastructure;
- Capability to increase scale without compromising or impairing the functionality, utility, operability and profitability;

- It was a global first fintech and first to financial service market and industry; and
- Successfully met all regulatory and legislative requirements.

5.4 SUMMARY OF THE DISCUSSION

It is clear from the interviews and the information gathered that the WhatsApp banking solution was a world first in introducing conversational banking to a new paradigm in banking. It was done to demonstrate innovation and creativity and to test ideas and thinking. The solution used an existing and established social media platform to provide an alternative channel for banking services largely to its own client base.

It was clearly evident from the interviews that the development of the service required little to no new infrastructure (asset light), was built on a low revenue model and is extremely scalable. In addition, the solution was very innovative and needed no new regulatory approvals and met all compliance requirements. The WhatsApp banking solution thus meets all of the LASIC principles.

However, the study also highlighted that data costs of mobile telephony is a critical inhibitor. Furthermore, the cost of banking services is unaffordable for close to 50% of South Africa adults. Finally, English as a medium of providing banking limits the uptake of services.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter summarises the findings of the study based on the desktop evaluation of the adoption rate and user base of the WhatsApp banking service, the semi-structured interviews conducted with key personnel, as well as the literature review. The purpose of the study is to assess whether the WhatsApp banking service is considered to be a sustainable fintech application against the LASIC attributes. As well as assessing whether it has been or is a successful service and whether it has the ability to positively address financial inclusion in South Africa.

6.2 MAJOR FINDINGS

The research questions of the study were as follows:

1. To what extent is the Bank's WhatsApp banking service a sustainable fintech service in terms of the LASIC framework?
2. How successful is the Bank's WhatsApp banking service? and
3. To what extent does the Bank's WhatsApp banking service positively contribute towards financial inclusion?

Other questions that were answered in this study:

a. What does the WhatsApp banking service provide?
b. What was the technological, economic, geographical, social and financial rationale in selecting WhatsApp as the platform to integrate banking services with?

The research propositions were as follows:

1. The Bank's WhatsApp banking service will be considered a sustainable fintech service according to the LASIC framework;
2. The Bank's WhatsApp banking service is a successful fintech service that will be evidenced by and supported with semi-structured interviews,

secondary documentary evidence and statistical data, obtained in respect of the number of customers who have made use of the service; and

3. A positive determination on both the sustainability and success of the service will be made, in that providing financial services on the WhatsApp platform leads to higher number of clients, affiliated with the Bank, performing financial transactions or receiving financial assistance via mobile phones. The assessment of this MFS platform will demonstrate that the increased uptake on using this MFS will positively contribute towards financial inclusion by (non-exhaustive list):
    a. reducing traveling time to a physical branch;
    b. ensuring easy and readily available access to financial services; and
    c. Enabling a greater diffusion of technological capability, in order to understand and make use of fintech applications.

6.2.1 ASSESSMENT OF WHATSAPP USING THE LASIC FRAMEWORK

WhatsApp was scored against the LASIC framework as being low-margin, extremely asset light, highly scalable, very innovative and fairly compliance easy thus making it a sustainable fintech application.

The various rationales that were considered in selecting, developing and launching the WhatsApp banking service was driven by an over-arching, leadership strategic intent on developing technological capabilities that may be used to leverage further fintech products and services over the long term. One of these technological capabilities that is considered for development is conversational UI.

6.2.2 IS THE WHATSAPP BANKING SERVICE SUCCESSFUL OR NOT?

The success or failure rate of any product or service offered by any traditional banking institution is to measure the number of clients that make use of the product of service. Therefore, with a current user base, which is still growing, of approximately 59 000 clients after nearly 20 months may be considered as a success. This is considered a success because the number of registered users for the WhatsApp banking service of 59 000 significantly exceeds the several thousand users who registered for previous social media banking services offered by the Bank combined. What followed the successful launch of WhatsApp banking was the decommissioning of the previous social medial banking services due to lower levels of success. The growing user base may also be attributed to the fundamental transactions that nearly every client would need to perform, such as: purchasing airtime or data, requesting mini statements, paying a beneficiary and so on. Tailoring the service to client's needs has made it an attractive and purposeful service to use.

Another important success for the Bank in launching the WhatsApp banking service was being a global industry first to have strategically partnered with a social media platform. This not only bolstered the Bank's brand and reputation, but also demonstrated its technological capabilities, adaptability and impressive response to market trends.

Lastly, as revealed during the semi-structured interviews, the main objective behind developing and integrating banking with WhatsApp was to build conversational UI capabilities that would be leveraged in the long term to enhance, deliver and implement further fintech applications or services.

6.2.3 WHATSAPP'S POTENTIAL TO ADDRESS FINANCIAL INCLUSION

Fintech solutions such as WhatsApp banking that meet the LASIC principles can expand the provision of banking services. The model of partnering with a non-traditional service provider, allows a traditional service provider to extend its reach and gain more clients. In this case, WhatsApp is the non-traditional service providers and the Bank is the traditional service provider.

In developing solutions for the underbanked and unbanked segments of society, apart from using the LASIC framework to ensure sustainability, other limiting factors must be addressed as well. From this limited study, factors such as data costs of mobile telephony, business language of the services and the overall cost of financial services are critical factors that must be addressed to ensure success.

Fintech provides opportunities for the development of innovative solutions to extend financial services thus providing a foundation for more inclusive economic growth.

However, the WhatsApp banking service in its current state, with its current offering, does not address financial inclusion, due to the fact that the offering is only available to already existing clients. These existing clients currently have access to these financial services, albeit on a different channel. There is potential for the WhatsApp banking service to address financial inclusion, specifically the unbanked population that may only be realised once there are financial service offerings, which are geared towards new to bank customers.

6.3 RECOMMENDATIONS

The following recommendations below are classified into short, medium and long term, arising from the data collection process during this study:

6.3.1 SHORT TERM RECOMMENDATIONS

WhatsApp banking is only offered in English, which may be a limiting factor when taking into consideration that SA has 11 official languages. Therefore, by extending the offering in other SA official languages, the Bank will have greater ability to penetrate a larger user base than what is currently being accessed.

6.3.2 MEDIUM TERM RECOMMENDATIONS

The Bank should consider expanding the WhatsApp service offering to enable cash transactions at the point of sale by linking a wallet to the service. Cash transactions still play a significant role in the daily transactions of those living below the poverty line. By providing a solution that caters to this need, the Bank can grow the uptake of WhatsApp banking and indeed, grow its client base.

6.3.3 LONG TERM RECOMMENDATIONS

The Bank should develop financial service offerings that are geared towards and cater for the unbanked population in SA that may be delivered or performed through the WhatsApp banking service. Some of these financial service offerings include opening a transactional account or applying for a loan. However, it is imperative to note that these financial service offerings are all subject to the legislative and regulatory framework that would enable such financial service provisions, as well as available technological advancements. While the Bank is unable to have direct control over some of the above-mentioned aspects, it still remains part of the conversations and interactions that shape the

industry and therefore is able to influence those aspects that are under its direct control.

6.4 DELIMITATIONS AND ASSUMPTIONS OF THE STUDY

There are several delimitations with regard to the proposed study and methodology, namely:

- The case study was confined to the Bank and the development of the WhatsApp banking service. This took cognisance of time constraints in the submission of this report;
- The semi-structured interview process was not be conducted on everyone in the employ of the Bank, but only key personnel or individuals closely related to the subject matter, who were identified as the product owner and developer;
- There are numerous intellectual property restrictions that prohibited the publication of various aspects and details of the WhatsApp banking service and its operation, however statistical data on its usage, which is available in the public domain, has been made available;
- Further personnel will be interviewed as and when they are identified by the key personnel, who have indicated their involvement and/or interaction with the subject matter;
- This study only focused on the business model, ideation and implementation of a mobile based financial service, which falls within the realm of fintech. Statistics obtained on the usage of the service during the desktop analysis and interview process was used to demonstrate the various attributes of the LASIC principles (Lee & Teo, 2015), as well as evaluate whether it is successful or not.

Key assumptions made in conducting the study are:

- By only interviewing key personnel responsible for the development of the WhatsApp banking service at the Bank, it was assumed that the response of the management hierarchy that approved the solutions deployment will not add any further insights other than those already captured;

- There is a tacit assumption that government and the regulators will provide an enabling environment for the development and implementation of fintech; and
- The SA population has an adequate level of technological knowledge and can operate a mobile telephone device.

6.5 SUGGESTIONS FOR FUTURE RESEARCH

This study can be supplemented by a furthermore in-depth study that is conducted 36 months later to assess the following:

6.5.1 TRANSACTIONAL OFFERING OF THE BANK'S WHATSAPP BANKING SERVICE

The WhatsApp banking service had a limited transactional offering for the duration of this study. Therefore, a reassessment of the service as to whether additional transactional functionalities have been built would be indicative of the Bank's strategic intent ensuring its sustainability, relevance and value add.

The following may be used as a guideline when conducting this post 36-month study:

- Document the Bank's WhatsApp banking service offering and compare it to the service offering that was available in 2018 when it was launched;
- Develop a semi-structured interview template and questions to determine whether the Bank's strategic intent has changed in any way, which may provide insight into whether the service offering has increased or not;
- Set up interviews with each identified participant;
- Record each interview and make notes of answers to the predetermined questions;

- Transcribe the interviews; and
- Analyse the feedback and results, which will then inform any recommendations and conclusions drawn.

6.5.2 OTHER FINTECH PRODUCTS OR SERVICE OFFERINGS FROM OTHER BANKS

The focus of this study was limited to the Bank, as a case study, with no other fintech product or service being considered or assessed. In order to gain a holistic industry view of whether the South African financial sector is embracing and using fintech to address market opportunities or shortcomings in its service offerings, a comparative study of fintech products or services by the major financial institutions should be included in the post 36-month study. This would involve repeating this study on a larger scale by including the other major retail banks in SA.

The cross comparison and assessment of other fintech products or services would also include a comparison of the actual transactional offerings of each.

The following may be used as a guideline when conducting this post 36-month study:

- Identify the other major retail banks in SA, as well as each of their fintech product or services that is similar to the WhatsApp banking service;
- Document the services provided by the fintech product or service;
- Collect published statements and reports of that respective bank on the take up and success of the fintech product or service;
- Assess the fintech product or service against the LASIC attributes;
- Develop a semi-structured interview template and questions;
- Set up interviews with each identified participant;

- Record each interview and make notes of answers to the predetermined questions;
- Transcribe the interviews;
- Analyse the answers and data collected; and
- Do a comparative analysis of the various SA major retail banks, the fintech products or services offered, and determine which fintech product or service is more successful in addressing financial inclusion.

6.5.3 CONDUCTING USER SURVEYS ON THEIR EXPERIENCE OF FINTECH PRODUCTS OR SERVICES ON SOCIAL MEDIA PLATFORMS

The user experience has been expressly excluded from this study as a delimitation. This study was only focused on the business model, ideation and implementation of a mobile based financial service, which falls within the realm of fintech. The study only considered the success of the service by understanding the take up rather than by understanding the user experience directly. This study will therefore be enhanced and enriched by collecting and integrating the actual users' experience, which may then be considered as being a second evaluation of any fintech product or service against the LASIC attributes.

The methodology used in Chapter 3 above may be repeated, however this must be supplemented by the inclusion of customer feedback and engagement. The data collection instrument must be constructed to determine the user's experience, which would be a technical enquiry, as well as allow the user to rate the overall experience of the WhatsApp banking service. A series of questionnaires or surveys are examples of a data collection instrument that may be used. The researcher must be mindful of approved participant selection methodologies and guidelines that would be best suited to serve this purpose.

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APPENDIX A

Title: **Financial technology as a driver for financial inclusion: an assessment and case study of WhatsApp banking in South Africa**

Questionnaire / Semi-Structured Interview

The purpose of this study is to determine whether the Bank's recently launched WhatsApp banking solution is able to address financial inclusion, by providing banking services to a wider population group. This will be achieved by assessing the WhatsApp banking solution using the LASIC principles, in order to determine its sustainability and potential success among fintech products and/or services. The study includes an analysis of the research, development and implementation of the application and/or solution, in order to understand the decision-making process that was opted for. This will then inform or justify whether the service has been successful or not.

Your participation in this study is valued and will remain confidential and anonymous. All data collected for this study is and will remain privately stored, in an access-controlled system.

Please answer the questions below:

Section 1: Background information		
1.	What is the date of the interview?	
2.	What is your name and surname?	
3.	What is your role/position at the Bank?	
4.	What is your understanding of fintech?	
5.	What is your understanding of financial inclusion?	

Section 2: WhatsApp Banking		
1.	What was or is your role with regard to the WhatsApp banking service?	
2.	What was the technological rationale behind selecting the WhatsApp banking service?	
3.	What was the economic rationale behind selecting the WhatsApp banking service?	
4.	What was the geographical rationale behind selecting the WhatsApp banking service?	
5.	What was the social rationale behind selecting the WhatsApp banking service?	
6.	What was the financial rationale behind selecting the WhatsApp banking service?	
7.	Were there any regulatory or legislative considerations that had to be taken into account?	
8.	How would you assess the WhatsApp banking service using the LASIC framework, namely: Low margin, asset light, scalable, innovative and compliance easy?	
9.	Were other banking services considered?	
10.	What are the statistics in the uptake and use of the WhatsApp banking service?	
11.	Has the WhatsApp banking service met the projected target in order to be deemed a successful service?	
12.	Do you think the WhatsApp banking service addresses financial inclusion?	

Section 3: Additional Information		
1.	Please provide any additional information or comments that you would consider important for the purposes of this study and what it seeks to determine.	

APPENDIX B

This consent form has been signed by all participants.

Consent Form

Title: **Financial technology as a driver for financial inclusion: an assessment and case study of WhatsApp banking in South Africa**

Name of researcher: Yashiv Maharaj

I _____ agree to participate in this research project, of which the following has been explained to me and I understand what my participation entails:

- The purpose and context of the study has been explained to me and I have had an opportunity to seek clarity, should there have been any confusion or doubts; and
- I may withdraw from the study at any time without any consequences.

Please circle the applicable responses below:

I agree that my participation will remain anonymous	Yes	No
I agree that researcher may use anonymised quotes in his research report	Yes	No
I agree that the interview may be audio recorded and transcribed	Yes	No
I agree that the information provided may be used anonymously by other researchers following this study	Yes	No

Signature:	
Full Name:	
Date:	

APPENDIX C

Wits Business School
Graduate School of Business Administration
Master of Management in the field of Innovation Studies
2 St. Davids Place and St. Andrews Road, Parktown, Johannesburg, 2193
P.O. Box 98, Wits, Johannesburg, Gauteng, South Africa, 2050
Website: www.wbs.ac.za

Dear Participant

I am a student at the Wits Business School studying towards a Master of Management in the field of Innovation Studies (MMIS). One of main the components and requirements of the MMIS program is to conduct a comprehensive research report.

The purpose of this study is to determine whether one of South Africa's major retail banks (the "Bank") recently launched WhatsApp banking service is able to address financial inclusion, by providing banking services to a wider population group. The study includes an analysis of the research, development and implementation of the solution, in order to understand the decision-making process that was opted for. And finally, the study will assess the WhatsApp banking service according to the LASIC principles, in order to determine whether the service is sustainable and its potential success among fintech applications.

The term LASIC refers to low margin, asset light, scalable, innovative and compliance easy, which has been identified and used to assess the attributes of a business model that would most likely be able to leverage fintech in a socially sustainable and successful manner, while addressing financial inclusion.

In order to conduct this research, I will interview employees at the Bank, who have been and possibly remain in the design, development, implementation and management team of the WhatsApp banking service.

You have been identified as candidate and I would appreciate your participation in this study.

The estimated time for the semi-structured interview is 45-60min. All information collected from this study will be confidential and anonymous, with all data collected

being stored in an access-controlled system. Only once your approval is received will an appointment be scheduled at a suitable time.

Prof. Mjumo Mzyece is the supervisor for this study and should you have any queries or concerns, you may contact him via mjumo.mzyece@wits.ac.za or +27 79 701 2007.

Regards

Yashiv Maharaj

Wits Business School, MMIS 2018 Student