Determinants of continued usage of financial technology products and services: A case study of low-income households in South Africa

A Dissertation

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By

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I would also like to express my gratitude to my family and friends for their constant motivation and support throughout this journey.

ABSTRACT

In many developing economies, access to and subsequent utilisation of mainstream financial services act as a barrier to financial inclusion. The merging of financial services and information technology, especially by means of mobile devices, result in consumers being able to make use of financial services at any time and place, thereby overcoming the distribution challenges and subsequent use (Gu, Lee, & Suh, 2009). This research examined the factors influencing the continued use of tech-based financial services post adoption by the Base of the Pyramid (BOP) in South Africa. The research uses the risk-benefit framework to understand usage behaviour focusing on cost, convenience, perceived ease of use and risk (security and operational) as predictor variables. The research makes use of analysed secondary data on 481 low-income individuals using the Structural equation modelling (SEM).The partial least squares structural modelling was utilised to test the hypotheses and relationship between the variables.

The findings indicate that perceived benefit has a greater influence on usage than perceived risk. Even though consumers consider both benefit and risk in decision making, the expectation of potential benefits is a greater driver of usage. Convenience, cost and perceived ease of use were found to have significant impacts on usage, with the latter two having the greatest impacts. Perceived risk had a significant but weak impact on usage, with operating risk influencing usage more than security risk.

The research recommends that when creating a value proposition for Fintech products, resources should be weighted more towards improving and highlighting those factors that drive the perception of benefit or value added to customers (cheaper, quicker etc.) vs. those that manage a potential risk. Customers are likely to respond positively and increase usage when there is an additional benefit to be derived.

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ABBREVIATIONS

ATM:	Automated Teller Machine
BCG:	Boston Consulting Group
BOP:	Base of Pyramid
EY:	Ernst & Young
FNB:	First National Bank
GDP:	Gross Domestic Product
HCM:	Hierarchical component model
HOC:	Higher order construct
IDC:	Industrial Development Corporation
IMF:	International Monetary Fund
LOC:	Lower order construct
NDP:	National Development Plan
P2P:	Peer to Peer
PEOU:	Perceived ease of use
PLS:	Partial least squares
POS:	Point of sale
SA:	South Africa
SARS:	South African Revenue Services
SASSA:	South Africa Social Security Agency
SEM:	Structural equation modelling
TAM:	Technology acceptance model
TRA:	Theory of reasoned action
USSD:	Unstructured supplementary service data
WEF:	World Economic Forum

CHAPTER 1

INTRODUCTION

1.1 Background to the study

The financial sector remains an essential sector in South Africa. In 2016, the sector was the highest contributor to the country's gross domestic product (GDP) at 22.1% (IDC: Department of Research and Information, 2016). Growing public sector focus on financial inclusion as an enabler to achieving the National Development Plan (NDP) 2030 goals coupled with increasing provider interest in servicing the unbanked to generate greater interest in ensuring that people have access to basic financial services. Financial inclusion has previously been defined as the proportion of individuals and firms that use financial services (World Bank, 2014). However, true inclusion looks at usage and sustainability in addition to access (Kessle et al., 2017).. An inclusive financial sector is important for any economy. It ensures that people at the lower income levels also contribute to the GDP instead of being mainly benefactors. Through inclusive financial services, individuals can access credit and expand businesses, transact, mitigate risk (insurance), save and build wealth.

South Africa has a dual economy characterised by two separate economic sectors with differing levels of development and demand. This is especially true for the financial sector. In its Global Competitiveness Survey for 2016/2017, the World Economic Forum ranks South Africa at 11th place in the financial sector development rankings out of 138 countries, three places down from the previous year's 8th position. Despite South Africa's high rank in terms of financial sector development, the 2017 WEF Africa noted that cash accounts for 90% of all consumer transactions .Although South Africa seems to have low levels of financial exclusion, if the strict definition of banked versus unbanked groups is applied it can be argued that a significant proportion of South Africans is "under-banked" or "underserved."

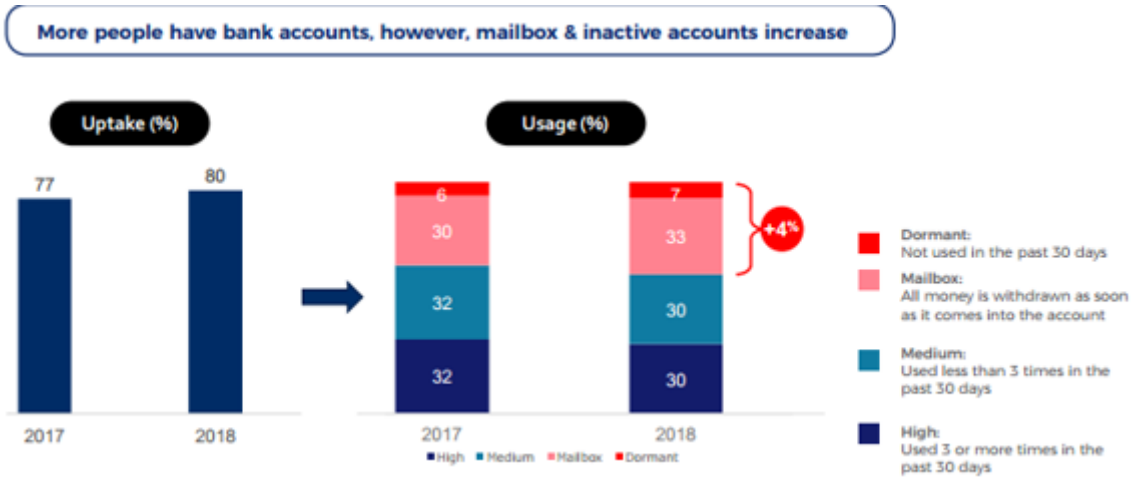
The most affected group of people are those in the lower income brackets. Low-income earners are those identified as earning an income of R75 000 per annum (R6 250 per month) or less. Using the South African Revenue Services data for 2016/2017, everyone falling within this tax bracket is considered to be below the income tax threshold. The data shows that the majority of registered taxpayers in that period were in the low-income tax bracket. In 2016, of the 38.2 million financially included (formally and informally) 31 million (81%) earned under R6000 per month — making them low income earners (Mutsonziwa & Khumalo, 2016). Among the low-income earners are people that receive monthly SASSA grants from the national government.

One interesting development in the past few years has been the emergence of financial technology (Fintech) companies through the creation of new start-up companies and the formation of strategic partnerships between mobile companies and banks. Their aim is to reach the underserved and those excluded. The term 'Fintech' encompasses financial products and services that are underpinned by making use of unsegregated IT solutions. Fintech payment innovations provide unprecedented solutions in the digital era of the financial industry. The EY Fintechs in Sub-Saharan Africa report reveals that the Fintech landscape in Africa has grown at an annual rate of approximately 24% over the last 10 years (ey.com). Fintech innovations are set to redefine the financial services industry especially in areas with high levels of financial exclusion such as low income earners of Sub-Saharan Africa, India and China. Most of the impact is expected to occur in the banking space due to increased mobile penetration and the introduction of mobile money(Demirguc-Kunt, 2015). Fintech enables interoperability through the creation of platforms that enable payments and transfers across different networks (Shim & Shin, 2016; Thompson, 2017). Such innovations create better access to financial information through improved transparency and elimination of the middle man, thus reducing the cost to transact (Zavolokina et al., 2016). Identification technologies, mobile banking and alternative credit scoring are making it easier for the financially excluded population to overcome the obstacles that previously blocked access to financial products and services. Despite significant attention given to these new developments, there is a question regarding the continuous use of Fintech after adoption due to scepticism around perceived risk.

1.2 Problem Statement

While the majority of South African adults have access to, and have acquired one or more financial services products, the use of these products has not sufficiently translated into beneficial outcomes for the consumers. Access has not automatically translated into usage. According to research done by the Finmark Trust, 30% of the banked population report to drawing all cash immediately when deposited or not having used the account in 30 days as seen is figure 1 below.Both SASSA and non-SASSA users withdraw their money as soon as it is deposited, effectively using the account as a mailbox. This challenges the substance of the banked statistics.There has also been a 9% increase in the use of informal savings and credit. MasterCard revealed in 2017 that an estimated R23 billion was spent by consumers in 2015 on cash usage costs, including ATM and banks fees (accounting for R6.6 billion). Thus, low-income earners forfeit four percent of their earnings to cover cash costs, compared to the national average of 1.1 percent (Mastercard, 2016). Accessing and using a bank account is usually seen as a first step to financial inclusion as it increases the probability of making use of the other financial products.

Figure 1: Bank account uptake vs. usage

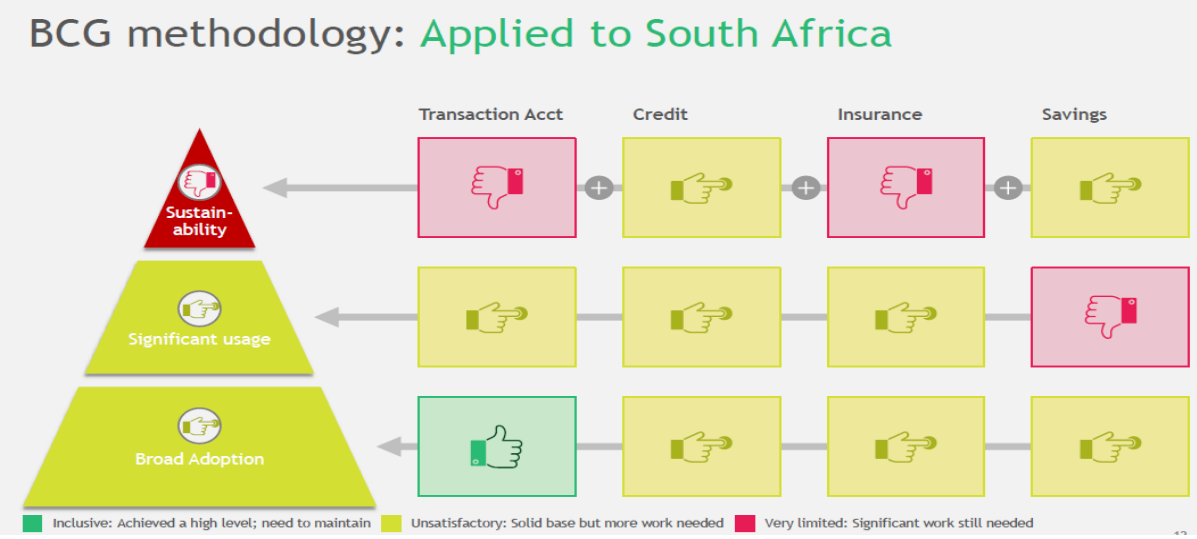


Source: Finmark Trust, Finscope SA 2018

Results from past Finscope surveys show that the levels of usage and product satisfaction in the country remain low. When it comes to bank accounts in South Africa, there is high adoption and low usage. If SASSA card holders are excluded, the banked population decreases from 77% to 58%. Most people use bank accounts to hold money temporarily

instead of making use of the full transactional capabilities. Insurance usage statistics are worse off than banking. Insurance is a product that is meant to cushion people from unexpected incidents and shocks. However, only 22% of adults have insurable cover other than funeral cover. 55% of those who do not have insurable cover cite affordability as the main cause (Finscope, 2016). Credit access remains a problem with just under half of the adults being granted access. The number is boosted by unsecured finance. Access to asset-backed loans such as home and car finance is also unobtainable for many. The South African population in general has a poor savings culture. Inclusion has remained consistent in the mid-20% range over the past three years. One reason that has been cited as an explanation is that most savings' products are unsustainable for the average South African. This is further highlighted by BCG in their analysis on the financial inclusion methodology as documented in figure 2 below.

Figure 2: BCG financial inclusion methodology



South Africa has made significant inroads when it comes to access to financial services and initial adoption. However, these levels of adoption are not sustainable. Although access and uptake are important in the journey to creating financial inclusion, usage should remain the ultimate objective. Services are largely meaningless if people are not using them. To account for the progress made in financial inclusion, we need to look at all four major types of financial services — savings, credit, payments and insurance, apart from active accounts. According to the Centre for Financial Inclusion, "people use financial services because they want to meet an underlying need for which financial services may be helpful." (Centre for

Financial Inclusion, 2017) However, there seems to be a lack of alignment between individual needs and financial products on offer in certain areas. According to GMSA, South Africa is home to the largest number of Fintech start-ups on the continent. However, most of the start-ups operate outside the borders of the country. With smart phone penetration predicted to grow rapidly over the next five years, coupled with the success stories of mobile technology in the rest of continent, identifying the areas that need alignment will help with understanding gaps Fintech can fill and its characteristics associated with high consistent usage.

The demand factors impacting financial services adoption for traditional bricks and mortar financial structures have been well documented. It is important to identify and understand the reasons for gaps between access/adoption and sustainable usage in order to determine areas where technology can help. Uptake of mobile technology-driven financial services has steadily increased in some parts of Africa. Although most Fintech start-ups are based in the country, adoption has not happened as quickly in South Africa. Explanations given for this include the fact that South Africa has high levels of financial inclusion. This, however, is questionable as access and uptake have not translated into active usage. Where it has, the usage has not been sustained.

Customers compare the benefits of Fintech with the risk when determining whether or not to make use of such products or services (Abramova & Böhme, 2016). For Fintech to be successful, Fintech companies have to show a net positive result between potential benefits of usage and potential risks (Abramova & Böhme, 2016). It is, therefore, important to identify the factors that help determine why people continue to use technology-based financial products and services (Ryu, 2018). Furthermore, while there has been an effort to understand general customer behaviour with regards to access and uptake of financial services, there is need to understand user behaviour especially where it is underpinned by technology. The study aims to bridge the research gaps by investigating whether the combined influence of perceived risks and benefits impact the continued Fintech usage post adoption in low-income South African households. While studies may have been conducted for other countries, countries vary in their supportiveness of the Fintech climate and infrastructure readiness. This means that factors impacting the likelihood of usage differ from one country to another. Most studies have focussed on technology's impact on initial adoption while paying little attention to continued use. Individual experience regarding

product consumption and perception varies from customer to customer(Karahanna et al., 2006).The decision to use technology from adoption to post consumption may be determined by different factors which influence the variations (Bhattacherjee & Premkumar, 2004; Oghuma et al., 2015).As such, there is a need to study factors driving continued use in the post-adoption phase. The focus of the study is what comes after access in order to inform providers of financial services who wish to convert access and uptake into active sustainable usage.

1.3 Research Objectives

The objective of this research is to explore some of the determinants of continued use of technology-enabled financial products and services by consumers. The specific objectives include the following:

i. To examine the effect of perceived benefits on continued usage of financial technology products;
ii. To examine the effect of perceived risks on continued usage of financial technology products; and
iii. To examine the effect of demographic characteristics on continued usage of financial technology products.

1.4 Justification of the study

The study contributes to literature in the following manner. It broadens the scope and decisions made by consumers around continued usage, taking into account the combined perceived risks and benefits. Previous research about the demographics being studied has been mainly around adoption. The study aims to provide insight into considerations by users post the adoption phase. It is aimed at helping Fintech companies understand the perceptions that users have around benefits and risks and can be used to encourage Fintech use by focusing on strategies that increase benefits and reduce risks. The research aims to provide information on the factors that should be prioritised when creating Fintech products for users.

1.5 Organisation of the study

The research paper is organised into five major components. Chapter One is the introduction to the study. Chapter Two reviews the relevant literature in the area of study. Chapter Three explains the research methodology, while Chapter Four documents and analyses the research findings. Lastly, Chapter Five contains an overview of the study together with suitable conclusions and recommendations.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

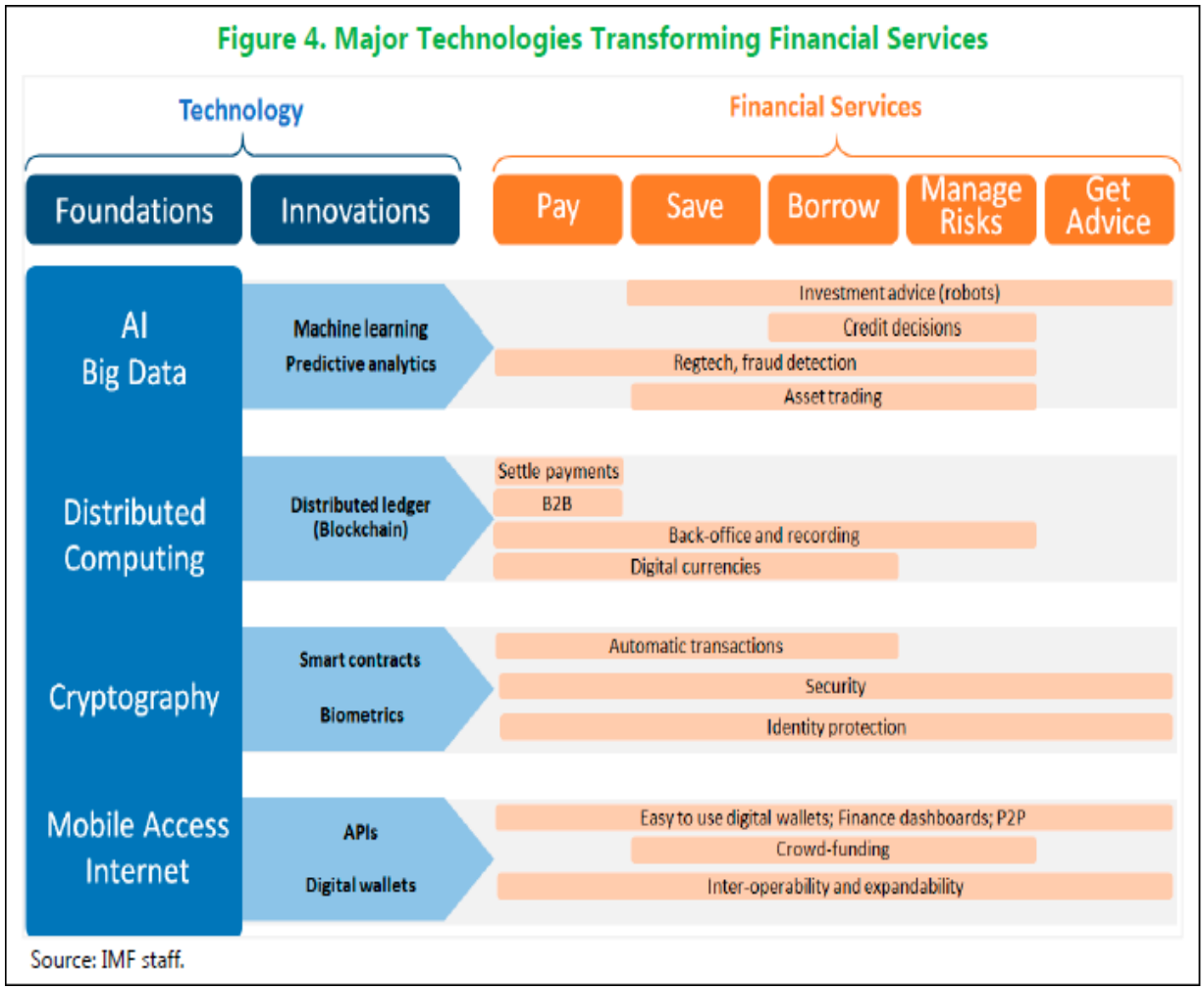
The literature review starts off by looking at the definition of Fintech and its contribution to the changes in the financial services industry. The discussion is extended to highlight the role of mobile technology as an enabler for Fintech. In addition, the review discusses the link between Fintech uptake and the increase in financial inclusion. An overview of the current South African landscape is highlighted. It then concludes by discussing consumer behaviour in determining product usage, especially in relation to technology-based products and a review of the model to be used.

2.2 Financial Technology (Fintech)

The development of traditional electronic financial services has led to the emergence of more innovative ways of rendering products in the finance sector referred to as Fintech (Arner et al., 2015).Fintech is a fast-growing industry combining information technology with financial services.It is this integration of financial services with technology that has given rise to disruptive credit, transactional and insurance products over the past few years (Zender, 2015).Fintech cuts across many business segments with start-ups and traditional financial instructions actively operating in the space. It is not sector or business model specific, but rather encompasses all the financial products and services provided by traditional institutions (Arner et al., 2015). Fintech has been defined by various scholars in previous technology-based studies. Kuo Chuen and Teo (2015) defined Fintech as “products or services in non-financial institutions created on highly innovative and disruptive service technologies”. EY (2017) refers to Fintech as “an innovation in financial services with technology as the key enabler”. Ryu (2018) defined it as “innovative and disruptive financial services by non-financial companies, where IT is the key factor”. (Lee & Kim, 2015) described Fintech as “a technical process resulting from developing and establishing new financial software which might affect the entire traditional system”. Even though the relationship between IT and financial services is not a novel one, the increased role of IT in the Fintech space sets it apart from traditional electronic financial services (e.g. e-banking) in terms of better opportunities

accompanied by different legal and risk implications. In explaining the difference between Fintech and traditional electronic services, EY highlighted the new role of IT as being more than that of an enabler or facilitator, but rather that of a disruptor to the current value chain by creating innovative ways to bypass existing distribution channels. This disruption in the existing channels, especially through use of mobile technology, increases companies' ability to provide more customised financial services, thereby improving the financial services performance. Consumers participate in various mobile-based services such as money transfer services, payments processing, credit arrangements, taking out insurance products, assets management and investments (Barberis, 2014). For the purposes of this study, Fintech focuses on the following categories: mobile payment, P2P transfers and e-wallets.

Figure 3: Technologies transforming financial services



2.3 Mobile for development

The exponential growth in access to mobile technology has seen the number of mobile phones on the African continent increase drastically in the last decade. This contributed to economic growth improvement in people's living standards (Chavula, 2013). It is estimated that by 2013 Africa had more than 800 million subscribers (Boniecki et al., 2016) This growth trajectory provides new and underserved markets with unprecedented access to communications and information technology services. In the context of this growth, new mobile-enabled products and services became the focus of many organisations. Mobile technology refers to the use of cellular phones to facilitate the performance of tasks. It reduces the gap between those with access to computers and the internet, and those without (ITU, 2013).Mobile phones have lost the status of being considered devices for the more affluent. They are seen as a basic need across developed and developing nations (Aker & Mbiti, 2010). The mobile phones are vital for diverse groups of people — both rural and urban, rich and poor. They link consumers to information, public services and the market economy (Aker & Mbiti, 2010). This makes them great enablers for Fintech.

In developing countries, the infrastructure constraints associated with infrastructure development and modernisation challenges make mobile phones essential. Mobile phones facilitate the bypassing of traditional telephone and communication technology by eliminating the need to build capital intensive infrastructure (Heijenk & Liu, 2005). Their features such as mobility and accessibility create an enabling environment f or better conditions for residents in the less developed countries (Vincent & Cull, 2013). Aker and Mbiti (2010) noted that despite an initial fixed set up cost requirement, the direct costs associated with usage are low relative to the travel cost associated with the traditional model and opportunity other costs. These characteristics help to reinforce the fact that mobile phones are pivotal in creating technology-enabled services.

The establishment of mobile money and other digital financial services improved the depth of the financial systems of African countries (Demirguc-Kunt & Klapper, 2012b:3). In Sub-Saharan Africa, 16% of adults and 31% of the formally banked make use of mobile phones to make payments (Demirguc-Kunt & Klapper, 2012a:2). With mobile money accounts sitting in excess of 20 million for adults in the SADC region, they were the key driver to improving overall formal account ownership from 24% in 2011 to 34% in 2014 (Demirguc-Kunt, 2015).

Studies have suggested that access to financial mobile technology increases the chance of bank account ownership and reduce informal access. In their studies, Mbiti and Weil, 2011 and Morawczynski and Pickens, 2009 observed that users often keep a balance on their M-Pesa account, effectively using it as a bank account even though no interest is earned. Vaughan (2007) also noted that some users stored money in the M-Pesa mobile wallet as they considered it safe to do so, especially when travelling across borders.

2.4 The relationship between Fintech and the level of financial inclusion

The rapid increase of mobile phone ownership provides another delivery channel for basic financial services to poor people (Economist, 2017). Agrawal (2008) and Mbiti and Weil (2011) examine the factors that influence the accessibility of financial products and services, and how that is impacted by Fintech. Firstly, the physical distance to financial institutions becomes less important through the digitalisation of products and services. Digitalization enables users to conduct payment transactions without being physically present, resulting in a more convenient way to transact. Secondly, accounts become accessible at affordable costs. Technology results in the replacement of manual operations by automatic operations leading to cost efficiencies. These benefits can be passed on to customers by way of cheaper products. Fintech enables the collection and storage of a greater amount of customer data thereby allowing providers to design tailor made digital financial products and services that better fit the needs of those financially excluded (Jack, Suri & Townsend, 2010; Mbiti & Weill, 2011).

2.5 Overview of the South African landscape

In South Africa, the majority of Fintech innovations are in the banking space, in particular, the mobile banking space. One of the first mobile payment services was established in 2004 by WIZZIT Payments (Pty) Ltd. Wizzit offers the underserved and unbanked easy to use banking services. The banking platform makes use of USSD to offer services, requiring access to a basic cell phone only. Through this platform, customers access bank accounts and execute transactions. Although a maestro debit card is issued to customers after registration, the company offers branchless banking services. Instead, it has a partnership with the Absa Group and the South African Post Office which serve as banking agents and permits Wizzit's customers to deposit funds at any of their branches (Osah, 2015). Equally, they do not operate their own ATM network, but users can make deposits and withdrawals at any POS or ATM

machine. MTN's mobile money and Vodacom's MPESA are some of the mobile money products that were launched, but later discontinued. Both products had poor adoption, with high levels of bank account adoption cited as the reason for low uptake and usage. MTN, however, announced that they planned to enter the market again in 2019 with a new offering.

P2P transfers have had more traction in the country when it comes to financial services. The likes of Shoprite and PEP stores offer the option of sending money without the need for either party to have a bank account. The banks also have their version of money transfer services. For instance, Standard Bank's instant money, ABSA's cash send and FNB's e-wallet. In the case of banks, the sender needs to have a bank account, but it is not a requirement for the recipient. Cash out is at the respective banks' ATM. With all these services on offer, there is still a huge gap between adoption and usage that is attracting new entrants into the market. Bank Zero, a mutual bank that will be app-based, aims to target the unbanked and underserved. The bank will be branchless, making use of mobile phones for managing the account. Another bank that is playing in the same space is TymeBank, which is also branchless. It partners with Pick n Pay and Boxer stores for cash in and cash out. Old players in the market are also upping their game to attract more of the underserved/unbanked. FNB has partnered with a Fintech start-up to provide payment solutions in informal settlements. It is interesting to observe whether all these initiatives will sway enough customers to close the usage gap, and what factors will determine the level of uptake and usage by customers.

2.6 Theoretical Framework

2.6.1 Consumer behaviour and technology

Consumer behaviour studies seek to understand the basis for consumer decision-making with regards to product and service selection, purchase and subsequent disposal (Kuester, 2012). Consumer behaviour integrates aspects of economics, sociology, psychology and marketing, and is the basis for marketing-focused activities centred on continuance intention (Huang, 2009; Swarbrooke & Horner, 1999). It examines how psychological and sociological factors impact a consumer's purchase and usage behaviour patterns. Factors that influence consumer behaviour include belief systems, attitudes, intentions and other social factors. Businesses can advance their marketing strategies if they have a better understanding of customer behaviours, feelings and reasons for choice when faced with alternatives. The success of a business in

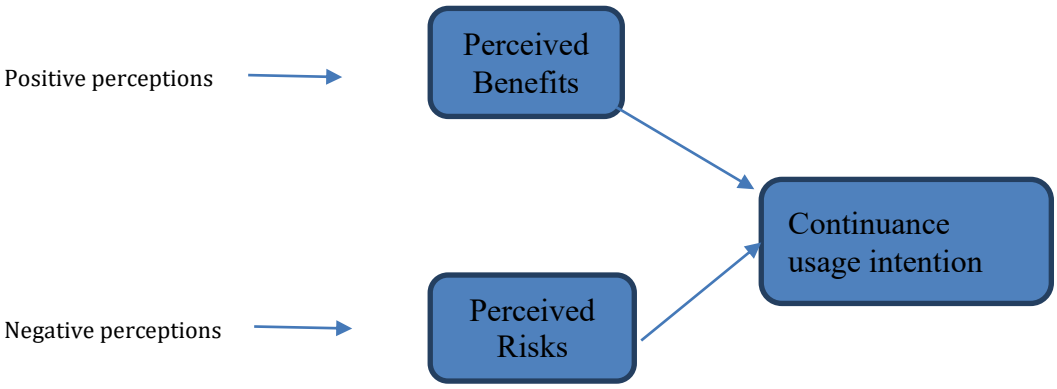
ensuring consumption and continued usage of its product is dependent on the depth of its knowledge in packaging such a product to appeal to consumers (Bhattacherjee, 2001a). As noted by Belch et al. (2012) and Osah (2015), the consumer buying decision-making process can be divided into five stages, namely problem or need recognition; information search; evaluation of alternatives to meet the need; purchase decision and post-purchase behaviour. The model has been criticised due to its assumption that consumers often follow a lengthy, dynamic, cognitive loaded, rational, and goal-oriented decision-making process when deciding to purchase goods or services (Lofman, 1991; Osah, 2015). Firat (1985) noted that in the past, models have been developed with certain specified time periods, contexts and social circumstances. As such, it is important that current models are more reflective of real life circumstances with less emphasis on predetermined assumptions of events if they are to be successfully implemented.

The point of intersection between this study and the consumer purchasing decision-making process is at the post-purchase stage. This stage was described by Belch et al. (2012) as the point at which evaluation of expectations occur after usage has taken place. The result of the evaluation determines the level of satisfaction with the consumer either satisfied (expectations met or exceeded) or dissatisfied (below expectations) (Kotler, 2000). User continuance intention is a post-adoption phenomenon that is driven by the consumers' levels of satisfaction (Bhattacherjee, 2001a). A consumer's decision to continue with the use of a certain product or service or similar ones will be influenced by his or her level of satisfaction with the said item

2.6.2 Risk-Benefit Framework

Consumers often make decisions based on insufficient or flawed information (Kim et al., 2000). These decisions can come with a degree of risk or uncertainty attached that need consideration. Risk alone is not the only consideration when continuance decisions are made. Perceived benefits are regarded by consumers as an incentive for decision-making (Wilkie & Pessemier, 1973). Tarpey and Peter (1975) identified three aspects for the consumer decision-making process. They asserted that when making decisions consumers consider the net valence or perceived value based on perceived risks and benefits. This study makes use of the net valence framework, drawing on the principles of theory reasoned action (TRA). TRA explains the relationship between attitudes and behaviours and their impact on behavioural intent (Ajzen & Fishbein, 1977; Benlian & Hess, 2011). The decision to continue using

Fintech is therefore dependent on the expected outcomes which are influenced by behavioural beliefs. Based on this, the study examined the factors users would consider as having an impact on their decision whether Fintech usage is beneficial or not. Positive perceptions around Fintech usage are associated with perceived benefits, while any negative beliefs are associated with the perceived risks. The net result of the benefits weighed against the risks lead to a decision on the continuance usage of Fintech. An illustrative summary of the perceived benefits and risks is shown below.



2.7 Empirical Literature

Several studies have examined the benefit-risk framework affecting the decision-making process when adopting or using IT services. The considered benefits and risks have mostly been multi-dimensional, usually containing several types of benefits and risks. Peter and Tarpey (1975) examined three alternative decision-making strategies in the consumer behaviour literature. These are maximising benefits, minimising loss and maximising the net expected gain. They concluded that the net expected gain model could explain more of the variance in brand preference than the other two models as consumers consider both positives and negatives when making decisions. They also found that perceived risks had a greater impact than perceived benefits. This is consistent with findings by Liu et al. (2012), Benlian and Hess (2011) and Ryu (2018) who all use the theory of reasoned action that assert that behavioural intentions are dependent on users' perceptions which are influenced by behavioural beliefs (positive and negative). Positive beliefs increase perceived benefits, while negative beliefs result in perceived risks. Qin (2007) came to a similar conclusion using the expectation disconfirmation model to predict and explain online shopping consumer behaviour. Results from the research indicated that the effect of risk has a stronger impact on

user satisfaction and usage intention. Trust was identified by Pavlou (2003) as a key driver for e-commerce. Kim et al. (2008), Cheng Shi et al. (2013) and Forsythe et al. (2006) put forward a decision-making model focusing on online buying patterns. They identified price and convenience as key determinants of benefits, with benefits viewed as a positive predictor of e-commerce activity. The principle of weighing benefits and costs to determine influence on intentions and usage was also applied by Lee et al. (2013) whose results showed that behavioural intention was mainly affected by benefit, not risk.

Attitudes towards technology also play an important role in behavioural intentions when dealing with technology-based products and services. Hsu and Lu (2004), Wu and Wang (2005), Wang et al. (2003) and Schierz et al. (2010) all make use of the technology acceptance model (TAM) to investigate what determines user acceptance and usage of online gaming and mobile based services. Key factors identified as having an impact on usage were perceived ease of use, perceived usefulness, compatibility, social norms and attitudes, security and convenience. Abramova and Böhme (2016) researched the factors that encourage and hinder the use of bitcoin. They combined TAM with the benefit-risk based approach to explain bitcoin adoption. Three components of perceived benefits (seamless transaction, security and control, and decentralization) and four components of perceived risks (financial losses, legal risk, operational risk, and adoption risk) were identified (Ryu, 2018). Kim et al. (2010) divided their research into two categories — early and late adopters. Early adopters are prone to adopt an innovation irrespective of any low certainty level surrounding potential use and respective benefits.

Using a cost-benefit perspective, Lee (2009), Shen et al. (2010) and Kuo-Chen et al. (2015) concluded that transaction costs along with convenience and security were also key factors causing increased traction in mobile and online banking adoption. Karahanna et al. (1999) used a combination of innovation diffusion and attitude theories to examine differences in pre-adoption and post-adoption beliefs and attitudes. The study found that determinants of behavioural intention surrounding information technology differ for users when compared to potential adopters. Usefulness is the only belief underlying both attitude toward adopting and attitude toward continuing to use. In addition, PEOU, visibility, and trial-ability were important to pre-adoption attitudes. Below is a summary of the empirical studies.

Table 1: Summary of several empirical studies

Source	Method of analysis	Country and sample size	Findings
Kim et al. (2010).	Structural Equation Modelling (SEM)	Sample size of 269 in Korea	Perceived ease of use and perceived usefulness are predictors of intention to use m-payment, with perceived ease of use being influenced by convenience and reachability
Lee (2009).	The chi-square test was used to assess the adequacy of the hypothesized model	Sample size of 368 in Taiwan	Convenience, speed of transactions, cost, risk (security, privacy and financial)where identified as influencing factors
Benlian and Hess (2011).	Research hypotheses tested using PLS, with SPSS statistics	Sample size of 349 in Germany	The factors influencing usage where identified to be performance risk, economic risk, strategic flexibility and security risk
Liu et al. (2012).	TRA was used as a basis for predicting behavioural intentions, while structural equation modelling procedures were performed using AMOS 4.01 to test the theoretical model	Sample size of 337 in an online survey	Financial and privacy risks were identified as key contributors of adoption
Cheng Shi et al. (2013).	Multiple regressions were performed to test hypotheses	Sample size of 578 in China	Key determinants of benefits identified were price, convenience and recreational benefits while risks identified were financial, psychological, product and time risk
Abramova and Böhme (2016).	Partial Least Squares (PLS) and the R-software package used to test hypothesis	Sample size of 6395 from Estonia, Germany, Italy, Netherlands, Poland and the United Kingdom	Transaction process, security and control decentralization are noted as key drivers while financial losses, legal risk, operational risk and adoption risk are seen as inhibitors.
Ryu (2018).	Partial least squares method was used to test the proposed model.	Sample size of 243 in Korea	Although seamless transaction and economic benefit could also drive the Fintech continuance intention, convenience was the strongest and most consistent factor significantly affecting the perceived benefit. Of the major risk factors driving Fintech continuance intention, legal risk was the dominant factor (Ryu, 2018)
Hsu and Lu (2004).	LISREL 8, a program for performing structural equation modelling was used to test the structural model.	Sample size of 233 in an online survey	Social norms, attitudes and experience impact behavioural intention to use. The easy-to-use interface of an on-line game also played a critical role in determining perceptions of usefulness and in forming flow experience (Hsu and Lu, 2004)
Wu and Wang (2005).	The proposed research model was evaluated using structural equation	Sample size of 310 in Taiwan	Perceived usefulness and perceived ease of use all indirectly influence the actual usage through behavioural intention to use. The most

	modelling (SEM). The data obtained were tested for reliability and validity using confirmatory factor analysis (CFA).The CFA was computed using the LISREL software		important determinant for behavioural intention to use is compatibility.
Qin (2007).	Hypotheses tested using SEM. The data obtained were tested for reliability and validity using confirmatory factor analysis (CFA)	Sample size of 335 in China	Intention to use is influenced by perceived usefulness and user satisfaction, with user satisfaction being the stronger of the two
Wang et al. (2003).	A confirmatory factor analysis using LISREL 8.3 was conducted to test the measurement model.	Sample size of 123 in Taiwan	Perceived ease of use and perceived usefulness constructs are believed to be fundamental in determining the acceptance and use of IT. Perceived credibility" is a factor that reflects the user's security and privacy concerns(Wang et al.,2003)
Forsythe et al. (2006).	The relationship between online purchase frequency and shoppers' overall perceptions of benefits and risks was tested using MANOVA analysis.	Sample size of 937 in the United States of America	Perceived benefit factors identified; shopping convenience, product selection, ease of shopping. Perceived risks; Financial and product risk The study revealed that those shoppers who shopped more frequently and spent more money online perceived greater benefits and less risk to be associated with Internet shopping. Furthermore, perceived benefits were determined to be a positive predictor of future intentions to visit and purchase online, while perceived risks related negatively to future intentions to purchase online (Forsythe et al., 2006).
Kim et al. (2008).	PLS was used for assessing the structural model and measurement model because	Sample size of 468 in Singapore	A consumer's trust has a strong positive effect on the purchasing intention as well as a strong negative effect on a consumer's perceived risk. This study also provides evidence that a consumer's perceived risk reduces the consumer's intention to purchase, whereas a consumer's perceived benefit increases the consumer's purchasing intention (Kim et al., 2008).
Lee et al. (2013).	PSAW statistics was used to conduct analysis of variance and regression analysis to test the hypothesis. To test measurement model, the Partial Least Squares (PLS)	Sample size of 67 in Korea	Benefit is a greater predictor than risk with regards to consumers intention to share context information

	method of structural equation modelling was utilized		
Peter and Tarpey (1975).	Multiple regression runs were performed using Johnson's (1970) Big step Regression program	Sample size of 210 in the United States of America	The results of this study indicated that the net perceived return model could explain more variance in brand preference than the other two models (Peter & Tarpey, 1975).
Kuo-Chuen & Teo (2015).	Qualitative analysis of the factors that influence Fintech success.	Sample size of 2 in China and Kenya	Cost reduction and convenience are the most common and consistent extrinsic motivations for Fintech, especially ease of setup. The quality of online experience was also identified as a factor
Schierz et al. (2010).	To examine the latent variables within their causal structure, structural equation modelling (SEM) was applied using EQS 6.1 soft- ware (Bentler, 1995) and the Maximum Likelihood (ML) procedure	Sample size of 1447 in Germany	Perceived ease of use, perceived security, individual mobility and perceived compatibility impact attitudes towards acceptance which impacts continuance intention
Shen et al. (2010).	Factors were modelled via structural equation model (SEM) as the antecedents of the benefit and cost of adopting the mobile banking system.	Sample size of 400 in Taiwan	The main drivers of risk and benefit of mobile banking are security and convenience respectively
Pavlou (2003).	In order to examine the proposed hypotheses, partial least squares (PLS-Graph Version 3.0) was employed	Sample size of 258 in the United States of America.	The primary constructs for capturing consumer acceptance of e-commerce are intention to transact and on-line transaction behaviour (Pavlou, 2003). Trust is categorised into trust in a specific party and trust in the infrastructure. Trust is influenced by perceived ease of use, perceived usefulness and perceived risk
Karahann et al. (1999).	Partial Least Squares (PLS) approach was used analyse the effect of the behavioural and normative components on intentions of adoption and usage	Sample size of 230 in the United States of America.	Usefulness is the only belief underlying both attitude toward adopting and attitude toward continuing to use. In addition, image is significant for users while visibility, result demonstrability, ease of use, and trial-ability are significant for potential adoption (Karahann et al.,1999)

2.8 Summary of the Literature

The chapter looked at the definiton of Fintech as well as technologies impacting the financial sevices industry. It looked at the role of mobile phones for development and addressed the relationship between Fintech and the level of financial inclusion. An overview of the South African landscape was discussed to provide further context. The theoretical framework looked at consumer behaviour and technology as well as the link between risks, benefits and the intention to use. The chapter concluded with empirical literature review from previous similar studies performed.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The study combined positive and negative influences of Fintech usage by making reference to the benefit-risk framework. The three factors affecting perceived benefit identified and discussed were convenience, low transaction costs, and perceived ease of use. The Two factors identified as factors that impact perceived risk were security risk and operational risk. As a result, this study assumed that the intention for Fintech continuance is significantly affected by perceived benefits and risks which are influenced by the positive and negative factors identified above. The proposed model is depicted in Figure 4 below.

3.2 Research Design

3.2.1 Data Collection, Frequency and Choice of Data

This study was quantitative in nature and relied on secondary data and information that is publicly available. The secondary data used in the study was obtained from reputable sources including GSMA-mobile for development, Finscope SA surveys, BCG, IMF and the World Bank. Questionnaires and responses were obtained from their databases and questions with responses that were found to be relevant to this research were extracted. The questions used can be found in Appendix A below.

3.2.2 Sampling

This study aims to investigate whether the intention to continue the use of technology-based financial products and services is directly impacted by a customer's satisfaction from prior use. Sample data used in the study was based on the statistics on the use of mobile money and other money transfer mechanisms extracted for the 2016 period. Mobile money and P2P usage data were selected as this was the most used form of Fintech in South Africa. The population used was over the age of 16 with an income of R6000 and below. The income was from various sources such as salary, grant and remittances. A set of indicators used to

measure convenience, such as PEOU, costs, security and operational risks were identified and included in appendix A below. This data was then used to perform the quantitative analysis, results of which ultimately formed part of the final findings and recommendations. From the population size used of 31million, the sample size of 481 is above the acceptable margin of error at 5% with a confidence level of 95%.

3.3 Research model: construct and hypothesis development

Perceived benefits and risks have been used extensively as predictors of IS continuance intentions (Kim et al., 2013; Melewar et al., 2013; Lee, 2009; Abramova & Böhme, 2016). For this study, a perceived benefit can be described as a consumer's expectation of positive results from the use of Fintech. On the contrary, perceived risk is the expectation of negative consequences from use. The identified perceived risks and benefits to be tested have been included in Figure 4.

The following three components, believed to have an impact on perceived benefit, have been identified. These are perceived ease of use, transaction costs, and convenience. Cheong and Park (2005), in their research, found perceived ease of use to be a significant factor in driving the intention to use M-internet. Davis (1989), in his technology acceptance (TAM) model, asserts that in determining whether to use technology an individual's behavioural intention to use will be determined by the perceived usefulness, perceived ease of use and attitude towards the technology. This in turn influences the actual use of the technology itself. Davis et al. (1989) define perceived ease of use as the extent to which potential consumers expect certain technology use to be free of effort. Burton-Jones and Hubona (2006) and Deng et al. (2007) all found perceived ease of use to play a significant role in adoption intention. This is in contrast with the findings by Karahanna et al. (1999) which noted that, although perceived ease of use is a significant motivator of IT acceptance, overtime it has an insignificant impact on perceived benefit as its influence has been seen to decrease over time. Despite differing opinions on its importance, ease of use has been chosen as a variable to test hypotheses as traditional financial products have sometimes been cited as difficult to use.

In their research, Kuo-Chuen and Teo (2015) considered cost reduction and convenience as the most common and consistent motivation for Fintech. Fintech applications such as mobile

remittances and P2P lending directly provide standardised services on a mobile channel without intermediation thereby lowering transaction costs for customers compared to traditional financial institutions(Mackenzie, 2015).

One of the most important determinants of online and mobile services' success is the level of convenience offered (Kim et al., 2010). Convenience relates to flexibility in location and time (Okazaki and Mendez, 2013). Characterised by immediate accessibility and portability, it is one of the great attractions of Fintech (Sharma & Gutiérrez, 2010; Kuo-Chuen and Teo, 2015).Mobile devices offer unprecedented convenience and efficiency without the need to travel to financial institutions. In their research on the costs and benefits of the mobile banking system, Shen et al. (2010) identified convenience as a useful predictor to determine usage. Mobile phones play a pivotal role as a channel that enables Fintech through mobile platforms. This makes convenience a plausible variable to use in order to determine the perceived benefit of the intention to use.

Notwithstanding the benefits, innovation is often associated with risks as well (Schierz et al., 2010).Cunningham (1967) identified six factors that influence perceived risk. These are "performance, financial consideration, opportunity/time, safety, social factors, and psychological factors." In the context of Fintech, this study identified security risk and operational risk as perceived risk factors to be considered. Financial loss was excluded as it usually occurs as a result of operating or security risk. There is a negative relationship between intention of continuous use and Fintech-caused financial losses that result from failures in the financial transaction system, moral hazard and financial fraud (World Economic Forum, 2015). Security risk has been defined by Lwin et al. (2007) as the probability of a privacy invasion, identified by consumers as a concern. According to Lee (2009) a critical concern amongst online mobile users is the potential monetary loss and violation of privacy that can result from fraud and hacker intrusions. Fintech usage is often linked to the risk of potential high losses resulting from transaction and data loss (Schierz et al., 2010).

Operational risk refers to the expected losses that occur as a result of inadequate systems, internal processes and employees (Barakat & Hussainey, 2013). If the financial and operating systems risk is high in Fintech companies, consumers are unlikely to continue the use of Fintech. Poor operations lead to dissatisfaction and subsequent distrust, creating barriers to

Fintech usage. In making usage decisions, users consider the good reputation of a Fintech company with regards to operational skills and operating systems in order to mitigate any identified perceived risks (Ryu, 2018).

Based on the above, the following hypotheses depicted in Figure 4 have been proposed:

H1. There is a positive relationship between perceived benefit and Fintech continuance usage.

H2. There is a negative relationship between perceived risk and Fintech continuance usage.

H3. Convenience positively impacts perceived benefit.

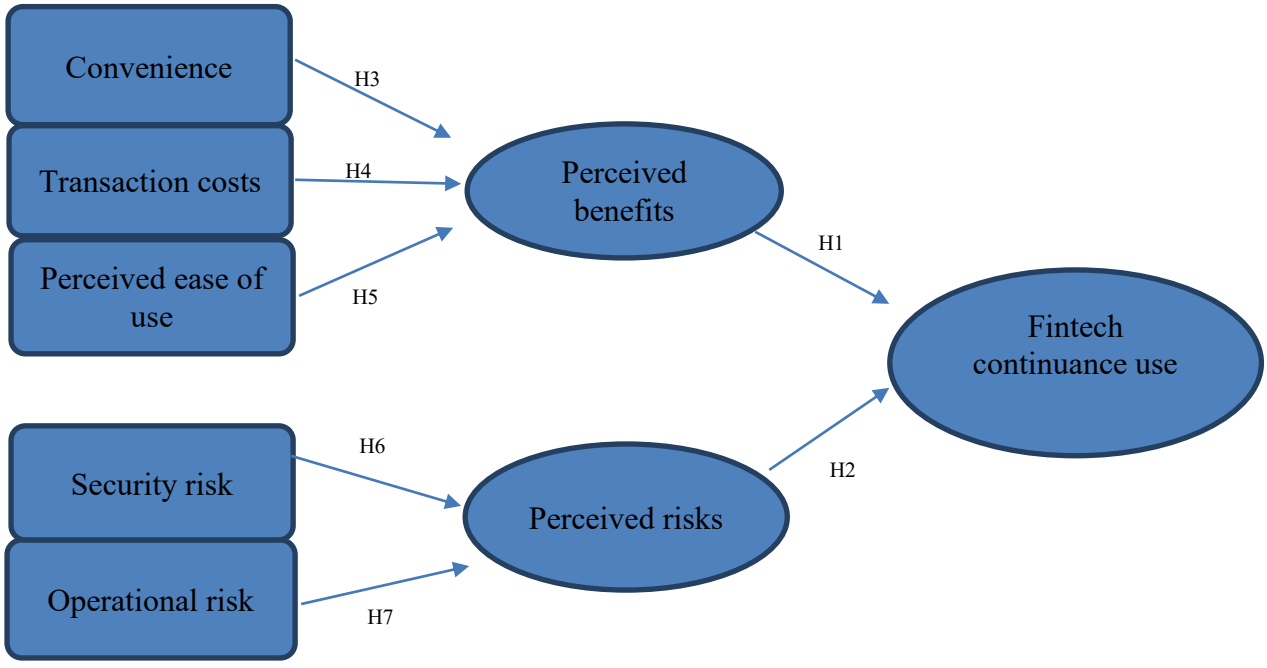
H4. Low transaction costs positively impact perceived benefit.

H5. Perceived ease of use positively impacts perceived benefit.

H6. Security risk has a positive impact on perceived risk.

H7. Operational risk has a positive impact on perceived risk.

Figure 4: Research model



3.4 Data Analysis Methods

The hierarchical component model (HCM) is proposed with lower order constructs that form the higher order construct. The proposed HCM is a reflective-formative type model with

lower order constructs (LOCs) that employ a reflective measurement model and higher order constructs (HOCs) employing a formative measurement model. If indicators used to measure a variable represent a consequence, then the model is reflective. Where they represent a cause, then it is formative (Rossiter, 2002).Structural equation modelling (SEM) using partial least squares structural modelling was utilised to test the hypotheses and relationship between the variables. SEM makes a distinction between the reflective versus the formative model (Edwards &Bagozzi, 2000). A two-step approach for data analysis was used as recommended by Gefen et al. (2000). Firstly, to test the reliability and validity of the measurement model used to measure each variable, and secondly, to test the validity of the entire structural model. When evaluating higher-order models consideration need to be given to firstly, the measurement models of the lower-order components, and secondly, the measurement model of the higher-order construct as a whole, represented by the relationships between the higher-order component and its lower-order components (Sarstedt, 2019; Chin, 2010b). The repeated indicator approach was applied to measure the second-order constructs in line with guidelines from Becker et al. (2012). In the repeated indicators approach, the indicators of the LOCs are reused for the HOC. If, for example, a HOC consists of two LOCs measured by three variables, each of the six variables will also be used as indicators for the HOC (Hwa et al., 2018). Thus, perceived risks and benefits were evaluated by the observable variables of convenience, transaction costs, PEOU, security and operational risks. Internal consistency reliability and validity tests were performed to ascertain the accuracy of the measurement model. Validity includes discriminant and convergent validity. Convergent validity measures the degree of relationship between indicator variables. On the other hand, discriminant validity measures whether two factors are statistically different. The internal consistency and reliability of the variables was evaluated using a composite reliability (CR) indicator approach and Cronbach's alpha values. Convergent validity was evaluated based on the criteria suggested by Lee (2009), through the examination of indicator loadings and the average variance extracted (AVE). The discriminant validity measure relied on Ringle and Sarstedt (2015)'s heterotrait-monotrait ratio of correlations (HTMT) measure and Fornell and Larcker (1981).

PLS bootstrap resampling procedure using Smart PLS 3 software was used to test the entire structural model. The bootstrapping procedure was run with 5 000 samples, and used the no sign changes option, bias-corrected and accelerated (BCa) bootstrap confidence interval, and two-tailed testing at the 0.05 significance level.Given that high correlations may lead to

multicollinearity problems; further tests were performed to support the discriminant validity results of the measurement model. Variance inflation factor (VIF) was used to check that none of the correlations among the variables was higher than the suggested threshold (Kline, 2011). The explanatory power of the structural model was evaluated on the basis of the significance of the path coefficients, t-values, and the coefficient of determination, commonly known as R^2 value. In addition, the Stone–Geisser's Q^2 value based on Geisser (1974) & Stone (1974) was examined to determine the model's predictive power/relevance.

3.5 Limitations

The study has some inherent limitations caused by the fact that it does not intend to fully explain the factors affecting continued Fintech usage in their entirety. It ignores other factors such as trust, demographics, socio economic factors, attitudes and beliefs which may have substantial impact on individuals' decisions. The existence of a relationship between two variables also does not, in itself, show cause and effect. It should be noted that many various factors may play a role in the decision to continue using Fintech. A limitation also arises from the use of secondary data. This is, however, negated to an extent by the use of data obtained from reputable sources.

One disadvantage of using the repeated indicator approach when using a reflective-formative HCM is that since all indicators of the lower order constructs are repeated to identify higher order components, almost all of its variance is explained by the indicators. As a result, there is no remaining variance to be explained by other potential predictors, and the R^2 value will be 1.0 (Cheah et al., 2018). Any other potential predictor's path coefficient estimate will be close to zero and appear non-significant.

CHAPTER 4

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The results from the hypothesis testing have been documented below. KMO and Bartlett's tests were run to determine the adequacy of the data used. The measurement model of the lower order constructs was validated first, with multicollinearity, significance and relevance of the entire model being tested and results analysed.

4.2 Demographic characteristics

The secondary data used was in the form of a questionnaire, from which extracts on relevant questions were identified. The selected sample contained respondents earning a minimum of R1000 and a maximum of R6000. Their age ranges from 16 to 71 years. The respondents received income via salary, grants and remittances. The respondents were mainly employed in the formal sector, or entrepreneurs, with a few pensioners and unemployed individuals. Most have used or are using one or more financial products (insurance products, transactional banking, savings and credit).The sample characteristics are shown in Table 2.

Table 2: Sample characteristics

Variable	Group	Frequency	Percentage
Gender	Female	173	36%
	Male	308	64%
Age group	16-29	241	50%
	30-44	136	28%
	45-71	104	22%
Income bracket	R1,000 - R1,999	159	33%
	R2,000 - R2,999	88	18%
	R3,000 - R5,999	193	40%
	R6,000	41	9%
Employment status	Entrepreneur	34	7%
	Formal employment	252	53%
	Retired	103	21%
	Unemployed	92	19%
Residential area	Rural	108	22%
	Suburb	139	29%
	Township	234	49%

Note: N (%) =481(100%)

4.3 Convergent Validity

The results of the adequacy of the sample, using the Kaiser-Meyer-Olkin measure, are presented in Table 3. The results vary between 0 and 1, with values closer to 1 being more acceptable (anything from 0.7 is considered moderate). The Bartlett's Test of Sphericity was used to test the hypothesis concerning the relationship between the variables. H0; No statistically significant interrelationship between variables and H1; statistically significant interrelationship may be present. As can be seen below, KMO is greater than 0.7 which indicates that the sample is adequate. Bartlett's Test of Sphericity, taking a 95% level of significance, results in p-value (Sig.) of .000 < 0.05. The null hypothesis is therefore rejected.

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.735
Bartlett's Test of Sphericity	Approx. Chi-Square	2 460.90
	df	120
	Sig.	.000

Before assessing the HCM of the formative measures, perceived benefits and risks, the reflective dependent construct, continued usage and the LOCs (convenience, cost, PEOU, operational and security risk)were examined for reliability and validity (Hair et al., 2017). Results from the assessment of these constructs show that their loadings exceeded the threshold value of 0.7 across all indicators (see Table 4). This indicates that all items strongly influence the variable. The factor loadings for HOCs PB and PR range from 0.5 to 0.7. Although factor loadings should ideally be higher than 0.7, Hair et al. (2010), Chen & Tsai (2007) and Hulland (1999) consider a minimum loading of 0.5 as acceptable. Similarly, the average variance extracted (AVE) is greater than the critical value of 0.5 for LOCs. The reliability criteria are also met (Cronbach's Alpha and Composite Reliability) as the values are above 0.7 for all constructs. According to Fornell and Larcker (1981) and Lam (2012), AVE of less than 5 is acceptable if composite reliability is greater than 0.6 as this means that convergent validity is still adequate. As the composite reliability for the HOCs is greater than 0.8, the AVEs of 0.494 and 0.4 are accepted. These outcomes support the validity and reliability of the reflective measurements.

Table 4: Reflective Measurement Model Assessment

Construct	Item	Loadings	CA	CR	AVE
Continued usage	CU1	0.788	0.735	0.849	0.652
	CU2	0.825			
	CU3	0.81			
Convenience	C1	0.922	0.788	0.904	0.825
	C2	0.894			
Cost	TC 1	0.857	0.725	0.845	0.648
	TC 2	0.861			
	TC 3	0.685			
Perceived ease of use	PEOU 1	0.873	0.819	0.893	0.735
	PEOU 2	0.865			
	PEOU 3	0.834			
Operational risk	OR 1	0.841	0.78	0.872	0.695
	OR 2	0.861			
	OR 3	0.798			
Security risk	SR 1	0.909	0.714	0.873	0.775
	SR 2	0.851			
Perceived benefit	C1	0.692	0.784	0.841	0.4
	C2	0.597			
	TC 1	0.697			
	TC 2	0.683			
	TC 3	0.515			
	PEOU 1	0.62			
	PEOU 2	0.63			
	PEOU 3	0.605			
Perceived risk	OR 1	0.746	0.739	0.829	0.494
	OR 2	0.764			
	OR 3	0.714			
	SR 1	0.709			
	SR 2	0.562			

Notes: CU=Continued usage; C=Convenience; TC=Cost; PEOU=Perceived ease of use; OR=Operational risk; SR=Security risk; PB=Perceived benefit; PR=Perceived risk; CA= Cronbach's Alpha; CR= Composite Reliability; AVE= Average Variance Extracted

4.4 Divergent Validity

The discriminant validity was confirmed using Henseler et al. (2015) heterotrait-monotrait ratio of correlations (HTMT) measure and Fornell and Larcker (1981). The HTMT results presented in Table 5, below, show that none of the HTMT confidence intervals include the value of 1 and all value results are below the conservative threshold of 0.85 (Kline, 2016; Franke & Sarstedt, 2018).Thus, discriminant validity has been established using this criterion.

The correlations between items measuring any two variables should be lower than the square root of the average variance shared by items within a variable (Fornell & Larcker, 1981). As indicated in Table 5 the square root of the variance (diagonal values) shared between the variables and their items was greater than the correlations between the variable and any other variables in the model, satisfying the discriminant validity criteria.

Table 5: HTMT-based Discriminant Validity Using Assessment

	1	2	3	4	5	6
1.Continued usage						
2.Convenience	0.119					
3.Cost	0.204	0.57				
4.Operational risk	0.172	0.251	0.155			
5.PEOU	0.342	0.304	0.386	0.191		
6.Security risk	0.114	0.05	0.126	0.437	0.092	

Note: Perceived Ease of Use

Table 6: Fornell-Larcker Criterion

	1	2	3	4	5	6
1.Continued usage	***0.807***					
2.Convenience	0.093	***0.908***				
3.Cost	0.155	0.44	***0.805***			
4.Operational risk	-0.132	-0.199	-0.119	***0.834***		
5.PEOU	0.268	0.252	0.298	-0.152	***0.857***	
6.Security risk	-0.079	-0.013	0.073	0.336	0.067	***0.881***

Note: Perceived Ease of Use, Diagonal elements are square roots of average variance extracted

4.5 Multicollinearity

The variance inflation factor (VIF) is a common measure of multicollinearity. It indicates the degree to which each independent variable is explained by other independent variables (Hair et al., 1998). If variables are highly correlated, they may provide redundant information about responses. A threshold VIF that is less than or equal to 10 is commonly suggested by Hair et al. (1995) while Ringle et al. (2015) consider a maximum of 5 more appropriate. The results in Table 7, below, indicate that there are no multicollinearity issues in the model.

Table 7: Variance inflation factor (VIF)

HOC	LOC	
PB	Convenience	1.265
	Cost	1.301
	PEOU	1.119
PR	Operational risk	1.128
	Security risk	1.128

4.6 Structural Model Assessment

The explanatory power of the structural model is generally evaluated on the basis of the significance of the path coefficients and the coefficient of determination (R^2). The results in Table 8, below, provide estimates of the path coefficients and their significance for all the proposed hypotheses.

Tables 8 show the results of the hypotheses testing. The results indicate that perceived benefit ($\beta = 0.220$, $p < 0.05$) has a positive and significant relationship with continued usage, which is consistent withH1. This indicates that respondents who perceived a benefit from utilisation showed a willingness to continue usage. The results further show that the effect of perceived benefit was greater than that of perceived risk. This is consistent with Forsythe et al. (2006) who, in their research, observed that perceived benefit was a predictor of usage, and that consumers are most likely impacted by their perception of benefit vs. risk. The research further hypothesises that perceived benefit is positively impacted by convenience, level of transaction cost and perceived useful of the Fintech products. For instance, convenience ($\beta = 0.38$, $p < 0.05$) was found to have a significant positive effect on perceived benefit in line with H3. This finding is consistent with Lee (2009) and Benlian and Hess (2011) who found convenience to be a significant factor in determining usage. This model suggests that

convenience has a significant, but lower impact on perceived benefit when compared to the other two variables. The path coefficients between cost and PB, as well as PEOU and PB, where almost similar and both had a stronger relationship with PB than convenience. Consumers are therefore more likely to be influenced by the cost of transactions and ease of use of products vs. convenience when faced with all three. Lee (2009), however, found convenience to be a stronger predictor of benefit. The coefficient of Cost ($\beta = 0.481$, $p < 0.05$) also aligns. Thus H4 is satisfied. Kuo-Chuen and Teo (2015) found costs to be the most significant determinant, suggesting that "opportunities for businesses that utilise Fintech to lower operating costs" are great. Perceived ease of use ($\beta = 0.483$, $p < 0.05$) was found to have the strongest relationship with perceived benefit when compared with the other two indicators. This suggests that user friendliness is important to consumers and their usage patterns (Venkatesh, 2000). H5 is therefore satisfied. This is consistent with Kim et al. (2010) and Wang et al. (2003)'s findings. While Karahanna et al. (1999) also found PEOU to be a factor, they concluded, however, that its relevance diminishes over time. Abramova &Böhme (2016) found that even though PEOU had a significant effect on perceived benefit, it was weak.

In line with H2a negative coefficient was observed for Perceived risk ($\beta = -0.096$, $p < 0.05$).This indicates that when consumers assume that more risks are associated with using a financial product its usage is impacted negatively. Lwin et al. (2007) found an inverse relationship between continued usage and perceived risk from expected losses due to fraud and operational failures. Pavlou (2003), on the other hand, found trust to be a key characteristic that drives usage intention. One of the most important drivers of trust is perceived risk. The level of usage is determined by trust which in turn is driven by the level of perceived risk. The two determinants of perceived risk, identified in this research, are operational and security risk. If the levels of operational risk ($\beta = 0.727$, $p < 0.05$) increase, perceived risk is significantly increased. H7 is therefore satisfied. While Abramova and Böhme (2016) found operational risk to have a significant impact on perceived risk, the relationship was not as strong as financial loss (from fraud) which is identified as security risk in this research. The results of this research show operational risk to have a higher impact on perceived risk than security risk. Security risk ($\beta = 0.485$, $p < 0.05$), which is derived mainly from the fear of monetary loss as a result of fraud, also has a significant and positive relationship with perceived risk. Thus, H6 is satisfied. This was also found to be the case by Ryu (2018) and Lee (2009).

The effect of control variables was also considered. Of the five control variables documented below in Table 8, gender is the only one that was found to have an influence on continued usage. There is a positive, significant though weak, relationship between gender (β = 0.104, p < 0.05) and continued usage. This is consistent with Nysveen (2005) whose research on moderating impacts of gender on mobile use concluded that gender does plays a role in technology adoption.

Table 8: Structural model assessment (path analysis)

	Path	T Statistics	P Values
Convenience -> PB	0.380***	20.603	0.000
Cost -> PB	0.481***	25.868	0.000
PEOU -> PB	0.483***	20.31	0.000
PB -> Continued usage	0.220***	4.985	0.000
Operational risk -> PR	0.727***	29.376	0.000
Security risk -> PR	0.485***	21.448	0.000
PR -> Continued usage	-0.096***	2.645	0.008
Gender-> **Continued usage**	0.104**	2.183	0.029
Age group-> **Continued usage**	-0.086	1.765	0.078
Income bracket-> **Continued usage**	-0.016	0.336	0.737
Employment status-> **Continued usage**	0.064	1.301	0.193
Residential area-> **Continued usage**	0.026	0.569	0.569

Note: PB=Perceived benefits; PR=Perceived risk; CU=Continued usage; PEOU=Perceived ease of use
*** and ** denotes significance at 1% and 5% respectively.

Altogether, the proposed model explains 6.5% of the variance in usage behaviour (Table 9).Although it may not explain a large amount of variation in the response, a model with a small R^2 value can still be used because a significant relationship may exist between predictors and the responses that may still be of importance (Theroux, 1981). Fonticella (2010) also indicated that $R^2$is more useful in measuring significance of the slope and not a good measure of the goodness-of-fit. He also stated that when the R^2 is not as high as a pre-determined benchmark, instead of rejecting the data other significant factors should be considered. In addition, the calculated Q2 value (Geisser 1974; Stone 1974) of 0.04 for the dependent variable continued usage is larger than zero (Hair et al. 2013; Sarstedt et al. 2014). The path model exhibits predictive relevance for usage behaviour. The structural model, however, is found to not be highly predictive as the Q2 value is less than the threshold of 0.5 (Chin 2010).

Table 9: Structural model assessment (R2 and Q2)

	R^2	Q^2	P Values
Continued usage	0.065	0.04	0.003
PB	1	0.376	0.000
PR	1	0.462	0.000

CHAPTER 5

RESEARCH CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the research findings of the study, and presents an overview of the study and the conclusion of the study. The chapter starts off with a discussion on the research journey followed by a discussion of the empirical findings including policy recommendations. Finally, the chapter concludes with recommendations for areas of future study.

5.2 Summary and conclusion of the study

The objective of the research was to examine the impact of perceived benefits and risks on the continuous use of Fintech among low-income South Africans. The research draws on the risk-benefit framework which suggests that consumers consider not only risks when making decisions, but also benefits, and weigh the two together to get an outcome. These risks and benefits are based on expected outcomes, which dependent on consumer beliefs. Supported by empirical literature, independent variables that impact risk and benefit and ultimately usage where identified with hypotheses formed. Convenience, cost and perceived ease of use where identified as having an impact on perceived benefit while operational and security risk have an impact on perceived risk. The structural equation modelling, employing the smart PLS, was used to test the hypotheses based on secondary data collected. Bootstrapping procedures, using two-tailed testing at the 0.05 significance level, were run via smart PLS making use of the repeated indicator approach.

Perceived benefit was identified as having a positive relationship with usage while perceived risk was negatively correlated. Although both perceived benefit and perceived risk were identified as having an impact on usage, perceived benefit was found to have a greater impact. Cost and perceived ease of use had a similar significant impact on perceived benefit. While the relationship between perceived benefit and convenience was also significant, it was not as strong as the other two. Both security and operational risk had a significant impact on perceived risk, with operational risk having the greatest impact.

5.3 Policy recommendations

Given the usage statistics on financial services in South Africa's lower income households, combined with growth in technology use, Fintech can be a great enabler for improved usage. A lot of Fintech companies have emerged in the past few years in an attempt to close the financial inclusion gap. For them to be successful, they need to deliver something substantially different to what is already being provided by the current banking system. This research identifies some of the factors that would need to be addressed in order to realise success. Customers consider multiple factors that impact their purchasing behaviour and weigh them before making decisions. Customer behaviour should therefore be an integral consideration when establishing product offerings. While both risks and benefits where significant, and should both be taken into account, the research identified benefits as having a stronger impact on usage than risk. The implications are that benefits have a greater influence than risks when it comes to user perception. In developing products, Fintech companies should focus on improving those areas that would increase users' perceptions of the benefits that tech-based products have to offer.

5.4 Avenues for future research

It is important to identify those factors that impact behavioural usage. However, future research could look more in-depth at the different factors and apply weightings to each indicator of risk and benefit to highlight the level of importance. While perceived benefit may have been identified as having a greater influence in totality, there are potential factors identified under perceived risk that could have a greater impact than some individual factors in perceived benefits, and if weighted differently could produce a different outcome. This will provide better insight into how consumers balance different beliefs regarding the benefit and risk factors prior to the decision-making process.

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APPENDICES

Appendix A: Measurement scale and items

Continued usage
• CU1: I use internet based financial services
• CU2: I use mobile based financial services
• CU3: Technology makes life easier
Convenience
• C1: Easy and quick to access
• C2:Convenient, makes life easier
Cost
• TC1: Provides value for money
• TC2: Fees are cheaper
• TC3: Consider price when making product decisions
PEOU
• PE1: Mobile banking user friendly
• PE2: Easy to obtain information
• PE3: Not stressful to use products
Operational risk
• OR1: System can be slow
• OR2: System not working (offline)
• OR3: Issue not responded to in a timeous manner
Security risk
• SR1: Fraud is not easily detected
• SR2: Safety of money a concern