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Fintech as a driver for customer retention in the South African telecommunications industry

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2023
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Fintech as a driver for customer retention in the South African telecommunications industry

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

Wits Business School

Johannesburg, 2023

ABSTRACT

This study explored the impact of financial technology (fintech) adoption by customers on customer retention in South Africa's telecommunication industry. Telecommunications companies in South Africa have been at the forefront of bringing technological innovation into their processes at a very early stage. However, customer retention as a result of fintech adoption by customers is not clear. To retain customers in a competitive business environment, new products and services are usually employed. This study analysed the impact of fintech service adoption and telecommunication service adoption in retaining customers underpinned by the communication theory and UTAUT. Adoption was determined by the customer's perceived values and usefulness of the services. Customer retention was determined by the customer's intention to remain with the network provider and had no intention to switch to another network provider. A 33-item questionnaire was used to gather data from 130 telecommunication customers at Wits Business School (WBS). Correlation analysis, exploratory factor analysis and structural equation modelling were used to analyse the data collected.

This correlation analysis revealed that there is a positive correlation and a statistical significance ($r = 0,515$ and p-value $< 0,01$) between customer retention and fintech service adoption. In contrast, traditional telecommunication services, an essential part of telecommunication companies, have insufficient evidence to suggest a statistically significant relationship (p-value -0,040) and correlation ($r = 0,181$) with customer retention. The results of this study provide insights for telecommunication firms to develop and expand fintech services for their existing customers. Implementing financial technology services will confer additional

value beyond the scope of traditional telecommunication services. Communication was also seen to have a positive impact on fintech adoption over telecommunication adoption, thus having a positive impact as an additional variable.

As a result of these findings and efforts employed by telecommunication firms as seen in media reports, SMS campaigns, social media, advertisements, mergers and acquisitions of fintech start-ups, fintech service adoption by customers has an impact on customer retention.

DECLARATION

I declare that this research, "**Fintech as a driver for customer retention in the South African telecommunications industry**", is my original work and that all sources I have used or quoted have been indicated and acknowledged utilising complete references.

Ekalabamu

…….

E. K. Kalabamu

KEYWORDS

South Africa, Telecommunications, Fintech, Financial Technology, Customer Retention

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LIST OF ABBREVIATIONS

AVE: Average Variance Extracted

CV: Convergent Validity

DV: Discriminate Validity

ICASA: Independent Communications Authority of South Africa

Fintech: Financial Technology

KMO: Kaiser-Meyer-Olkin

MTN: Mobile Telephone Network

PLS: Partial List Squares

SEM: Structural Equation Modelling

UTAUT: Unified Theory of Acceptance and Use of Technology

CHAPTER 1. INTRODUCTION

1.1 Purpose of the study

This quantitative research study explored the impact of financial technology (fintech) on customer retention in the South African telecommunications industry. The study investigated the adoption of fintech and telecommunication services, assisting in understanding their effect on customer retention in the South African telecommunications industry.

1.2 Overview of the South African telecommunications industry

South Africa is classified as a developing country despite its manufacturing and industrialisation field progress (Bakari, 2017). South Africa has an active internet base of 38.13 million users and 36.13 million active mobile users as of January 2021 (Statista, 2021). The active internet base makes the switching costs between operators low and requires telecommunication companies to innovate their product and service offerings to retain customers. As of January 2021, South Africa has mobile connections versus a total population penetration rate of 163% (Kemp, 2021). This high percentage reflects that some subscribers may subscribe to more than one telecommunications provider in South Africa.

The Ministry of Communications governs the telecommunications industry and comprises mobile network operators, internet providers, and wireless application services providers. This study focused on mobile network operators in South Africa offering voice, short message services, mobile data and value-added

services. Value-added services include but are not limited to digital services, financial services and mobile gaming.

As of January 2021, there are four leading telecommunication operators in South Africa: MTN South Africa (Mobile Telephone Network; hereafter referred to as MTN), Vodacom South Africa (hereafter referred to as Vodacom), Cell C and Telkom Mobile South Africa (formerly 8ta; hereafter referred to as Telkom). Until 1994, the South Africa Post and Telecommunications, managed by the Ministry of Transport and Communications, tightly monopolised the industry. However, in a system dominated by one major player, various regulations were passed in the 1980s and early 1990s that allowed private firms to join the industry (Sutherland, 2014).

In 1994, mobile telephony licences were handed to MTN and Vodacom to offer mobile services to South Africans. These firms introduced the pre-paid business model that gave customers control over spending and subsidies to acquire handsets. In addition, these two firms provided voice and internet access at a later stage, which contributed to their exponential growth over the next 20 years. However, the Independent Communications Authority of South Africa (ICASA) (2020) report indicates a stagnant subscriber growth in pre-paid and post-paid subscriptions between 2015 and 2019 of 5.7%, from 91 million to 96 million (Figure 1.1). Moreover, post the COVID-19 pandemic, this growth was further impacted as the economy contracted, as indicated in Kemp's (2021) report, which showed a 0.8% growth between January 2020 and January 2021.

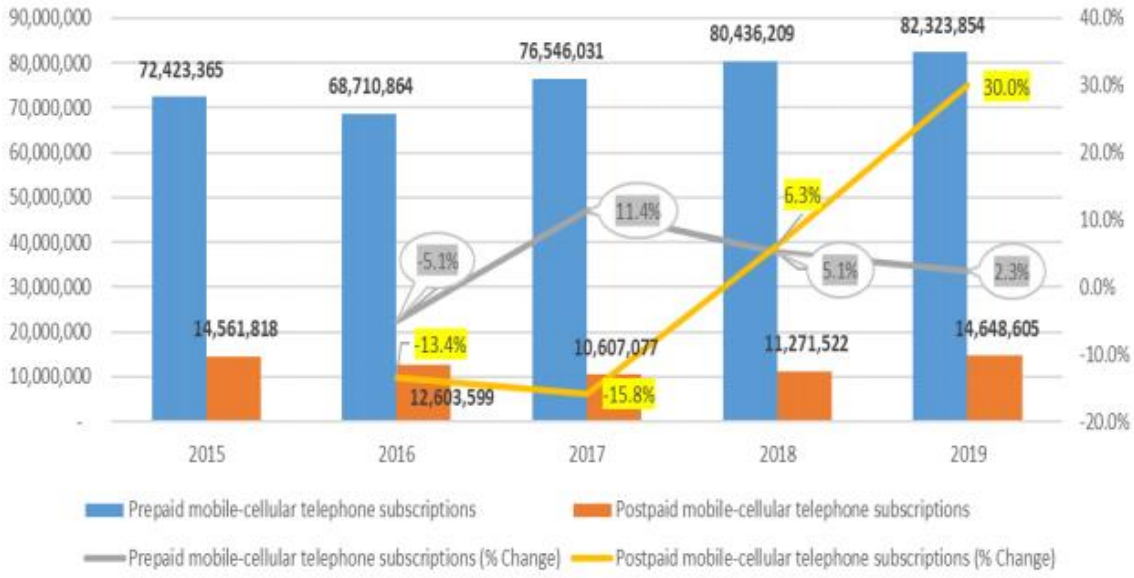


Figure 1.1: Pre-paid and post-paid subscriptions between 2015 and 2019
Source: ICASA, 2020

Telkom and Cell C entered the industry in 2010 and 2006, respectively. Telkom added mobile telephony services in 2010 to their existing landline services, which have recorded a steady decline in revenue and subscription over the past ten years, as shown in Figure 1.2.

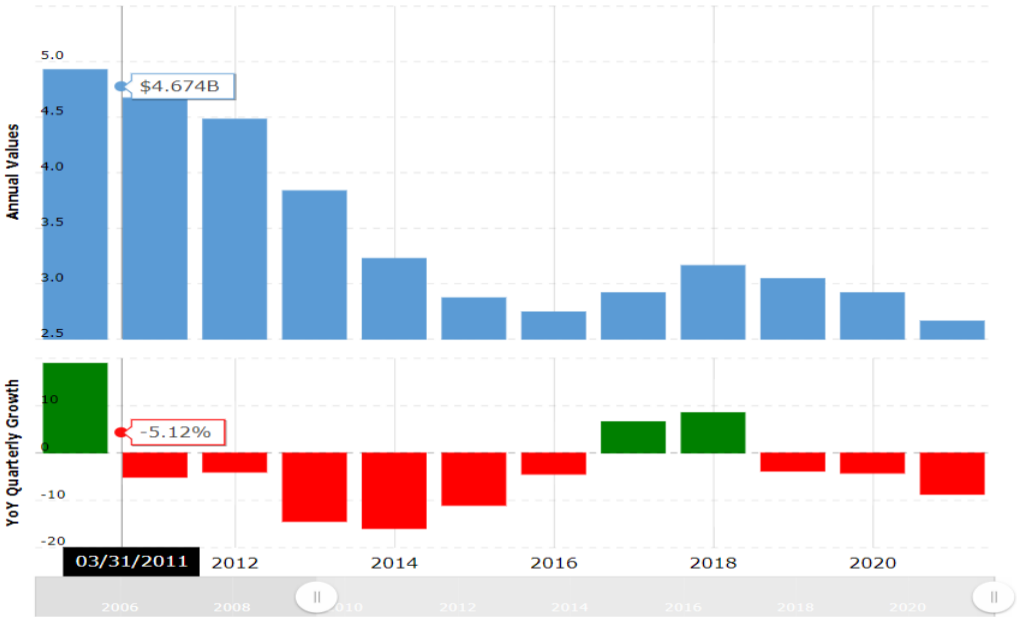


Figure 1.2: Telkom revenues from 2010 to 2020

Source: Macrotrends, 2021

Cell C, in 2020, switched their focus from being capital-intensive in telecommunications infrastructure to becoming a super mobile virtual network that roams on the MTN network. The change in corporate strategy was mainly due to their inability to compete with MTN and Vodacom's dominance. This strategy enabled Cell C to offer pre-paid and post-paid services to their direct customers. In addition, it allowed Virgin Mobile South Africa and First National Bank Connect to operate as mobile virtual network operators on their network.

1.3 Context of the study

South Africa's telecommunications industry is one of the most competitive and matured industries globally, providing modern and efficient mobile services in urban and regional areas. The sector has contributed over 3% to the gross domestic product of South Africa. However, the industry has steadily declined revenues from traditional services, such as short messaging, and voice and mobile data (ICASA, 2020).

The decline in revenues has encouraged the industry to diversify its portfolios. MTN, established in 1994, launched a mobile money service dubbed "MoMo" in January 2020. This financial service offering is their fourth attempt to launch financial services for South African customers. Vodacom South Africa launched Voda Pay, and Telkom recently launched its financial services offering insurance to its mobile subscribers. The primary drive was diversifying their revenue and improving customer acquisition and retention. Customer retention, loyalty and satisfaction have proven key to sustainability in telecommunications (Alamgir et

al., 2017). The study illustrates that customers have become more demanding regarding telecommunication services.

Jayanthaa and Geethab (2014) show that satisfied customers are generally loyal and have a long-term relationship with the telecommunication operator. The traditional telecommunications model is outdated, and customers have demanded more from their mobile providers than just voice, SMS and mobile data services. Their paper points out the importance of customer satisfaction in strategies to drive customer retention by focusing on customer adoption of fintech as one of the determinants.

The banking and insurance industries have primarily offered financial services in South Africa. However, these services have excluded almost ten million South Africans due to stringent FICA requirements and other regulations in South Africa (Alexander et al., 2017). In addition, the incumbents of the financial industry in South Africa charge high account management and transaction fees for those in the lowest income segments. Carlin and Pagel's (2017) study shows that customers are attracted by lower fees and commissions, which lead to adoption.

With over 100% mobile phone penetration, South African telecommunication operators can tap into an excluded market (Kemp, 2021). In addition, the industry can capture the unbanked population by offering financial services, such as mobile money, insurance and credit. In doing so, telecommunication operators can offer new services that will enable customer "stickiness", improving customer retention.

1.4 The motivation for the study

Customer retention remains crucial for telecommunication operators despite multiple business models and strategies to improve customer lifetime value (Molapo, 2015). Numerous firms like KPMG, Deloitte and McKinsey have written white papers on diversification strategies and business models to improve customer retention.

The main business management problem in the telecommunications industry is retaining customers whilst adding new customers in a matured industry (Gerpott et al., 2001). As traditional telecommunication services become readily available, customers can switch to mobile providers that better suit their demands and needs.

In addition, customers demand more services from their telecommunication service provider over and above traditional services. This study looked at the effect of fintech adoption by mobile customers on customer retention in the South African telecommunications industry.

1.5 Research objectives

The objectives of the research were to:

1. Determine the level of fintech adoption by mobile network subscribers in South Africa;
2. Determine the level of telecommunication services adoption by mobile network subscribers in South Africa;
3. Determine the effect of communication of fintech and telecommunication services in South Africa on the adoption of fintech and telecommunication services;

4. Determine the influence and effectiveness of fintech adoption in retaining subscribers in the South African telecommunications industry; and
5. Determine the influence and effectiveness of telecommunication service adoption in retaining subscribers in the South African telecommunications industry.

1.6 Significance of the study

This study aimed to contribute to existing customer management knowledge, focusing on customer retention. Multiple research studies have provided customer retention strategies focusing on digitally transforming existing services and products. For example, in the telecommunications industry in South Africa, the key focus area has been on improving network services, customer care services and providing a marketing mix that enhances customer growth.

This research is significant as an empirical basis for recommending compelling fintech offerings in the South African telecommunications industry. In addition, this study aimed to provide fintech strategies that will enable an incumbent in the telecommunications industry to remain competitive and improve their customer retention whilst achieving overall growth.

1.7 Delimitations of the study

Fintech encompasses various financial industry technologies enabling interaction between corporate and retail customers (Micu & Micu, 2016). Furthermore, McAuley (2015) defined fintech as an "*economic industry composed of companies that use technology to make financial systems more efficient".*

Telecommunication companies have fintech offerings such as mobile money and payment solutions. As such, telecommunication companies have ventured into

the fintech space with various initiatives and fintech business models. This study focused on telecommunications' fintech initiatives between 2015 and 2020. During this period, the core focus was on the initiatives' impact on customer retention. An online questionnaire determined fintech implementation's impact on the South African telecommunications industry’s customer retention.

1.8 Assumptions

1. There is an assumption that respondents were competent to complete the questionnaire.
2. Respondents answered the online questionnaire with reasonable knowledge of fintech and telecommunications in South Africa.
3. The questionnaire respondents were aware of the fintech services offered by telecommunication providers.
4. The respondents subscribe to at least one telecommunication provider in South Africa.
5. The respondents are not directly or indirectly connected financially or otherwise to telecommunication providers but are merely consumers of the services.

1.9 Research outline

Notwithstanding the sustained growth of the telecommunication industry in South Africa since the early 1990s, the industry players still face an enormous challenge in retaining their customers. Chapter 1 introduces this study's context and highlights the industry's management problem. The 1st chapter outlines the motivation for this study and the research objectives. The 2nd chapter of this

study provides a literature overview of innovation, financial technology, customer adoption and retention. The second chapter concludes with a conceptual theory used in the research.

The 3rd chapter covers the research design and methodology. It details the quantitative methodology used in this study, outlines the sampling strategy and data collection process, and describes the data collection tool used (questionnaire). Chapter 4 presents the results and findings of this study, presenting tables and graphs depicting different results. The researcher also provides analysis and interpretations of the findings. All the analyses and interpretations of the results from this study are made in the context of the research objectives and questions.

The final two chapters (chapters 5 and 6) discussed the findings from the analysis presented in Chapter 4, centring around the hypotheses presented in Chapter 2 and concluding this study's findings on the two hypotheses outlined. Chapter 6 also provides policy recommendations around utilising financial technology to drive customer retention. Finally, the chapter concludes with recommendations for further studies.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

This chapter establishes an understanding of the research problem, identifies the knowledge gap and draws from similar research reports to gather insights. Various frameworks can be explored to understand the reports' findings. The section identifies vital quantitative variables essential to the research and the interpretation of the results.

Mobile network operators' introduction of fintech is seen as a strategic move to acquire and retain customers. Unfortunately, fintech and telecommunications literature is limited to industry reports from Groupe Speciale Mobile Association, McKinsey and other consultancy firms. However, multiple case studies and research reports evaluate fintech's impact on revenues, customer acquisition and financial inclusion.

Dorfleitner et al. (2017) highlighted the impact fintech has on revenues in Germany and growth volume. Mobile network operators can acquire customers excluded from the financial industries and offer financial services to their existing customer base. This opportunity arises from the sector's large customer base and technological advances in innovation that enable mobile network operators to launch mobile financial services.

2.2 Innovation

The academic definition of innovation is described by the Organisation for Economic Cooperation and Development (OECD) as “the implementation of a

new or significantly improved product (good or service), or process, a new marketing method, or a new organisation method in business practices, workplace organisations or external relations" (OECD, 2005). There are four main types of innovation; product, process, organisational, and market.

Product innovation refers to developing and introducing new or improved technologies that can be used to create new products or improve existing ones (OECD, 2005). This can include software, hardware or process innovations driven by internal research and development efforts or through partnerships with other organisations or universities. Product innovation refers to developing and introducing new or improved products or services. This can drive technological innovation, changing customer needs and preferences, or market conditions.

Process innovation is implementing a new or significantly improved production delivery method (OECD, 2005). Process innovation includes manufacturing processes, supply chain management, or logistics changes. Organisational innovation involves new or significantly improved business practices, workplace organisations, or external relations (OECD, 2005). Organisational innovation can include changes to management practices, employment training or partnerships with other organisations. Lastly, market innovation refers to implementing a new or significantly improved marketing strategy, including branding, advertising or pricing changes.

Financial technology in the telecommunications industry is seen as product innovation as it involves introducing products and services to the subscriber base (OECD, 2005). For example, the emergence of mobile money services has enabled telecommunication companies to leverage their existing customer base

and infrastructure. Therefore, fintech is considered a product innovation in the telecommunication industry as it has created a new product category that combines financial and telecommunications services.

2.3 Overview of financial technology

Fintech is described by Schueffel (2016) as a "*new financial industry that applies technology to improve financial activities*". These activities include paying for services or products using a mobile phone, transferring money using a mobile application or checking one's bank statement online. This is a multi-billion dollar industry, with over 50 billion US dollars invested in the sector between 2010 and 2015 (Skan et al., 2016).

Fintech is considered an emerging topic in the academic and business world by many and has multiple definitions (Leong & Sung, 2018). Below are some select descriptions from various academics.

i. Leong and Sung (2018) define fintech as *"any innovative idea that improves financial service processes by proposing technology solutions according to different business situations, while the ideas could also lead to new business models or even new business".*
ii. Sung et al. (2019) define fintech as "*a cross-disciplinary subject that combines Finance, Technology Management and Innovation Management*".
iii. Kagan (2021) defines fintech as "*new tech that seeks to improve and automate the delivery and use of financial services".*

Fintech from a telecom perspective is described by (Liébana-Cabanillas, et al. (2019)) as the application of digital innovation and mobile technologies to enhance and optimize various financial services and products including banking, payments, investment, insurance and lending often leading to the transformation of traditional financial practises. From these three select definitions, it is deduced that fintech is the "*use of technology to deliver innovative and effective financial services to consumers".* Therefore, for this research, the above definition will describe fintech.

The industry opportunity has resulted in South African telecommunication firms venturing into fintech as a form of product and service innovation. The mobile network operators in South Africa launched mobile financial services in the industry as part of their market and product development strategies.

Mobile network operators have used fintech as a supplementary product in their portfolio. The core drivers for adopting fintech in the product portfolio are diversifying revenues and improving customer retention (Kyei & Bayoh, 2017). The declining revenues from traditional mobile network services mainly drive the adoption of fintech. Post the launch of mobile technologies like 4G Long Term Evolution, there has not been much excitement within mobile network services. The launch of advanced communication technologies, such as 5G, has not materialised much in terms of market excitement and revenue increases. Furthermore, adopting fintech by mobile network operators has allowed firms to acquire new customers (Dibie et al., 2019).

2.3.1 *Fintech business models*

Fintech encompasses various economic activities, such as money transfers, mobile banking, lending services, cryptocurrency, payments, and investments (Skan et al., 2016). These financial activities are presented in multiple identified fintech business models below (Chiu, 2016).

a. ***Payment business model***

This model focuses on consumer and retail markets and wholesale and corporate payments (Lee & Shin, 2018). Safaricom Kenya launched M-Pesa in 2009 as a national remittance service for subscribers to send money to friends and family in rural Kenya. The services expanded over the next few years to include utility payments, merchant payments, cash-in and cash-out, and bill payments.

At its basics, the payment business model involves mobile wallets, peer-to-peer payments via mobile, local and international remittances, real-time payments and digital currency solutions (Lee & Shin, 2018). The services in a payment model often simplify day-to-day customer transactions, offering quick, secure and seamless mobile solutions. A prime example of a telecommunications company offering a payment business model is Safaricom in Kenya, which launched M-Pesa.

b. ***Lending business model***

As the cost of credit increases in South Africa, fintech companies have developed innovative solutions to get funds to those excluded. Innovations such as peer-to-peer consumer and business lending allow lenders to get low to medium-sized loans from non-banking institutions. For example, Airtel Tanzania launched the

Timiza service on the Airtel Money platform in 2014. The service allowed customers to borrow mobile money using alternative data sources, such as mobile network age, transaction volume and re-payment history to determine the loan amount. This technology is run using artificial intelligence to assess risk.

Fintech companies that pursue the lending business model match borrowers with lenders, as they are technically not involved in the lending (Lee & Shin, 2018). The fintech companies collect a portion of the fees for using the services.

c. ***Crowdfunding business model***

The crowdfunding business model primarily focuses on bringing people together to finance a new product or project. This business model has three main actors: the product or project that requires funding, the contributors seeking products or projects to fund and the moderating agency facilitating engagement between the two. The arrangement is typically broken down into three types of popular crowdfunding models. These models are rewards-based crowdfunding, donation-based crowdfunding and equity-based crowdfunding.

Rewards-based crowdfunding typically involves borrowers setting an interest rate they are comfortable with and can guarantee a refund within a specified timeframe (Kagan, 2021). Donation-based crowdfunding is primarily used to collect funds for charity and offers no monetary rewards or incentives to contributors. Equity-based crowdfunding is used by small to medium-sized firms to build capital and, in return, provide equity to investors. Examples of crowdfunding fintech companies include AngelList, CrowdCube and GoFundMe.

d. ***Wealth management business model***

The wealth management business model uses robo-advisors to provide financial advice at a significantly lower cost than an actual financial advisor. Using artificial intelligence, automation and big data technologies, the business model has an advantage in efficiently gauging changing demographics and consumer behaviour.

e. ***Capital market business model***

The capital market business model enables investors and traders to connect and share knowledge, monitor stocks and risks in real-time, and place orders to buy and sell (Giglio, 2021)). An area that has been very prominent in South Africa is foreign currency exchanges. Fintech has enabled many individuals to trade in foreign currencies by providing real-time pricing and performing transactions securely from their mobile devices. Fintech companies can offer these services at a significantly lower price, using standard payment methods, such as electronic fund transfers or card transactions. Capital market Fintech examples include Plus500, FxPro, Avatrade and HFM.

2.4 Customer adoption of technology innovations

Technology innovations are immensely important in general human and professional life. Technology has seen remarkable growth over the past few years. What was once considered a complex way of managing finance and conducting financial transactions is now used by millions globally due to the increase in online banking and mobile-first platforms.

Multiple theories have been developed that could determine the adoption of technology. Examples of such theories underlined by acceptance of usage in fintech are the technology acceptance model, the theory of planned behaviour and the theory of reasoned action (Fishbein & Ajzen, 1974; Davis et al., 1989; Ajzen, 1991).

Venkatesh et al. (2016) developed the unified theory of acceptance and use of technology (UTAUT), which has four primary constructs of technology acceptance that determine usage behaviour. These are social influence, effort expectancy, performance expectancy and facilitating conditions. A breakdown of each determinant is shown in table 2.1.

Table 2.1: Unified theory of acceptance and use of technology determinants

Social influence	How much influence do family and friends have on adopting fintech services?
Effort expectancy	What are the benefits of using fintech services?
Performance expectancy	How easy is it to use the fintech service?
Facilitating conditions	Are all the resources available to customers of fintech services?

Source: Venkatesh et al., 2016

For South African telecommunication firms to successfully have their technology innovations adopted by subscribers, they need to ensure that the technology is easy to use, has material benefit to the end user, subscribers can influence their social circle to use the services, and the resources are available to the subscribers to use the services effectively. Advances in financial technology have enabled users to utilise smartphones, feature phones and even basic phones to use the service.

2.5 Customer retention in the South African telecommunications industry

Customer retention from an academic perspective has not been clearly defined, as marketers and academics have not entirely agreed (Alshurideh, 2016). Academics, however, have agreed that customer retention implies a long-term relationship between a business and the customer through various practices and procedures (Gerpott et al., 2001). These include rules and guidelines to prevent customer loss and increase recurring revenue (Molapo, 2015).

A customer is considered retained when transacting with the business within a set period (Ascarza et al., 2018). Customers are then considered lost when they fail to buy from the business over time or purchase from a direct competitor offering similar products and services. Customer retention strategies can be the key to success for many companies, and Ascarza et al. (2018) further indicated that customer retention strategies could increase customer equity. This improvement in customer equity highlights the importance of firms engaging in customer management strategies focusing on customer retention.

Research reports have shown that costs for customer acquisitions are higher than customer retention (Pfeifer, 2005; Tatikonda, 2013). Thus, telecommunications firms focus on customer acquisition strategies to grow their customer base, and a large chunk of their budgets is dedicated to this.

Therefore, telecommunications firms have augmented their growth model with a value-add model to aid customer retention. Competition for customers in the South African telecommunications industry has increased due to mobile network

operators' low switching costs and mobile number portability. In addition, Alshurideh (2016) highlights the need for telecommunications to develop new methods to keep customer churn at acceptable levels and prevent challenges in retaining customers.

For South African telecommunication firms to successfully retain customers, Molapo (2015) identified product, place, people, price and promotion (5Ps) as critical. These 5Ps, in turn, drive customer satisfaction and, ultimately, loyalty. The study by Molapo (2015) further highlights the importance of telecommunication firms in South Africa to develop products and services that will promote long-term competitiveness to maintain customer satisfaction. These new services and products are essential for customer retention.

For this study, customer retention is defined as creating new products and services for existing customers with the explicit intention of building long-term customer value. Ansoff (1957) outlined a matrix that could be used as a decision tool for strategy expansion. This matrix comprises product development, market development, diversification and market penetration. Product innovation or product development is observed when mobile network operators introduce financial services into their product and services portfolio.

2.5.1 *Customer loyalty and retention*

Ngwenya (2017) showed that customers value relational capital more than intellectual capital. The study showed that managers in the telecommunications industry value customer loyalty and how it adds sustained competitive advantage. Following closely from relational capital came human capital, with the main

attribute of innovation as a driver of maintaining customer satisfaction (Govender, 2017; Ngwenya, 2017).

These research papers indicated that customer satisfaction driven by brand, quality, value and innovation is vital in attaining customer retention in the telecommunications industry in South Africa. Govender (2017) proposed a conceptual framework highlighting a positive correlation between perceived quality and customer satisfaction, driving customer loyalty and retention (Figure 2.1).

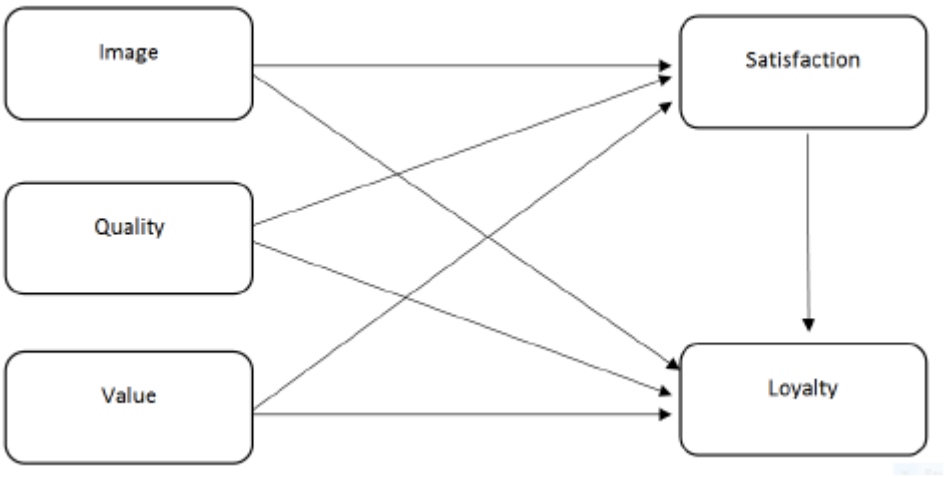


Figure 2.1: Conceptual framework

Source: Govender, 2017

In conclusion, this leads to the hypothesis that mobile network operators that engage in fintech innovations can improve customer retention. This hypothesis suggests that as more customers adopt fintech services, they become loyal to the telecommunications company and likely remain customers.

2.6 Theory development

The linear communication theory by Lasswell (1945) (Figure 2.2) was utilised as the first theory to underpin this research to assess the communication of fintech services by telecommunication firms to drive customer retention. Communication theory specifies that "*all living beings existing on the planet communicate although the way of communication is different"* (Scudder, 2010). Lasswell's linear communication model is often linked to marketing products and services by providing a structured framework for understanding the communication process involved in promoting and selling these offerings.

Lasswell (1945) proposed a linear model that studies mass communication to predict a message's effect on a group. In the case of mobile network operators, this will be the communication used to advertise and notify customers of fintech products and services. This communication's desired effect will be acquiring and retaining customers on the network based on the fintech innovation. The Lasswell theory was modified in the current study to include traditional mobile network services and products to separate them from fintech products to determine the impact of fintech adoption. By applying Lasswell's linear communication model in marketing products and services, telecommunication firms can develop effective and targeted marketing strategies for the successful introduction of fintech services and products to the market.

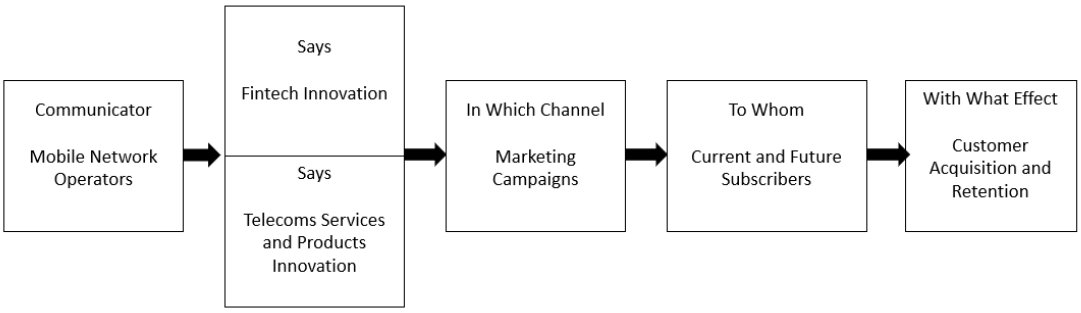


Figure 2.2: Modified linear communication theory

Source: Lasswell, 1945

2.6.1 *Conceptual framework for assessment of fintech innovation on customer retention*

In order to assess the perceived usefulness of fintech and telecommunication services the UTAUT theory was also used to underpin the research.

Mobile network operators have often adapted to the market's various needs and wants as and when there have been technological advancements. As technology develops in the mobile communications world, it has become apparent that firms must develop innovative services to ensure customer retention. Customer demand has ranged from which provider offers the most value to what services are available over and above essential telecommunication services.

With the advancement of technology, mobile network operators can offer supplementary financial services to their existing base on top of their existing products and services portfolios. Several authors have discussed the advantages of launching supplementary fintech solutions to their current customers and disrupting the financial industry (Alexander et al., 2017; Omarini, 2018; Senyo & Karanasios, 2020). In addition, these financial services fundamentally impact

diversifying revenue streams for mobile network operators and include individuals excluded from traditional banking systems (Sy et al., 2019).

Gengeswari et al. (2013) summarised "*word of mouth, price insensitivity, repeat purchase and non-complaining behaviour*" to determine the satisfaction levels. The elements are essential as they could measure an organisation's customer retention practices. This third theory was used to measure customer retention in the study and thus formed the third underpinning theory.

Given the limited literature and analysis on fintech, a conceptual framework was used from a previous study conducted by Gengeswari et al. (2013), a modified linear communication theory, originally proposed by Lasswell (1945), and UTAUT. This study does not look at the financial performance of an organisation as these rely on multiple factors, such as the marketing mix implemented, service quality, price fairness and others.

The conceptual framework in Figure 2.3 outlines how the variables are associated and ultimately lead to customer retention. To assess service adoption, the model separately investigates the adoption of traditional telecommunication services by customers and fintech adoption. The model assesses the impact of fintech and telecommunication services to determine the customer retention drivers.

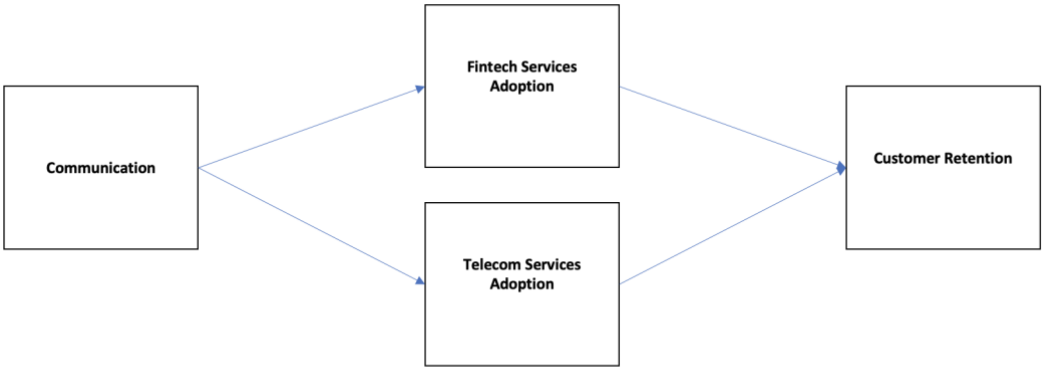


Figure 2.3: Conceptual framework for assessing the impact of fintech innovation on customer retention

Source: Author's compilation

Based on the conceptual framework outlined in Figure 2.3, the below 4 hypotheses are proposed in this study to assess the impact of fintech as a driver for customer retention in the South African telecommunications industry. The study will investigate the relationships between communication, customer adoption and retention in the domains of fintech and telecommunication services in the South African telecommunications industry.

Hypothesis 1: Communication of Fintech services has a positive impact on Fintech adoption. This hypothesis suggests a causal relationship between effective communication strategies and increased fintech adoption rates. This hypothesis is based on the communication theory highlighted in section 2.6.

Hypothesis 2: Communication of Telecommunication services has no impact on telecom services adoption. This hypothesis implies that the communication strategies within the telecommunication industry do not significantly affect

telecom service adoption. This hypothesis is based on the communication theory highlighted in section 2.6.

Hypothesis 3: Customer adoption and perception of Fintech services has a positive impact on customer retention. Shifting the focus to customer retention, this hypothesis proposes that customer adoption of fintech services has a positive effect on customer retention. This hypothesis is based on the adoption theory highlighted in section 2.4.

Hypothesis 4: Customer adoption and perception of telecom services have no impact on customer retention. In contrast to the 3rd hypothesis, the 4th hypothesis asserts that customer adoption and perception of telecom services do not impact customer retention. This hypothesis is based on the adoption theory highlighted in section 2.4.

These hypotheses collectively serve as a foundation for this study's empirical research, facilitating the examination of relationships between communication, adoption of fintech and telecom services and customer retention within the South African telecommunication industry.

2.7 Conclusion

The model highlighted in Figure 2.3 simply shows that for a telecommunication form to retain customers, the adoption of services must be achieved by existing customers and communication of these services is key to driving the adoption. To forge customer satisfaction and loyalty, the adoption of services needs to be tested to understand if the services will encourage the customer to remain with the network providers. Once the services are communicated and eventually

adopted by customers this should lead to customer retention. The communication and adoption variables are thus tested to check their influence on customer retention in the South African telecommunications market.

CHAPTER 3. RESEARCH DESIGN AND METHODOLOGY

3.1 Research approach

This quantitative study explored fintech innovation's influence on the mobile network operator's ability to retain customers. As per (Cresswell, 2018), a quantitative study involves the collection and analysis of quantitative data from a sample, leading to the formulation of generalizations or inferences about a larger population. The choice of a quantitative research method was deemed suitable for this particular study due to the dependence on the analysis of quantitative data derived from the questionnaire pertaining to communication and adoption variables and their impact on customer retention in the telecom industry in South Africa.

3.2 Research design

As its primary purpose, this study empirically evaluated the effect of mobile financial services innovation in the telecommunications industry on customer retention. In addition, the quantitative research used a correlational design to investigate the degree of association between the variables identified in the literature review and customer retention regarding the use and adoption of fintech services.

A correlation design as defined by (Gravetter, 2018) is used to explore and measure the statistical relationship between two or more variables. The design is particularly valuable in understanding the degree and direction of association between the variables. The 3 key characteristics of a correlation design are outlined below by (Gravetter, 2018; Trochim, 2008);

1. Measurement of relationships: Correlation designs are primarily concerned with measuring the relationships and/or associations between variables. They assess whether changes in one variable are associated with changes in another. In this study, the communication and adoption variables will assess the relationship with customer retention.
2. Quantitative data: Correlation designs deal with quantitative data. The communication, adoption and customer retention variables are measured using numerical scales, which allows for statistical analysis.
3. Direction and strength: Correlation coefficients are used to quantify the direction and strength of the relations between the communication, adoption, and customer retention variables. Positive values indicate a positive correlation, negative values indicate a negative correlation, and the absolute value represents the strength of the relationship.

The survey method was the preferred approach for this study, as it allowed for a rapid turnaround in data collection for the targeted population. The plan allowed the research instrument to reach a large audience, be cost-effective and develop quickly.

Custom tables are also utilised in this study as they allow data to be presented and analysed tailored to the research questions and objectives. The custom tables enable this study to be efficient and accurate, allowing this research to focus on the variables specific to this study and present understandable and easy-to-interpret data. The responses were measured on a 5-point Likert scale; however, the lower endpoints (“strongly disagree” and “disagree”) and upper scales (“strongly agree” and “agree”) were each combined for a straightforward

interpretation (Morgan et al., 2016). Custom tables were also used to measure this study's first three research objectives: determining the adoption levels of fintech and telecommunications services and the effect of communicating fintech and telecommunications services.

3.3 Population and sample

3.3.1 *Population*

Cresswell and Creswell (2019) defined a population in a study as a complete set of individuals, cases, or elements that possess the characteristics of interest to a researcher. The population under investigation for this study was mobile subscribers in the South African telecommunications industry.

3.3.2 *Sample and sampling method*

For this study, convenient sampling was employed. Convenient sampling is a non-probability sampling technique used in research and data collection (Babbie, 2016; Fowler, 2013). This method of sampling enabled the study to select participants based on their accessibility and convenience rather than using random or systematic methods due to limited resources in the form of time, budget, and manpower constraints. The method was a simple and cost-effective way to collect the research data but it can lead to biases and limitations in the sample. These limitations are outlined in section 3.8.

As convenient sampling was used the questionnaire was distributed to 2 018 postgraduate students in the Commerce, Law and Management department of Wits Business School.

3.4 Research instrument

A questionnaire was used as the research instrument. The questionnaire was developed from the literature based on the variables of communication, adoption and customer satisfaction that drive customer retention and mobile network operator details. Mobile network operator details included subscription information, and fintech knowledge and usage. Apart from the demographic information, all questions measuring the variables were ordinal and based on a Likert scale.

Table 3.1 provides an operation definition of the four variables assessed in the study along with their corresponding measurement items selected.

Table 3.1: Operation variables

Variable	Definition	Measurement	Source
Communication	The effectiveness of communication strategies employed by telecommunication firms in conveying information about services to customers	1. Content of the message 2. Frequency of the message 3. Relevance of the message 4. Effects of the message	Lasswell, 1945 Scudder, 2010
Telecom Services Adoption	The degree to which customers adopt and utilize telecommunication services	1. Social Influence 2. Effort expectancy 3. Performance expectancy 4. Facilitating conditions	Venkatesh, 2016
Fintech Service Adoption	The degree to which customers adopt and utilize the fintech services	1. Social Influence 2. Effort expectancy	Venkatesh, 2016

		3. Performance expectancy 4. Facilitating conditions	
Customer Retention	The likelihood of the customer remaining with the telecommunication company	1. Customer satisfaction 2. Customer loyalty 3. Service recommendations	Morgan, 2017 King, 2016

The Likert scale was used to determine the opinions of the questions from strongly agree to disagree strongly, allowing the responses to be measured. In addition, Likert scales, as identified by Nemoto and Beglar (2014), provide for measures in variations, such as frequency, quality, importance and likelihood, that will aid in the analysis of the data collected. The questionnaire consisted of 33 questions grouped accordingly (Appendix A). The questionnaire was designed to ensure participants take 10 to 15 minutes to fill to ensure no participant fatigue.

3.5 Procedure for data collection

The research instrument was administrated via email using the Qualtrics^{XM} system supplied by the Wits Business School. The email addresses were obtained from the Wits University Registrar department. An online questionnaire reaches a large population quickly (Jones et al., 2008) and is controlled at every point in real-time error checking and correction (Solomon, 2001). In addition, an online questionnaire allows for data to be collected and easily transcribed to the database for analysis. However, the main disadvantage of the online questionnaire is the exclusion of participants who do not subscribe to mobile network operators but do not have internet access or are not computer savvy.

An email with a link was sent to the target population that included an introduction and the purpose of this study. The email also had the contact details of the researcher and their supervisor in the event of queries that arise from the participants. No personal information that could be used to identify a participant was collected in the questionnaire, thus guaranteeing anonymity. The administration period was about six weeks from the start of questionnaire distribution.

Response bias is described by Fowler 2013 as a systematic pattern of inaccurate responses from participants in a survey or research study. The bias occurs when respondents do not provide honest, accurate, or complete answers, either intentionally or unintentionally, which can distort the results and lead to incorrection conclusions. Response bias is problematic for several including; reduced validity, distorted findings, under or over-estimation, waste of resources and inaccurate insights. Response bias was mitigated by communicating that all responses would be anonymous and that no personal information would be collected that could be used to identify an individual. Doing so ensured that answers were open and honest. In addition, to reduce the risk of non-response, the survey was distributed by email and on social media platforms such as WhatsApp, Twitter, Facebook and Instagram.

To ensure response bias is further reduced, wave analysis was used on a week-by-week basis to examine changes in question responses to the variables in question. This check ensured that the questionnaire responses received towards the final week had no response bias, as guided by Cresswell and Creswell (2018). In addition, a pilot study was performed to test the feasibility and practicality of

the research instrument, identify and address issues of the research instrument, and assess the time and resource requirements. This was essential to address potential challenges in the study and increase the overall quality and success of the study.

3.6 Data analysis and interpretation

Using SPSS®, descriptive analytics is used to analyse and present the demographic profiles of the respondents, followed by a goodness of fit test of the variables to investigate the influence of fintech innovation on customer retention in the South African telecommunications industry. All necessary tests on size, accuracy, magnitude and reliability were also performed. Finally, the virtue of fitness determined if the sample data accurately matched the population (Solomon, 2001).

In addition, the below statistical methodologies were used to explore the influence of fintech customer satisfaction variables as a source of impact on the customer retention rates in the South African telecommunications industry.

3.6.1 *Exploratory factor analysis*

Exploratory factor analysis was used as a construct validity technique in this study. Construct validity assesses the extent to which a measurement tool, such as in this research a questionnaire, truly measures the theoretical construct or trait it is intended to measure (Kang, 2013).

Kaiser-Meyer-Olkin (KMO) and Bartlett's tests were deployed in factor analyses to assess the adequacy of the data collected in this study. The KMO test measures the proportion of variance among all the variables that can be

explained by the factors (Shrestha, 2021). Bartlett's test is used to assess whether the correlation matrix of the observed variables is an identity matrix, which would indicate correlation amongst the factors.

3.6.2 *Frequency tables*

Frequency tables were used to present counts of observations in the demographic data collected.

3.6.3 *Correlation analysis*

The correlation analysis technique is commonly used as a statistical tool in many fields to study the relationship between variables and predict future outcomes. This study utilised correlation analysis to examine the relationship between the independent variables (telecommunication service adoption, fintech adoption, communication) and the dependent variable (customer retention).

3.6.4 *Structural equation modelling*

Structural equation modelling (SEM) is a powerful statistical technique utilised to analyse complex relationships among variables in a research design Cresswell and Cresswell (2018). The conceptual framework identified in Chapter 2, highlighted the variables and their hypothesised relationships. The data collected by the research instrument was then analysed using SEM software to test the hypothesised relationships between the variables and provide insights into the causal relationships among the variables. Partial Least Squares – Structural Equation Modelling (PLS-SEM) was the specific SEM technique used to model the relationship between the latent variables. This method was chosen as the primary interest of this study is to predict the dependent variable rather than testing the specific hypothesis (Fan et al., 2016).

3.7 Reliability

Schindler (2018) describes reliability as "*an instrument's ability to measure the repetition of the research findings and produce results*". Potential reliability threats that could be faced are participant error and bias, researcher error and bias, and instrument reliability.

Participant error is described as any factor that can alter the participants' performance, whilst participant bias is any factor that may produce a false response (Drost, 2011; Cresswell & Creswell, 2018). These errors and biases were minimised in this study by conducting an online questionnaire. Participants could respond to the questionnaire on time and comfortably, with few chances of participant error and bias. Furthermore, respondents were informed in advance of the duration of the questionnaire to allow them to set aside adequate time and minimise the effects of fatigue, disturbances and rushing during the completion of the survey.

Research error is any factor that can alter the researcher's interpretation of the response, and research bias is any factor that produces a bias in recordings or responses (Drost, 2011; Cresswell & Creswell, 2018). Using an online questionnaire with specific questions leaves little room for the researcher's interpretation errors or recording bias. Furthermore, the questionnaire was self-administered and completed online.

Instrument reliability refers to the measurement approach. As a questionnaire was used, this reliability factor posed the most threat. Cresswell and Creswell

(2018) identify "*poor wording of questions, long double-barrel questions, and vague statements*" that can compromise the measurement of an instrument. To mitigate the reliability threat, every effort was taken to develop the instrument and data collection methods to minimise this threat. Steps included using scales tested in preceding studies and multi-item scales with more than three questions. Scores or coding were reversed in negatively phrased questions to ensure reliability.

Other threats considered insignificant in this study were situational reliability and data processing reliability. These threats were mitigated by implementing an online survey via Qualtrics^{XM}, using Microsoft Excel and SPSS® to capture and process the data. This electronic capturing and processing of data minimised any data handling errors caused by human error.

3.7.1 *Internal consistency*

The research instrument included questions that have multi-item scales. To guarantee internal consistency, a reliability measure was used. Different tools are available to achieve this task, and for this study, Cronbach Alpha provided on SPSS® was used. Cresswell and Creswell (2018) define this alpha as a "*function of the extent to which items in a test have high commonalities and thus low uniqueness"*.

3.7.2 *Construct validity*

A measure has construct validity "*to the degree that it confirms predicated correlations of other theoretical propositions"* (Schindler, 2018). Construct validity was assessed using convergent and divergent validity through exploratory and confirmatory factor analysis. In addition, the measures determine the extent to

which the constructs that should be related are related, and the constructs that are theoretically not linked to each other are not correlated (Weiner, 2007).

3.7.3 *Internal validity*

Internal validity intends to measure the truthfulness of the research instrument to be implemented. Cresswell and Creswell (2018) pointed out that this measure ensures that the research instrument measures what it was intended to measure when repeated. The same questionnaire was used for all participants during the same period to guarantee internal validity. A large sample size and random selection of participants across South Africa were expected to improve the internal validity of the research instrument. Lastly, the questionnaire emphasised the participant's honesty when completing the research instrument as far as possible.

3.8 Limitations of the study

The following limitations were identified:

1. Customers on mobile virtual network operators are considered customers of the parent mobile network operators (e.g., FNB Connect subscribers are regarded as Cell C subscribers).
2. This study focused only on the business model ideation and implementation, which fall within fintech.
3. This study did not engage any persons who work for any of the telecommunication companies and relied on academic literature and desktop searches to determine fintech business models and customer retention strategies.

As convenience sampling was used the below limitations were identified in the study:

1. Convenience sampling often results in selection bias as it may systematically exclude certain demographic groups in the telecom industry such as low-income earners, non-degree holders, and teenagers.
2. Findings have the potential of not being generalizable due to a low representation of the larger population by only selecting WBS students.
3. Due to the lack of randomization, the study had difficulty in drawing inferences about the population from the findings obtained.

3.9 Ethical considerations

The research is guided by the University of the Witwatersrand's ethical standards for research. All participants were adequately informed of the purpose of the study, ensuring their full awareness of the research objectives. Participants were not spammed via email, mobile, social media or any communication tool unless explicitly as a reminder to complete the survey.

Respondent's personal information that can be used to identify them was not collected, and no responses were disregarded based on gender or race. All personnel involved in the research, including respondents, researcher, supervisor, and anyone affiliated with the university, were protected. The research proceeded upon approval of the University of Witwatersrand's ethics committee (Appendix C) and the supervisor's sign-off.

CHAPTER 4. PRESENTATION OF RESULTS

4.1 Introduction

This chapter details the analysis of data collected through a questionnaire. The results from descriptive, analysis, validity and reliability, and regression analyses are presented in this chapter.

4.2 Survey responses

The questionnaire was distributed to 2 018 students, and 138 responded. Eight responses were invalid and were excluded from the final report as they were incomplete. 130 responses were deemed valid as the respondents answered all questions and were used in the report.

4.3 Reliability analysis

Reliability and validity are two important mechanisms used to assess measurement instruments (Tavakol & Dennick, 2011). According to Heale and Twycross (2015), enhancing the quality of research in a quantitative study is achieved by measuring and assessing reliability and validity. Applying various approaches in assessing the measurement of instruments is imperative to ensure the adequacy and reliability of the instruments (Zaiţ & Bertea, 2011). A 5-point Likert scale with endpoints of strongly disagree and strongly agree was used in the questionnaire to measure the participant's responses. Cronbach Alpha is a popular reliability measurement method (Joshi et al., 2015).

Table 4.1 presents the results obtained for the reliability and validity test of the research construct measurement items.

Overall, the reliability proved that the survey results were valid for analysis. The proposed constructs were all reported to have a Cronbach's Alpha above 0,7, as per table 4.1, and the reliability of the questions was acceptable (Hair et al., 2010).

Table 4.1: The structure of the questionnaire and Cronbach's Alpha

Objects (Variable)	Questions	Cronbach's Alpha	Cronbach's Alpha based on standardised items
Fintech services adoption	8	0,939	0,941
Telecommunication services adoption	8	0,912	0,916
Communication	5	0,781	0,780
Customer retention	5	0,848	0,848

Source: Research data collected

4.4 Descriptive statistics

Descriptive statistics were employed in this study to quantify and describe the characteristics of the dataset collected. The demographic characteristics used were age, gender, education level, employment status, gross household income, marital status and network provider.

4.4.1 *Age*

Table 4.2: Respondents' age distribution

Age (years)	Frequency	Percent
18 to 34	1	0,800
35 to 54	57	43,8
55 to 64	72	55,4
Total	**130**	**100,0**

Source: Research data collected

Table 4.2 shows the age profiles of the respondents. Most respondents fell within the 55 to 64 age range, at 55,4%, and the second highest range was the 35 to 54 age range. at 43,8%.

4.4.2 *Gender*

Table 4.3: Respondents' gender distribution

Gender	Frequency	Percent
Male	70	53,8
Female	60	46,2
Total	**130**	**100,0**

Source: Research data collected

Table 4.3 indicates the gender distribution of the respondents. The male representation was 53,8%, whilst female representation was slightly less at 46,2%. This shows that the participation is relatively balanced between males and females.

4.4.3 *Education level*

Table 4.4: Respondents' education level

Education	Frequency	Percent
Matric	3	2,3
Certificate	1	0,8
Diploma	4	3,1
Degree	23	17,7
Honours	32	24,6
Postgraduate	67	51,5
Total	**130**	**100,0**

Source: Research data collected

Table 4.4 indicates that most respondents have a postgraduate degree (51,5%), followed by an Honours Degree (24,6%) and lastly, an undergraduate degree

(17,7%). The breakdown of the level of education could be assumed that the majority of university students participated in the survey.

4.4.4 *Employment status*

Table 4.5: Respondents' employment status

Employment	Frequency	Percent
Full-time	109	83,8
Part-time	1	0,8
Independent contractor	8	6,2
Self-employed	7	5,4
Unemployed	5	3,8
Total	**130**	**100,0**

Source: Research data collected

Table 4.5 shows that most of the respondents are full-time employees (83,8%). The respondents that are working part-time, unemployed, or self-employed stood at 0,8%, 3,8%, and 5,4% respectively. The remaining 6,2% stated that they were independent contractors.

4.4.5 *Household income*

Table 4.6: Respondents' household income distribution

Household income	Frequency	Percent
Less than R10000	10	7,7
Between R10 000 and R25 000	12	9,2
Between R25 000 and R50 000	41	31,5
More than R50 000	67	51,5
Total	**130**	**100,0**

Source: Research data collected

Most respondents indicated they earn more than R 50 000 per month (51,5%), and 31,5% earn between R 25 000 and R 50 000. Twelve respondents reported

earning between R 10 000 and R 25 000 (9,2%), and 7,7% said they earn less than R 10 000 (Table 4.6).

4.4.6 *Marital status*

Table 4.7: Respondents' marital status

Marital status	Frequency	Percent
Married	12	9,2
Un-married	55	42,3
Cohabit	63	48,5
Total	**130**	**100,0**

Source: Research data collected

Table 4.7 indicates that 48,5% of the respondents cohabit whilst 42,3% are not married. Only 9,2% of the respondents indicated that they are married (Table 4.7).

4.4.7 *Network provider*

Table 4.8: Respondents' primary network provider

Network provider	Frequency	Percent
Vodacom	42	32,3
MTN	41	31,5
Cell C	17	13,1
Telkom	27	20,8
Other	3	2,3
Total	**130**	**100,0**

Source: Research data collected

Most of the respondents are on Vodacom mobile network subscriptions (32,3%), followed by MTN with 31,5%, Telkom with 20,8%, Cell C with 13,1%, and other networks, including mobile virtual network operators and smaller network providers at 2,3% (Table 4.8). The distribution of mobile subscribers per network captured in this study represents the subscribers in the South African

telecommunications industry as per the ICASA March 2020 report on the information and communications technology sector (ICASA, 2020).

According to Table 4.8, the high number of MTN and Vodacom subscribers confirmed the literature in Chapter 2 that the two largest market players in South Africa are MTN and Vodacom. The other three networks are relatively small players in the telecommunications industry with low customer subscriptions. The low subscription numbers can be attributed to the market dominance of MTN and Vodacom. In this regard, MTN and Vodacom are significant players in the telecommunications industry, sharing almost 60% of the market.

4.5 Data Analysis

4.5.1 *Telecommunication service adoption*

It is evident from the analysis in Table 4.9 that most respondents adopted telecommunication services offered by the various mobile network operators. Furthermore, most of the respondents found the telecommunication services offered by their mobile network provider to be helpful (75%), easy to use (83%), beneficial to their day-to-day use (82%) and have the necessary tools and support to use the service (86%). However, only 54% of the respondents would recommend telecommunication services to their family and friends.

Table 4.9: Respondents' telecommunication service adoption

Telecommunication service adoption			Strongly disagree/ Agree	Neutral	Strongly agree/ Agree	Total	Mean	Std
TSA1	I find the telecommunications services offered by my network provider useful	Count	13	19	98	130	3,76	0,89
		Percent	10,0	14,6	75,4	100,0		
TSA2	Using telecommunications services provided by my network provider increases my productivity	Count	15	26	89	130	3,74	1,00
		Percent	11,5	20,0	68,5	100,0		
TSA3	Using telecommunication services provided by network providers benefits my day-to-day activities	Count	6	17	107	130	3,99	0,82
		Percent	4,6	13,1	82,3	100,0		
TSA4	It is easy for me to use telecommunication services provided by the network provider	Count	9	12	109	130	4,00	0,89
		Percent	6,9	9,2	83,9	100,0		
TSA5	Communication on telecommunication services from my network service provider is clear and understandable	Count	9	26	95	130	3,78	0,89
		Percent	6,9	20,0	73,0	100,0		
TSA6	I have the necessary tools to use telecommunication services offered by my network provider	Count	3	14	113	130	4,08	0,75
		Percent	2,3	10,8	86,9	100,0		
TSA7	I will highly recommend telecommunication services offered by my network provider to family and friends	Count	17	42	71	130	3,51	0,97
		Percent	13,0	32,3	54,6	100,0		
TSA8	I use telecommunication services offered by my network provider at least once a week	Count	13	8	109	130	4,12	1,03
		Percent	10,0	6,2	83,8	100,0		

Source: Research data collected

4.5.2 *Fintech service adoption*

Table 4.10 shows that 42,3% of respondents found fintech services easy to use, 31% found fintech services helpful, 38,4% found fintech services clear and

understandable, and 55% have the necessary tools to use fintech services. In addition, the same respondents found that the services increase their productivity (40,7%), offer some benefit to their day-to-day activities (40%), would recommend fintech services to their friends and family (33%) and used the services at least once a week (59%).

Table 4.10: Respondents' fintech service adoption

Fintech service adoption			Strongly disagree/ Disagree	Neutral	Strongly agree/ Agree	Mean	STD
FSA1	I find the financial technology services offered by my network provider useful	Count	40	49	41	3,03	0,988
		Percent	30,8	37,7	31,5		
FSA2	Using financial technology services provided by my network provider increases my productivity	Count	53	42	35	2,85	1,082
		Percent	40,8	32,3	26,9		
FSA3	Using financial technology services provided by network providers benefits my day-to-day activities	Count	52	39	39	2,90	1,077
		Percent	40,0	30,0	30,0		
FSA4	It is easy for me to use financial technology services provided by the network provider	Count	35	40	55	3,17	1,065
		Percent	26,9	30,8	42,3		
FSA5	My network service provider's communications about financial technology services are clear and understandable	Count	42	38	50	3,07	1,028
		Percent	32,3	29,2	38,5		
FSA6	I have the necessary tools to use financial technology services	Count	30	28	72	3,43	1,056
		Percent	23,1	21,5	55,4		
FSA7	I will highly recommend financial technology services from my network provider to family and friends	Count	43	49	38	2,99	1,000
		Percent	33,1	37,7	29,2		
FSA8	I use the financial technology services from my network provider at least once a week	Count	77	20	33	2,54	1,271
		Percent	59,2	15,4	25,4		

Source: Research data collected

4.5.3 *Communication of fintech and telecommunication services*

Table 4.11: Respondents' perception of fintech and telecommunication services related to communication.

Communication			Never/ rarely	Sometimes	Often/ always	Mean	STD
C1	Do you often receive communication from your telecoms service provider on financial technology services?	Count	49	46	35	2,82	1,11
		Percent	37,7	35,4	26,9		
C2	Do you often receive communication from your telecoms service provider on telecommunication services?	Count	21	35	74	3,48	1,07
		Percent	16,1	26,9	57,0		
C3	Do you receive communication on telecommunication and financial technology services via SMS, Television Adverts, Road Shows or all?	Count	28	35	67	3,35	1,06
		Percent	21,5	26,9	51,6		
C4	Do you often feel that the communication you receive from your telecoms services provider is tailored to your needs?	Count	68	46	16	2,50	0,99
		Percent	52,3	35,4	12,3		
C5	Does the communication you received drive you to use the service?	Count	80	34	16	2,37	1,04
		Percent	61,5	26,2	12,3		

Source: Research data collected

The communication theory highlighted in the literature review by Laswell (1945) was used to gauge the message delivered to the customer with the intention of customer retention or adoption. From Table 4.11, most customers reported receiving more communication about telecommunication services than fintech services (56,9% reported to have received telecommunication services communication versus 26,9% that received communication about fintech services). Furthermore, respondents often received communication via SMS, television adverts, road shows or all (51,5%). The respondents never or rarely

received communication tailored to their needs (51,3%). The lack of communication tailored to the respondents is evident, with 61,5% of respondents not driven to use the service communicated to them.

4.5.4 *Customer retention*

Table 4.12: Respondents' perception of customer retention

Customer retention			**Strongly disagree/ Disagree**	**Neutral**	**Strongly agree/ Disagree**	**Mean**	**STD**
CR1	I am satisfied with my network providers' services	Count	30	55	45	3,146	0,916
		Percent	23,1	42,3	34,6		
CR2	I intend to continue using my network service provider	Count	14	26	90	3,708	0,927
		Percent	10,8	20,0	69,2		
CR3	I can quickly get assistance from my provider on any network services queries I may have	Count	37	50	43	3,008	0,984
		Percent	28,5	38,5	33,1		
CR4	I find the network and financial technology services offered by my provider convenient for my daily use	Count	29	43	58	3,254	0,943
		Percent	22,3	33,1	44,6		
CR5	I will recommend network services offered by my provider to friends and family	Count	31	55	44	3,108	0,934
		Percent	23,8	42,3	33,8		

Source: Research data collected

Table 4.12 indicates that 42,3% of the respondents were neutral about their satisfaction with the mobile network providers' services. The same percentage was neutral about recommending the services to their family and friends. 69,2% of the respondents intended to continue using the services, whilst 44,62% found the services on offer convenient for their daily use.

4.6 Observed variable analysis.

KMO threshold values above 0,5 are considered acceptable, values between 0,5 and 0,7 are mediocre, values between 0,7 and 0,8 are good, values between 0,8 and 0,9 are great, and values above 0,9 are superb (Shrestha, 2021).

Table 4.13: Kaiser-Meyer-Olkin and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy	0,840

Source: Research data collected

A KMO value of 0,840 was obtained, which is considered good according to (Shrestha, 2021). Therefore, the result indicates that the sample size is adequate for the analysis.

Table 4.14: Exploratory factor analysis

Matrix of components after rotation, percentages of explained variance of the five dimensions of the Likert scale. (Rotated Component Matrix **)				
	Factors			
	Telecommunication service adoption	**Fintech service adoption**	**Customer retention**	**Communication**
TSA3	0,830			
TSA4	0,829			
TSA5	0,802			
TSA1	0,791			
TSA2	0,791			
TSA6	0,717			
TSA8	0,713			
TSA7	0,616			
FSA1		0,898		
FSA4		0,871		
FSA3		0,869		
FSA2		0,869		
FSA7		0,849		
FSA5		0,746		
FSA6		0,720		
FSA8		0,702		
CR5			0,812	
CR4			0,763	
CR3			0,729	
CR2			0,692	
CR1			0,594	
C2				0,846
C3				0,828
C1				0,790
C4				0,472
Eigenvalue	7,836	4,482	2,255	2,033
% of the explained variance	31,345	17,926	9,020	8,133
% of total variance explained	**66,425**			
Extraction method: Principal component analysis Rotation method: Varimax with Kaiser normalization				
** Rotation converged in five iterations				

Source: Research data collected

The research instrument had 33 questions in total, and 26 questions were outlined in the research instrument to measure the four constructs: telecommunication services adoption (eight questions), fintech adoption (eight

questions), communication (five questions) and customer retention (five questions) and 8 questions were used to collect demographic information. All 26 questions measuring the different constructs were analysed using the principle component analysis with varimax rotation.

The four chosen constructs (telecommunication services adoption, fintech service adoption, communication, and customer retention) had an Eigenvalue of one and above, as represented in Table 4.14. Using the (Shrestha, 2021) Eigenvalue criterion, values above one, are considered suitable in a study.

The result from Table 4.14 is explained below according to their Eigenvalues and percentage contributions towards the variance.

- Factor one: Telecommunication service adoption had an Eigenvalue of 7,836 and explains 31,345% of the total variance.
- Factor two: Fintech service adoption, had an Eigenvalue of 4,482 and explains 17,926% of the total variance.
- Factor three: Customer retention, has an Eigenvalue of 2,255 and explains 9,020% of the total variance.
- Factor four: Communication, has an Eigenvalue of 2,033 and explains 8,133% of the total variance.

The factor loadings in this study indicate that all loadings range between 0,472 and 0,898 (See Table 4.14), exceeding the recommended threshold value of 0,4 (Wiid & Diggines, 2010). As all the factor loadings are within range, measurements are strong enough to measure the respective constructs. Out of the 26 questions measuring the variables of interest, one question was removed

("C5: Does the communication you received drive you to use the service?") as it did not meet the threshold value of 0,4 and thus failed to measure the communication construct.

4.7 Correlation analysis

Multiple authors have suggested different interpretations of the threshold values for measurement; however, this study used Cohen's (2013) guide to interpreting the Pearson correlation (r), and the threshold for statistical significance is a p-value of less than 0,05 (Table 4.15). The statistical significance ensures that the chance of observing the results by chance is less than 5%.

Table 4.15: Pearson correlation guide

Strength	Threshold
small	r = 0,10 to 0,29
medium	r = 0,30 to 0,49
large	r = 0,50 to 1,00

Source: Cohen, 2013

Table 4.16 shows a statistical significance (p-value = 0,040) and a slight positive correlation (r = 0,181) between customer retention and telecommunication services adoption. There is a statistical significance (p-value < 0,01) and a significant positive correlation (r = 0,515) between customer retention and fintech service adoption. There is also a statistical significance (p-value < 0,01) between customer retention and communication and a medium positive correlation (r = 0,315).

Table 4.16: Correlation and discriminant analysis

		Telecommunication services adoption	Fintech services adoption	Communication	Customer retention
Telecommunication service adoption	Pearson correlation (r)	1			
	Sig. (2-tailed)				
	N	130			
Fintech service adoption	Pearson correlation (r)	0,156	1		
	Sig. (2-tailed)	0,077			
	N	130	130		
Communication	Pearson correlation (r)	0,035	0,325**	1	
	Sig. (2-tailed)	0,692	<0,001		
	N	130	130	130	
Customer retention	Pearson correlation (r)	0,181*	0,515**	0,315**	1
	Sig. (2-tailed)	0,040	<0,001	<0,001	
	N	130	130	130	130
* Correlation is significant at the 0.05 level (2-tailed)					
** Correlation is significant at the 0.01 level (2-tailed)					

Source: Research data collected

4.8 Structural equation modelling

Structural equation modelling (SEM) was used to analyse the relationships between the variables to validate the model proposed in Chapter 2. Based on partial list squares-structural equation modelling (PLS-SEM), the measurement model was assessed first, followed by the structural model. The measurement model specifies how the dependent variable relates to the latent variables and estimates the factor loadings, representing the relationship's strength and direction (Fan et al., 2016). The structural model in PLS-SEM was used to outline the relationships between the latent and dependent variables.

4.8.1 *Assessment of the measurement model*

The measurement model was assessed using reliability analysis, convergent, and discriminate validity. Reliability analysis was employed in this study to evaluate the consistency and stability of each construct's measurement results. The reliability for each construct is measured using the Cronbach Alpha coefficient and composite reliability. The valid threshold for the Cronbach Alpha coefficient value is more significant than 0,7, and the threshold for composite reliability is above 0,7 (Henseler et al., 2014). As seen in tables 4.1 and 4.17, all constructs have a Cronbach Alpha coefficient above 0,7 and composite reliability above 0,7, respectively. As the Cronbach Alpha coefficient and composite reliability meet the defined thresholds, the measurement model was thus deemed reliable. The reliability analysis and composite reliability met the defined thresholds and are good, so this study's measurement constructs and model are reliable.

Table 4.17: Constructs' composite reliability and average variance extracted

Constructs	Composite reliability	Average variance extracted	Discriminate Validity
Communication	0,854	0,595	0,771
Customer retention	0,889	0,619	0,787
Fintech service adoption	0,952	0,711	0,843
Telecommunication service adoption	0,908	0,556	0,746

Source: Research data collected

To measure how closely the constructs relate to each other, convergent validity (CV) was utilised in this study. CV is measured using the average variance extracted (AVE) values. According to Henseler et al. (2014), for an adequate convergence, an AVE of at least 0,50 is recommended. Table 4.17 indicates that

all constructs have AVE values above the 0,50 threshold. All values met the CV threshold, so this study's measurement model and constructs were convergently valid.

To ensure that constructs share more variance with their underlying items than they do with other constructs in the model; discriminate validity (DV) was deployed. DV is measured by comparing the correlation between the constructs with the square root of the AVEs. Ideally, the correlation value of the construct must be lower than the square of the AVE. Table 4.17 indicates that each construct meets this threshold as defined by Hair et al. (2020). All values met the DV threshold, so this study's measurement model and constructs were discriminately valid.

4.8.2 *Assessment of the structural model*

To test the underlying relationship among the variables of interest, the structural model was assessed using the t-value, path coefficients and coefficient of determination (R2), as suggested by Hair et al. (2010). This assessment enabled the hypotheses outlined in Section 2.5.2 to be tested, determined the strength and significance of the relationships of the constructs, and evaluated the structural model's fit to the data collected.

Table 4.18: Structural equation model results

Hypothesis	Relationship	Path-coefficient (β)	T-value (|O/STDEV|)	p-value	Decision
H1	**Communication -> Fintech service adoption**	0,350	4,613	**0,000**	Supported
H2	**Fintech service adoption -> Customer retention**	0,529	7,309	**0,000**	Supported

Source: Research data collected

The t-value was used to determine the statistical significance of each independent variable in the model and assess its impact on the dependent variable (Hair et al., 2010). A high t-value indicates that the corresponding coefficient significantly differs from zero, indicating that the independent variable significantly impacts the dependent variable. A t-value above 1,96 indicates a significant impact. As depicted in Table 4.18, “communication” has a significant impact on “fintech service adoption” (t-value = 4,613), and “fintech service adoption” has a significant impact on “customer retention” (t-value = 7,309). There is no significant impact of “communication” on “telecommunication service adoption” (t-value = 0,023) and “telecommunication service adoption” on “customer retention” (t-value = 1,158).

According to Hair et al. (2010), the p-value is commonly used in statistics to determine the statistical significance of results in a study. The p-value measures a corresponding independent variable's effect on the dependent variable. The threshold for statistical significance, as identified by Hair et al. (2010) is 0,005, which means that if a p-value is lower than the threshold, there is a 5% chance of observing the results if a null hypothesis is true. As observed in Table 4.18, “communication” and “fintech service adoption” had a p-value of 0,000, indicating a high statistical significance. Similarly, “fintech service adoption” and “customer retention” had a high statistical significance (p-value = 0,000). However, “communication” and “telecommunication service adoption” fall above the threshold (p-value = 0,880) indicating a low statistical significance. This low statistical significance is also observed between “telecommunication service adoption” and “customer retention” (p-value = 0,247).

The connection strength, also known as the path coefficient (β), was used to represent the response of the dependent variable to a unit change in an explanatory variable when other variables in a model were kept constant (Hair et al., 2010). The requirement is that the magnitude of the standardised path coefficient has to be more than 0,1 if a significant path relationship exists between the variables (Hair et al., 2010). The criteria were met in all the structural path relationships in this model. “Fintech service adoption” and “customer retention” had the highest level of significance (β = 0,529), whilst “communication” and “telecommunication service adoption” had a lower level of significance (β = 0,023). The significance strength between “telecommunication service adoption” and “customer retention” and between “communication” and “fintech service adoption” was slightly higher at β = 0,162 and 0,350, respectively, though at a lower level of significance (See Table 4.18).

The coefficient of determination (R^2) assessed the causal or predictive relationship between constructs. The strength of these relationships was determined by the amount of variance explained (R^2) in the dependent variables and the inner model’s path coefficient sizes and their significance. As illustrated in Figure 4.1, the first level dependent variable, “fintech service adoption”, was 0,123 and for “telecommunication service adoption”, it was 0,001. This result indicates that the latent variable “communication” can explain 12,3% variance for “fintech service adoption” and 0,1% for “telecommunication service adoption”, whilst the latent variables “fintech service adoption” and “telecommunication service adoption” can explain 33,6% of the variance in customer retention.

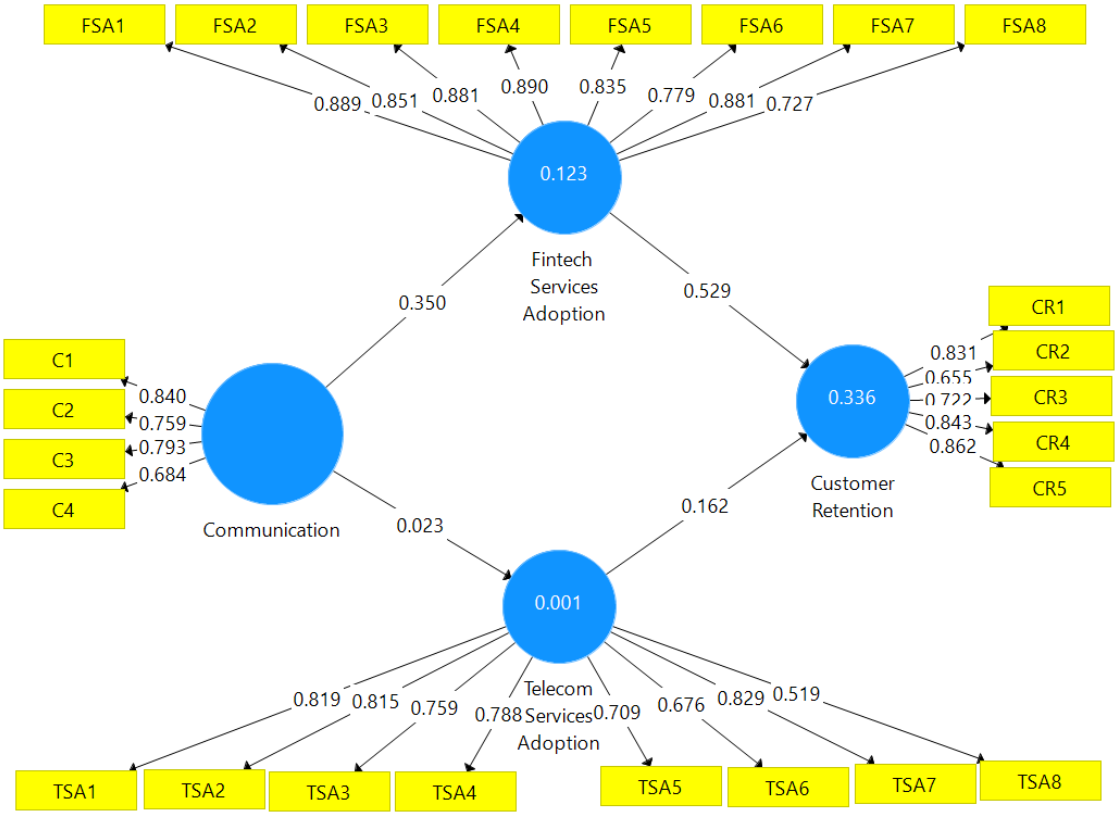


Figure 4.1: Conceptual model

Source: Research data collected

4.9 Conclusion

In conclusion, from the analysis in Chapter 4, it is evident that communication of fintech services has a positive impact on fintech service adoption supporting the first hypothesis (H1) which in turn has a significant influence on customer retention (H3). In contrast, communication of telecom services does not influence customer perception and adoption of telecom services (H2). It is also observed that telecom service adoption by customers has no significance on customer retention (H4)

CHAPTER 5. DISCUSSION OF THE RESULTS

5.1 Introduction

This research investigated the impact of communication and fintech adoption by telecommunications firms in South Africa on customer retention. A questionnaire was used to collect reliable and valuable information from the sampled population to achieve this objective. This chapter discussed the findings from the analysis presented in Chapter 4, centring on the hypotheses in Section 2.5.1 of Chapter 2.

5.1.1 *Financial technology impact on customer retention*

The first hypothesis stated that mobile network operators communicating about fintech services have a positive effect on customer retention. Most respondents adopted that financial technology in the telecommunications industry and the communication about fintech had encouraged them to stay with their mobile network providers. The key driver for customer retention has been the ability of mobile network operators to introduce fintech products and services above the traditional mobile network services, such as messaging, voice calls and mobile data.

New products and services are essential for organisations as they deliver customer satisfaction and attract new customers as highlighted in the literature review. The importance of product innovation in retaining and attracting new customers is highlighted by Dibie et al. (2019), who point out the importance of an organisation being passionate about product innovation. The launch of fintech as a means of product innovation by telecommunication firms in South Africa

indicates that most subscribers are willing to remain with the network. The results indicate a positive correlation between fintech adoption by subscribers and customer retention.

The availability of fintech services positively and significantly affect customer satisfaction, further driving customer retention (Alkhazaleh & Haddad, 2021). From the findings of this research, it is evident that there is fintech adoption by mobile network subscribers, such that effective fintech services assist in preserving customers. The results also indicate that mobile network customers are more likely to remain with the operator as they adopt financial technology services.

In today's complex business environment, a customer has many options for services offered by mobile network operators, providing essential services such as SMS, voice and data does not guarantee a negative customer churn for mobile network operators. Therefore, mobile networks must innovate and create services to attract new customers and ensure that existing customers remain with the mobile network operator. The launch of fintech services by mobile network operators and subsequent customer adoption indicate that customers are more likely to stay satisfied with the network, thus improving customer retention.

The communication theory developed by Lasswell (1945) indicates the need for mass communication to predict a message's effect on a group. In this study, there is a distinct correlation between the communication of fintech services to mobile network users and customer satisfaction resulting in customer retention. Given the high level of communication of telecommunication services, effort should be placed into advertising and marketing fintech services rather than

telecommunication services. However, the second hypothesis that stated communication of telecommunication has no impact on telecom service adoption is evident from the results of the data collection. This finding indicates that telecom firms that remain with the traditional services have no impact on telecom service adoption in in turn customer retention.

5.1.2 *Fintech services drive customer retention*

The third hypothesis states that customer adoption of fintech services drives customer retention. To address the hypothesis, this study investigated the adoption of fintech services by customers in the mobile telecommunications industry; the results show that most telecommunication users have adopted fintech services. Most respondents indicated that they are satisfied with adopting fintech services, and they find the services easy to use, and valuable relative to the cost. The respondents also indicate they will recommend financial technology services to their friends and family.

According to the literature, the higher the user's performance expectancy of technology, the stronger the recommendation to family and friends (social influence) (Venkatesh et al., 2016). This study's findings prove that introducing fintech services drives customer retention and increases customer lifetime value.

Dibie et al. (2019) and Gil-Gomez et al. (2020) highlighted the need to keep existing customers satisfied with the services and products offered by an organisation. The longer a customer is happy with products and services, the more likely they will be loyal and recommend them to friends and family (Gengeswari et al., 2013). This study supports existing literature (Gengeswari et al., 2013; Dibie et al. 2019; and Gil-Gomez et al. 2020) with evidence that

customer adoption (measured as product satisfaction, ease of use, availability of support services, convenience, and non-complaining behaviour) has a positive correlation with fintech services and customer retention.

5.2 Conclusion

The results of this study that fintech as a driver for customer retention in the South African telecommunications industry is aligned with the theory and literature on the impact of product innovation, technology adoption and customer retention (Chang and Chen, 2006; Krylova et al. 2020).

The main argument is that if a company does not adopt new digital technologies and launch new services, there is a high risk of customer exit due to redundancy. Providing just the traditional essential services does not guarantee long-term customer value. In conclusion, adopting financial technology significantly impacts customer retention. Similarly, this impact on customer retention has been demonstrated in various studies, which have shown that organisations that adopt technology have higher customer retention rates than those that do not (Kumar et al. (2012); Ngobo et al. (2015); Li et al. (2013)).

Technology can help improve customer experience by making it easier for customers to interact with the organisation, access information and make purchases. These experiences can lead to increased satisfaction, loyalty, and retention. Using data analytics and customer relationship management tools, technology can help organisations better understand their customers. The improved understanding of customers can allow organisations to tailor their products and services to meet better their customers' needs and preferences,

which can also contribute to increased retention. Overall, fintech and customer retention are closely related in the telecommunications industry in South Africa, and organisations that invest in financial technology are likely to benefit from customer retention.

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summarises and concludes this study's findings on the two hypotheses outlined in Section 2.5.1 of Chapter 2. The chapter also offers policy recommendations to telecommunication firms in South Africa regarding fintech adoption and customer retention. It concludes with recommendations for further research that could enrich and add to the existing knowledge of fintech and customer retention in the South African telecommunications industry.

6.2 Research problem

In South Africa, the telecommunications industry has steadily declined revenues from traditional telecommunication services such as data, voice, and short messaging. As the cell phone penetration rate is greater than 100% in South Africa, in theory, the revenues should be growing in double-digit figures. This growth should translate to customer satisfaction and, ultimately, customer retention. Previous studies on customer retention in the South African telecommunication industry have shown that customer retention is declining (Alamgir et al., 2017; Ernst & Young 2018; Botes et al 2012). Therefore, this research aimed to determine the impact of fintech as a driver for customer retention.

6.3 Research objectives

This research aimed to determine the impact of fintech on customer retention in the South African telecommunications industry. The study had three main

objectives; to determine the level of fintech adoption by mobile subscribers in the South African telecommunications industry, to determine the level of telecom adoption by mobile subscribers and to determine the effect of communication of fintech and telecom services in the South African telecommunications industry.

The impact was assessed by ascertaining customers' adoption of fintech and telecommunications in the telecommunications industry, their awareness of fintech and telecommunication services and their willingness to remain with their chosen network provider. The relationship between these factors is critical for telecommunication institutions to determine if fintech can drive customer satisfaction and retention.

6.4 Conclusions related to the research hypotheses

The survey questionnaire contained a series of questions relating to the adoption of fintech and telecommunication services, communication of these services and customer retention. The major finding from these questions was that fintech adoption had a strong positive relationship with customer retention, whilst telecommunication adoption had a negative relationship with customer retention. In addition, communication of telecommunication or fintech services had a weak positive relationship with customer retention.

The evidence of an increase in fintech adoption by customers and an increase in customer retention supports the hypothesis outlined in Section 2.3 of Chapter 2. This is supported by the theory highlighted in Chapter 2 on product and service innovation as a driver for customer retention.

According to data from consulting firms like Accenture, Delloite and AdaptIT, fintech services like mobile wallets, mobile money and digital payments have become innovative and essential services globally. The telecommunications industry in South Africa could attract new customers that the traditional banking industry has underserved and retain its existing customer base. This view was also supported by the fact that the traditional telecommunication services adoption by customers has minimal effect on customer retention.

Fintech services are driving more customer engagement, knowledge and loyalty. Lunching fintech services within the telecommunications industry in South Africa has resulted in new products and services, such as mobile money, insurance, and remittance and has shown an improvement in customer retention. This study has demonstrated that telecommunications firms could improve customer retention by offering fintech services, improving customer satisfaction and, ultimately, retaining them. This study's results indicate the positive correlation between South African telecommunications firms' adoption of fintech and customer retention.

6.5 Policy Recommendations

Technology and product innovation are essential drivers of business success, as they could help organisations differentiate themselves from their competitors, increase efficiency and capture new markets.

To remain competitive in the South African mobile telecommunications industry, firms must adopt new technologies above core services, such as messaging, voice and data. Innovative technologies, if used correctly, can help

telecommunication firms in South Africa differentiate themselves in the market. These innovative technologies could unlock more value for telecommunication firms and create customer stickiness. Adopting fintech services in the telecommunications industry encourages firms to think outside the box and create more value-added services.

Although this study showed a positive result for the adoption of fintech services by the respondents, a few more actions can be taken to improve the ease of use and helpfulness. To improve customer adoption, telecommunication companies can perform market research to understand the needs and expectations regarding fintech services. This will enable firms to design products to meet customer needs and expectations. In addition, telecommunication companies could offer attractive rewards and incentives to encourage customers to use their services and recommend them to friends and family. The recommendation to friends and family will aid in improving customer retention as it shall improve customer stickiness.

6.6 Recommendations for further research

The results showed that many respondents did not receive much communication about fintech services offered by the network provider. A possible reason was that telecommunication companies have not invested heavily in marketing and upselling the fintech offerings. Further research is recommended to determine how telecommunication companies can drive the adoption of fintech and which customer retention strategies can be taken.

This study showed many mid to high-income respondents that had adopted fintech services and the value they bring. A recommendation for further research could be to investigate the adoption of fintech services in the low-income market as these customers are more price continuous. Furthermore, future research on customer loyalty at different income levels can aid in determining which fintech business models and marketing strategies can be taken by telecommunication companies that would like to venture into fintech.

The results showed that many respondents were neutral about communication and customer retention questions. A possible reason was that the questions were not fully understood or found them very ambiguous. Therefore, further studies should explore customer retention and communication elements through a more qualitative approach.

As a result of employing convenient sampling, it is recommended the research is expanded beyond University students and a large sample of the population is used. A larger sample size would be required to achieve a more representative sample, reduce the margin of error and increase the confidence levels.

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APPENDIX A: Research instrument

Fintech Adoption and Customer Retention Questionnaire

Section A: Demographic Data

1. Age Range (Provide answers in years)

Under 18	1	18-34	2	35-54	3	55-64	4	65 and above	5

2. Gender (tick ✓ your choice)

Male	1	Female	2	Non-Binary	3	Prefer Not to Say	4

3. Level of education (tick ✓ your choice)

Matric	1	Certificate	2	Diploma	3	Degree	4	Honours	5	Postgraduate	6

4. Employment Status (tick ✓ your choice)

Full-time	1	Part-time	2	Independent contractor	3	Self-Employed	4	Unemployed	5

5. Gross household income (tick ✓ your choice)

Less than R10000	1	Between 10001 and 25000	2	Between 25001 and 50000	3	More than 50000	4

6. Marital status (tick ✓ your choice)

Married	1	Un-married	2	Cohabit	3

7. Network Provider (tick ✓ your choice)

Vodacom	1	MTN	2	Cell C	3	Telkom	4	Other	5	None	6

Section C: Telecommunication Services Adoption

Tick the appropriate options *(SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree)*

	Item	SD	D	N	A	SA
TSA1	I find the telecommunications services offered by my network provider useful	1	2	3	4	5
TSA2	Using telecommunications services provided by my network provider increases my productivity	1	2	3	4	5
TSA3	Using telecommunication services provided by network providers benefits my day-to-day activities	1	2	3	4	5
TSA4	It is easy for me to use telecommunication services provided by the network provider	1	2	3	4	5
TSA5	Communication on telecommunication services from my network service provider is clear and understandable.	1	2	3	4	5
TSA6	I have the necessary tools to use telecommunication services offered by my network provider	1	2	3	4	5
TSA7	I will highly recommend telecommunication services offered by my network provider to family and friends	1	2	3	4	5
TSA8	I use telecommunication services offered by my network provider at least once a week	1	2	3	4	5

Section D: Fintech Services Adoption

Tick the appropriate options *(SD = Strongly Disagree, D – Disagree, N = Neutral, A = Agree, SA = Strongly Agree)*

	Item	SD	D	N	A	SA
FSA1	I find the financial technology services offered by my network provider useful	1	2	3	4	5
FSA2	Using financial technology services provided by my network provider increases my productivity	1	2	3	4	5
FSA3	Using financial technology services provided by network providers benefits my day-to-day activities	1	2	3	4	5
FSA4	It is easy for me to use financial technology services provided by the network provider	1	2	3	4	5
FSA5	My network service provider's communications about financial technology services are clear and understandable.	1	2	3	4	5
FSA6	I have the necessary tools to use financial technology services	1	2	3	4	5
FSA7	I will highly recommend financial technology services from my network provider to family and friends	1	2	3	4	5
FSA8	I use the financial technology services from my network provider at least once a week	1	2	3	4	5

Section E: Communication

This section will appraise the influence of communication on customers' adoption of fintech and telecommunication services.

Telcom Services

	Item	Never	Rarely	Sometimes	Often	Always
C1	Do you often receive communication from your telecoms service provider on financial technology services?	1	2	3	4	5
C2	Do you often receive communication from your telecoms service provider on telecommunication services?	1	2	3	4	5
C3	Do you receive communication on telecommunication and financial technology services via SMS, Television Adverts, Road Shows or all?	1	2	3	4	5
C4	Do you often feel that the communication you receive from your telecoms services provider is tailored to your needs?	1	2	3	4	5
C5	Does the communication you received drive you to use the service	1	2	3	4	5

Section F: Customer Retention

Tick the appropriate options *(SD = Strongly Disagree, D – Disagree, N = Neutral, A = Agree, SA = Strongly Agree)*

	Item	SD	D	N	A	SA
CR1	I am satisfied with my network providers' services.	1	2	3	4	5
CR2	I intend to continue using my network service provider	1	2	3	4	5
CR3	I can quickly get assistance from my provider on any network services queries I may have	1	2	3	4	5
CR4	I find the network and financial technology services offered by my provider convenient for my daily use	1	2	3	4	5
CR5	I will recommend network services offered by my provider to friends and family	1	2	3	4	5

APPENDIX B: Ethics clearance certificate

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB1944963/371

This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	Fintech as a driver for customer retention in the South African telecommunications industry
Investigator / Researcher	MR Erick Kalabamu
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed anonymity and confidentiality.
Issue Date of Certificate	2021-08-18
Expiry date	Date of submission of the project report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Kalabamu
Signature

19 August 2021
Date: