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Digital fraud and the adoption of digital banking services by customers in South Africa

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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

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ABSTRACT

The banking industry in South Africa rapidly changed when traditional banks embarked on digital transformation initiatives. The digital transformation has come with challenges as the potential for digital fraud arguably increases as customers adopt digital channels.

Customers therefore may have been afraid to adopt digital channels, which could have caused low adoption rates. The study aimed to investigate to what extent the threat of digital fraud affected customers' adoption of digital banking services in South Africa. Customer intention, perceived risk, perceived benefits, and trust were measured to examine the effects of digital fraud.

A quantitative research approach was adopted in this study. The data from respondents was collected via a survey. Convenience sampling was adopted, and 350 respondents were targeted. However, only 150 responded to the survey. The response rate was 42.9%, which was deemed acceptable.

The findings indicated that intention alone does influence adoption. The findings also indicated that perceived risk did not significantly influence adoption. Perceived benefits in this study significantly influenced the adoption of digital banking services. The study also indicated that trust is critical in mitigating the impact of perceived risk associated with digital banking services.

The research focused on the adoption of digital banking services in South Africa. However, there was an opportunity to conduct further research in other industries and contexts.

In conclusion, the research has shown that organisations that can demonstrate benefits when customers use their digital banking services and gain their customers’ trust will likely not experience decreased adoption and use of their digital service offering.

KEYWORDS

Digital Banking, Digital adoption, Digital Fraud, Digital Trust, Digital Risk

DECLARATION

I, Kevandren Naidoo, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Kevandren Naidoo Signature: 

Signed at Randburg

On the 26th day of February 2024

DEDICATION

I dedicate my master's research to my late mother, Miss Manoo Padayatchy. She was my biggest supporter and motivator and would have been proud of my achievements.

To my wife, Dr. Shavania Ragavan-Naidoo, I thank you for all your understanding and patience. It has not been easy being a newly married couple and new parents to Yaadav and pursuing academic goals. I am blessed to have you share this achievement and be my number-one cheerleader. Yaadav, thank you for giving me a reason to push ahead.

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LIST OF ACRONYMS

VT	Valence Theory
SABRIC	South African Banking Risk Information Centre

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

This study aimed to investigate the extent to which the threat of digital fraud affected customers' adoption of digital banking services in South Africa.

1.2 Background of the study

The banking industry in South Africa is rapidly changing as traditional banks embrace technology to improve customer experience and reduce costs (Malinga, 2020). There has been a rise in digital banks that accelerated the digital transformation of traditional banks (Louahidi, 2022). In addition, the COVID-19 pandemic forced the banking industry to deliver services via digital channels (Writer, 2023). South Africa is a good study for digital banking fraud as South Africans have become a target for fraud because fraudsters know the weaknesses in organisations and law enforcement agencies (Shingane, 2022).

Digital fraud has been shown to increase as customers adopt digital channels (Kashyap, 2019). The increase in digital fraud has changed the risk landscape as more organisations adopt digital technologies (Kashyap, 2019). It has been found that internal and external perpetrators commit fraud and that digital organisations are exposed to new types of fraud (Kashyap, 2019). Due to the nature of digital fraud, incidents can occur at any time and place and affect any organisation. (AVeS Cyber Security, 2022). It has been found that the increase in cyber fraud in South Africa has made customers in the banking industry lose confidence in the services provided by banks (Akinbowale, Klingelhöfer, & Zerihun, 2023).

In 2021, suspected digital fraud increased by 24% globally, and in South Africa, fraud attempts increased by 7% (TransUnion, 2021). The banking industry was identified as the most impacted, as fraudsters know this industry had the most valuable information (TransUnion, 2021). According to SABRIC, there was a 13%

increase in reported fraud incidents on banking applications, accounting for 49% of gross losses (SABRIC, 2021). Most reported fraud incidents came from external perpetrators such as hackers and organized crime rings, accounting for 31% and 28% of cases, respectively (PwC, 2022). According to a case study on the development of digital payments conducted in India, adoption is lower due to rising fraud (Martins, 2023).

Fraudsters continue to find new ways to defraud organisations and their customers despite these organisations spending time enhancing processes and developing policies to mitigate against fraud (Yego, 2016). Studies have shown that digital-only customers are not satisfied with the security controls implemented by the banks (Mothibi & Rahulani, 2021). Fraudsters have sophisticated fraud technologies and tools that steal customer identities, payment fraud and fraud incidents (Nadolny, 2021). Recent technology has negatively affected organisations, opening them to hacking, phishing, and vishing (Akinbowale et al., 2023). Banks are regarded as one of the industries with the highest level of regulation, but fraudsters continue to infiltrate them (Sharma & Singh, 2020).

1.3 Research problem

Digital fraud has made customers afraid when transacting on digital channels, causing low adoption (Nzama, 2020). Fraudsters continue to evolve and become more sophisticated, which means new incidents on digital channels. Cybercriminals refined their fraud methods to stay ahead of the strengthened business processes implemented to improve cybersecurity in the banking industry (SABRIC, 2021). Despite South African banks taking steps to transform their business, there is still much room for improvement in securing the digital channels (Mothibi & Rahulani, 2021). Riquelme and Rios (2010) state that digital adoption is high when the risk of using digital services is perceived as low. Social engineering, phishing, vishing, smishing, email hacking, and business email compromise are fraudsters' most common methods in digital banking (SABRIC,

2021). Fraud in the banking industry may cause customers to lose trust in the Bank (Emefiele, Obim, & Nkamare, 2018).

Nearly half of all South African bank customers have experienced fraud, which means fraud is a massive problem in banking (FICO, 2021). Stolen identity and account take-over are the two highest forms of fraud identified (FICO, 2021). 31% of customers believe that online card transactions are unsafe, and 63% feel transactions are safe (FICO, 2021).

The South African banking industry has tried to implement measures by working with industry partners and regulatory bodies to mitigate fraud. However, fraud continues to cause losses (Akinbowale et al., 2023). Digital fraud causes financial and reputational loss, loss of confidence in the organisation, and risk of further investment (Sharma & Singh, 2020). The issues of fraud in the banking industry take a long time to be investigated and for solutions to be provided (Sharma & Singh, 2020). Some organisations do not take the time to unpack the fraud incidents fully and are therefore not quick to solve gaps (Yego, 2016). In contrast, internal perpetrators often impact organisations with sufficient controls and risk-mitigating strategies (Yego, 2016). Fraud undermines organisations' credibility, and specific problems are unreported by organisations (Emefiele et al., 2018).

South Africans have become a target for fraud because fraudsters know the weaknesses in organisations and law enforcement agencies (Shingane, 2022). Organisations do not understand how cyber criminals think and have been solving fraud issues in silos (Mckinsey, 2019). These organisations need a holistic view of a customer’s journey to identify points of weakness and continuously conduct assessments to minimize new fraud incidents (Mckinsey, 2019). Customer fraud, bribery and corruption, financial statement fraud, and cybercrime have been listed as the most prominent economic crimes in South Africa (Akinbowale et al., 2023).

Customers' perceptions of the risks associated with technology may hinder their adoption of that technology (Thusi & Maduku, 2020). However, the role of digital fraud in customers' adoption of digital banking services is currently unknown.

1.4 Research questions

Main question

1. To what extent has the threat of digital fraud affected customers' adoption of digital banking services in South Africa?

1.5 Rationale

Fraud is a problem on a worldwide scale because it entails deliberate fraud on customers and the misappropriation of organisational resources (Akinbowale et al., 2023). Customers have been shown to be afraid to adopt digital channels because they thought they had fewer security features (Rutherford, 2023). Customers fear sharing their personal information on these digital channels as they take information protection seriously (Rutherford, 2023). In a survey conducted by FICO in South Africa, 34% of customers said they would select a bank only if they had good fraud protection (Palmer, 2022). The survey further stated that 7.2% of respondents had their ID stolen, and their identity was used to open financial accounts (Palmer, 2022). Organisations can potentially drive digital adoption by incorporating digital safe environments while protecting customers against identity theft and fraud (Sontiq, 2022). Studies have found that customers prefer depositing money rather than adding their credit card details online because they fear being defrauded (Mthembu, Kunene, & Mbhele, 2018). A global study revealed that 40 per cent of customers do not prefer mobile payments as they are concerned with fraud and identity fraud (Chung, 2021).

Studies revealed that banks should enhance processes and technologies (Mothibi & Rahulani, 2021); (Akinbowale et al., 2023); (Mckinsey, 2019),

however, there was little evidence on which digital fraud components prevented customer adoption of digital banking services in South Africa.

1.6 Delimitations of the study

This study was delimited to the following:

I. There were many effects of digital fraud; however, this study focused on adopting digital banking services in the South African banking industry, where digital fraud is prevalent.
II. The study has focused on digital fraud in the South African banking industry.

1.7 Definition of terms

The study had the following important terms that need to be defined:

I. **Digital fraud**: Digital fraud is an act of deception by a fraudster to gain access to your personal information on a digital platform to cause financial loss (Kumar & Diwedi, 2021). Digital fraud is when criminals use email, SMS, and other sophisticated technologies to cause financial loss to a customer or organisation (Commbank, 2023).
II. **Cyber fraud**: According to DeltaNet International (2023) “Cyber fraud is the crime committed via a computer with the intent to corrupt another individual’s personal and financial information stored online.” Cyber fraud is also any person whose intention is to defraud an individual through misrepresentation of data or system programs (South African Government, 2024).
III. **Cyber criminals**: Cyber criminals are criminals who use computers and software to gain unauthorized entry to hardware to steal money or data (Avast, 2023). Cybercriminals banned from an organisation's system usually continue to create additional profiles and credentials weakening the organisation's controls (Whelan et al., 2024).

IV. **Phishing**: According to Emefiele et al., (2018, p. 4) “Phishing is the act of stealing customer’s information via the INTERNET to commit online banking fraud.” Phishing can be a misleading email from a fraudster to gain access to customers' personal information to commit fraud (Yasin et al., 2024).

V. **Vishing**: According to SABRIC c (2023) “vishing is when a fraudster phones a victim posing as a bank official or service provider and uses social engineering skills to manipulate them into disclosing confidential information, while at the same time leading them to believe that they are speaking to the bank or service provider.” Vishing is normally done on voice platforms to trick customers into sharing personal information (Choi & Rubin, 2023).

VI. **Smishing**: According to SABRIC b (2023) “smishing, short for SMS Phishing, is where criminals send an SMS often purporting to be from your bank requesting your personal or financial information such as your account or PIN.” Similar to vishing, smishing occurs on SMS and WhatsApp platforms to trick customers into sharing personal information (Choi & Rubin, 2023).

VII. **Social engineering**: According to Avast (2023) social engineering “is where a bad actor attempts to gain the confidence of an authorized user of your website or business systems and gets them to reveal information that will enable them to compromise its security later.” Social engineering is a tactic used by fraudsters to gain the trust of customers to obtain personal information to access their system (Choi & Rubin, 2023).

1.8 Chapter Summary

This chapter presented the subject of digital fraud and framed the research problem to be investigated. Studies have shown that there has been a rise in digital fraud in South Africa. Fraudsters are constantly developing inventive and sophisticated ways to con organisations and customers. Fraud impacts have lowered confidence and damaged banks' reputations in South Africa. This

research aimed to investigate the role of digital fraud in adopting digital banking services in South Africa by customers.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter examined various academic publications, papers, and other sources to understand better the elements contributing to digital fraud and its impact on customer use of digital banking services in South Africa and internationally. This chapter set the stage for discussions on digital fraud and banking services. The use of the services was evaluated by considering demographics, education, and customer insights. Implications for the research design will round out the chapter.

2.2 Background discussion

2.2.1. **Digital Fraud**

Digital fraud is an act of deception or theft where money is fraudulently taken from a financial institution and sent to the perpetrator's bank account through online services (Kumar & Diwedi, 2021). Digital fraud has been typically characterized as using online resources to carry out suspicious business activities with the intention of misleading or defrauding individuals or organisations (Alanezi, 2015). Digital fraud has become a more significant and demanding challenge for governments and organisations worldwide (Alanezi, 2015). A study revealed that banks lack the expertise to counsel and advise their customers because they are unfamiliar with online fraud and its tactics (Alanezi, 2015). Further results from the study demonstrate that, to prevent customers from becoming victims of fraud, most banks focused on protecting customers' personal information (Alanezi, 2015). The results from the study indicated that, despite an increase in online fraud, there had been little success in prosecuting perpetrators (Alanezi, 2015). Digital fraudsters have taken advantage of opportunities and loopholes generated

by the growth of online activities and the use of information technologies in financial transactions (Alanezi, 2015).

A study revealed eight common cyber fraud threats in South Africa, i.e., phishing, spying, malware, data theft, spam email, online theft, hacking, and skimming (Akinbowale et al., 2023). The study revealed that cyber fraud negatively impacts the company's revenue losses, reputation, customer loyalty, and shareholder trust (Akinbowale et al., 2023).

2.2.2. Digital banking services

Digital banking refers to financial institutions that allow customers to conduct banking anytime, anywhere, and from digital channels, i.e., online and mobile (Kumar & Diwedi, 2021). Mobile applications are now used for 70% of all bank interactions, with only about 20% of customers saying they prefer face-to-face contact for conversation, socializing, or expert reasons and about 30% looking for end-to-end integrated experiences that address all their banking needs. Between 2016 and 2021, the number of customer interactions in banking increased by 11% globally (McKinsey & Company, 2022). Banks want to cut operating costs and improve the banking experience for customers, so increasing the penetration of mobile banking services is crucial (Thusi & Maduku, 2020). Millennials give a desirable market opportunity for doing this because they comprise around 31.5% of the world population and have high discretionary incomes (Thusi & Maduku, 2020).

2.2.3. Adoption of digital banking services

Sensitive data and information are exchanged during internet banking transactions, and those participating in the transaction are afraid that fraudsters may gain access to these sensitive files and information; previous research has shown that the issue of security is more crucial in the adoption of Internet banking (Ramavhona & Mokwena, 2016). In this study, 50.7% of participants claimed that banks that provide Internet banking had not put in place security measures to protect their bank customers (Ramavhona & Mokwena, 2016).

According to research, customers' perceptions of the risks associated with technology may hinder their adoption of that technology (Thusi & Maduku, 2020). The risk customers perceive when using banking technology impacts the adoption of these systems (Thusi & Maduku, 2020). If retail banks want to promote the quick adoption of their mobile banking services, they must increase their clients' faith in their institutions and those services. When this is not done, customers are less likely to accept these services (Thusi & Maduku, 2020). Banks must collaborate with security and law enforcement organisations to apprehend and prosecute online banking fraudsters to demonstrate their commitment to the fight against online banking fraud (Thusi & Maduku, 2020). Professional thieves successfully exploit techniques like phishing and pharming to steal personal cash and commit identity theft globally as more businesses provide their customers with more online access (Dzomira, 2017). It causes a lack of customer trust and can cause adoption issues (Thusi & Maduku, 2020).

As more people access linked devices and a more tech-savvy society emerges, the quick adoption of digital services has become a force for change (Shiplana, 2019). However, some low-income earners prefer using cash instead of digital channels to transact due to a lack of knowledge and fear of being defrauded (Shiplana, 2019). The author highlighted that the increased use of mobile financial services is also supported by higher security standards and ongoing technology improvements (Shiplana, 2019). Banks need to ensure that customers and businesses are aware of the nature of the online fraud problem and its emerging forms (Dzomira, 2017). In a study conducted, most respondents cited a lack of knowledge regarding mobile money, a lack of education, and a lack of information as primary impediments to their adoption (Niekerk & Phaladi, 2021). This research further suggests that knowledge and awareness about fraud threats are essential for customers (Dzomira, 2017). Material on internet banking fraud should be easily accessible and delivered in a way that makes sense to the diverse clientele base, especially in South Africa, with its diverse languages (Dzomira, 2017).

Older demographic groupings are victims of fraud; however, it is unknown whether this group is more at risk than other age groups (Kemp & Pérez, 2023). On one hand, fraud in the older demographics is widespread due to social factors like social isolation, which makes older people less aware of potential fraud. Economic factors like wealth accumulated over their lifetimes, making them an easy target, and physical factors like age-related problems like memory loss and vision loss (Kemp & Pérez, 2023). On the other hand, because older people are less digitally active and fraud occurs primarily online, they pose a lower danger (Kemp & Pérez, 2023).

A study found that fraud was less common in older demographics due to lower internet usage and online shopping. However, after the pandemic, fraud increased due to higher internet usage by older demographics (Kemp & Pérez, 2023). Younger people are still more susceptible to online fraud; thus, more research is needed to determine if fraud impacts these customer types (Kemp & Pérez, 2023). The study concludes that in order to expand the study of fraud against older individuals, future research should aim to explore specific countries in greater detail with larger sample sizes and with the addition of a wider variety of questions on routine online activities and the effects of victimization (Kemp & Pérez, 2023).

2.3 ANALYTICAL FRAMEWORK

2.3.1 Valence Theory (VT)

Valence Theory (VT) was used in this study to assess digital fraud and its impact on customers adopting digital banking services in South Africa. VT examines the significance of valence in determining customers' propensity to engage in a particular product, service, or behaviour and suggests that customers weigh all of the risks and advantages involved in order to arrive at a net valence (Dhir, Malodia, Awan, Sakashita, & Kaur, 2021). VT has been used to examine customers' perceptions towards using online recommendation agents

(Ghasemaghaei, 2020). VT is a customer decision-making theory based on rational cognition. It further emphasises the positive and negative aspects of customer decision-making behaviours (Ghasemaghaei, 2020). In a study of the application of VT, it was noted that when customers choose whether to heed the recommendations of a review, customers will first weigh its value (positive or negative) rather than its utility (Jia & Liu, 2018). It is important to note that customers go through a net valence analysis when considering the adoption of controversial IT (Breward, Hassanein, & Head, 2017). VT examines an individual's intentions to engage in action better than other behavioural theories because it takes into account both perceived benefit and perceived risk (Dhir et al., 2021). Despite being appropriate for examining behavioural difficulties, VT does not consider the customer's subjective psychological perceptions, as represented by customer values (Dhir et al., 2021). The VT theory has been used in various studies to study perception (positive or negative) in the adoption of products or services.

A more extensive study framework, the trust-based decision-making model, has since been proposed (Kim, Ferrin, & Rao, 2007). A study was conducted, and it was suggested that customer trust does affect their purchasing decisions (Kim et al., 2007). The study validates that customer trust is crucial when engaging in online transactions (Kim et al., 2007). Trust is the most vital factor when customers engage in online transactions, followed by perceived benefits and perceived risks (Kim et al., 2007).

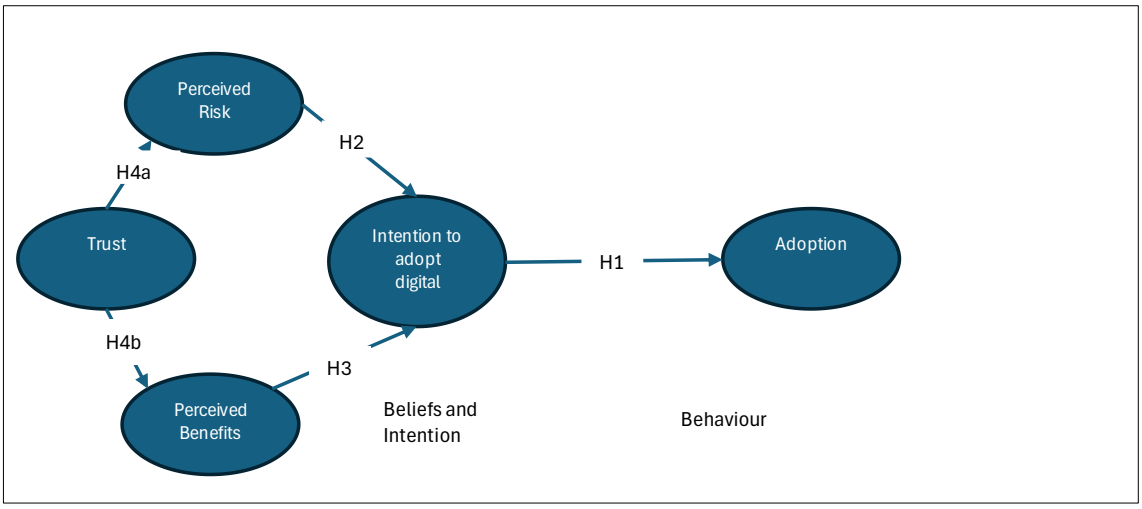


Figure 1: Basic theoretical framework (Kim et al., 2007)

2.3.2 Adoption and Intention to adopt a digital service.

The link between intention and behaviour was predicted by the assumption that customers try to make reasonable judgments based on the facts (Kim et al., 2007). A study was conducted to investigate if brand awareness, brand loyalty, brand association, and perceived quality influence customers' intention to purchase a product (Lee, Goh, & Noor, 2019). Perceived quality and brand awareness were considered critical factors for customer's intention to purchase a product (Lee et al., 2019). Perceived quality can drive adoption and enable an organisation to distinguish itself from competitors (Lee et al., 2019). Brand awareness is vital since there will be no communication or transactions if the brand is not considered in the customers' decision-making process (Lee et al., 2019). Lack of awareness does impact adoption (Niekerk & Phaladi, 2021).

Hypothesis 1: A customer's intention to use digital banking services (INTENTION) via a digital banking channel will positively affect the adoption of digital banking services.

2.3.3 Perceived risks (Risks)

This study defined perceived risk (RISK) as a customer's perception of possible unclear bad outcomes from using digital financial services (Kim et al., 2007). This research suggests a significant barrier to understanding when customers use digital banking services. Digital channels require customers to enter sensitive information, and customers become hesitant to enter their personal information if the channel does not have sufficient security (Ramavhona & Mokwena, 2016). According to research, customers' perceptions of the risks associated with technology use hinder their adoption of that technology (Thusi & Maduku, 2020). The bank is responsible for managing the perception of risk by demonstrating security controls (Thusi & Maduku, 2020). Digital fraud can cause reputation and financial risks to customers, and this risk can cause adoption issues (Nadolny, 2021). Customers are afraid to share their personal information on these digital channels as they take data protection of information seriously, which means customers will not adopt digital channels if their information is stolen (Rutherford, 2023). It has been discovered that a customer's perception of danger affects their online choices (Kim et al., 2007). Customers will be more at ease if they walk into a physical store as they can feel, touch and see (Kim et al., 2007) as opposed to an online store where one needs to add their credit card information into a digital platform where they are afraid of fraud (Mthembu et al., 2018).

Hypothesis 2: A customer’s perceived risk negatively affects the adoption of digital banking services.

2.3.4 Perceived benefits (Benefits)

Perceived benefit (benefit) refers to a customer's estimation of how adopting a bank's digital channel will improve their situation (Kim et al., 2007). Digital banking services allow customers to bank anywhere and anytime, thus providing convenience and time-saving benefits (Kumar & Diwedi, 2021). In contrast to the perceived risk of being a victim of identity theft or having their wealth stolen, customers benefit from convenience and time savings (Kim et al., 2007).

Customers could still digitally transact during the pandemic, allowing them to continue as usual and be safe (Writer, 2023), which provides further benefits of adopting digital banking services.

Hypothesis 3: A customer's perceived benefits positively affect the adoption of digital banking services.

2.3.5 Trust

The service offering via digital channels does provide some level of risk as all interactions are done online; therefore, there is some level of trust by customers when interacting on these channels (Kim et al., 2007). There are two ways that trust can reduce the impact of risk: 1) performing a digital transaction and having no control over the outcome; however, having trust that the risk will be low and 2) when the perceived benefits exceed the perceived risk of performing a digital transaction (Kim et al., 2007). Information on the security controls on the digital platform will improve customers' trust in the digital banking service (Dzomira, 2017). Covid-19 has increased digital transformational journeys and contributed to building trust in how individuals deal with new financial institutions (Keraan, 2021).

Hypothesis 4a: A customer's trust (TRUST) negativity affects the customer's perceived risk of the adoption of digital banking services.

Hypothesis 4b: A customer's trust (TRUST) positively affects the customer's intention to adopt digital banking services.

2.4 Conclusion

This chapter discussed various academic publications, papers, and other sources to understand digital fraud, digital banking services, and adopting digital banking services in South Africa and internationally. There is a rise in customers using digital channels, and this has caused a rise in digital fraud. Customers are

becoming concerned with entering personal information on digital channels, and the perceived risk does negatively affect adoption. A lack of understanding of security measures and controls on digital services and a lack of knowledge about digital fraud threats impact the use of banking services.

Valence Theory (VT) and a more extensive study framework, the trust-based decision-making model, were used as theoretical frameworks in this study. Research has indicated that perceived benefits and risks can positively and negatively influence customers who adopt digital banking services. Research has further shown that customers intending to adopt digital banking services can increase adoption rates. The addition of the trust-based decision model framework indicated that trust was an essential variable in adopting digital banking services. Trust can outweigh the perceived risk on a digital channel and positively affects the intention to adopt the service.

Table 1: Highlights hypotheses based on the VT theory framework on digital fraud and the adoption of digital banking services in South Africa.

Hypotheses	**Description**
Hypothesis 1	A customer's intention to use digital banking services (INTENTION) via a digital banking channel will positively affect the adoption of digital banking services.
Hypothesis 2	A customer's perceived risk negatively affects the adoption of digital banking services.
Hypothesis 3	A customer's perceived benefits positively affect the adoption of digital banking services.

Hypothesis 4a	A customer’s trust (TRUST) negatively affects the customer's perceived risk of the adoption of digital banking services.
Hypothesis 4b	A customer’s trust (TRUST) positively affects the customer’s intention to adopt digital banking services.

CHAPTER 3. RESEARCH METHODOLOGY

This chapter discusses the research approach, research design, collection methods, population and sample. The concepts of validity and reliability are explored, as well as the ethical considerations of the study.

3.1 Research approach

A quantitative research approach, which involves a statistical approach to research design, was adopted (Williams, 2007). The study aimed to understand the extent of how digital fraud affected customers' adoption of digital banking services in South Africa. A quantitative approach is best used when a research problem requires identifying elements influencing an outcome (Creswell, 2009).

3.2 Research design

The approach was to conduct a survey that would provide a numerical description of the opinions of a population of people using or not using a digital banking channel by studying a sample of that population. In this approach, evidence is collected to support or contradict the hypotheses (Creswell, 2009). A survey was appropriate in this study as it is a tool to measure people’s preferences, attitudes and beliefs (Bhattacherjee, 2012).

Advantages

The survey provided numerical descriptions of the opinions of the sample population. The responses were summarised to identify the perceived risk, perceived benefit and level of trust when adopting digital channels.

The study aimed to understand the relationships between variables. The questions in the survey were formatted to align with the variables, and responses were measured from low to high levels of satisfaction.

3.3 Data collection methods

The data was collected via survey research. The survey was a questionnaire to collect data from the studied population to understand behaviours and characteristics (Apuke, 2017). Survey research is a social science research method that concentrates on people as well as the essential information about them, including their opinions, beliefs, attitudes, motives, and behaviours (Apuke, 2017). Thus, data collection using this method was to determine if and to what extent there is a perceived risk and benefit or if there is intended use and trust of the digital banking services.

3.4 Population and sample

3.4.1 *Population*

The study population consisted of the adult banked South African population (18 years and older). This study's population is comparable to one that was used when determining which factor between perception and personality had the highest predictive ability when it comes to affecting the adoption of digital banking in South Africa (Matlala, 2022).

3.4.2 *Sample and sampling method*

Three hundred fifty survey responses were aimed for this study. Convenience sampling is when the participants are willing and available to be studied (Creswell, 2012). A large sample ensures that there will be fewer errors and that the sample will differ from the population (Creswell, 2012). Potential respondents were contacted through social media accounts and students at the University of Witwatersrand were contacted via email. The sampling method assists in reaching the target population, as permission to conduct the survey was obtained from the university.

Table 2: Description of the sample population

Description	Type
Age	18 and over
Digital banking usage	• Limited/no usage of digital banking channels • Moderate usage of digital banking channels • High usage of digital banking channels
Type of device	• Personal laptop • Work laptop • Mobile device

Similar demographic types were chosen in an online customer perception study (Pillay, 2021).

3.5 The research instrument

The research instrument was a questionnaire distributed electronically on the Qualtrics software. The questions were structured so respondents could select an answer from a given set of options (Bhattacherjee, 2012). A similar research tool was used in another study that measured patient perceptions of a telephone consultation (Lee et al., 2022). The responses were measured on a 5-point Likert scale, and the potential options were 1) strongly disagree, 2) disagree, 3) neither agree nor disagree, 4) somewhat agree, and 5) strongly agree. This

measurement scale is suitable for measuring people's opinions and attitudes in research studies (Hartley, 2013).

Appendix D presents the questionnaire items based on the following five constructs:

1) Intention to use: four survey questions measuring intention to use internet banking were adapted from Ridleun (2015).
2) Perceived risk: four survey questions measuring perceived risk when using internet banking were adapted from Demirdogen et al. (2010).
3) Perceived benefits: four survey questions measuring perceived benefits when using internet banking were adapted from Chaniotakis (2006).
4) Trust negatively affects the perceived risk of adopting digital banking services: three survey questions measuring customer's trust in a digital service were adapted from Kim et al. (2007).
5) Trust positivity affects intention to adopt digital banking services: three survey questions measuring trust as a positive characteristic when adopting internet banking were adapted from Vejačka & Štofa (2017).

3.6 Procedure for data collection

The questionnaire link was distributed on social media accounts to potential respondents and via email to the students at the university with a brief purpose of the survey. Permission was obtained from the Ethics Committee before the questionnaire was distributed. To reach the target population questionnaire links were sent to social media accounts. A similar process was followed by Danisa (2021) in a study to investigate factors that affect female entrepreneurial intentions in the South African digital ecosystem.

3.7 Data analysis strategies and interpretation

3.7.1 Descriptive analysis

This study used descriptive analysis to identify patterns and behaviours in large data sets and simplify the data (Loeb et al., 2017). Descriptive analytics was used to examine the responses from the target population on their intention to use digital banking services, its perceived benefits, and perceived risks; how trust positively affects their intention to adopt digital banking services and how trust negatively affects their perceived risks of these services.

Each question was assigned a numerical value to analyse the data, such as strongly disagree = 1, disagree = 2, neither agree nor disagree = 3, somewhat agree = 4, and strongly agree = 5 (Creswell, 2012). The scores were summed up to provide a single score representing all responses (Creswell, 2012).

The following descriptive statistical procedure was followed:

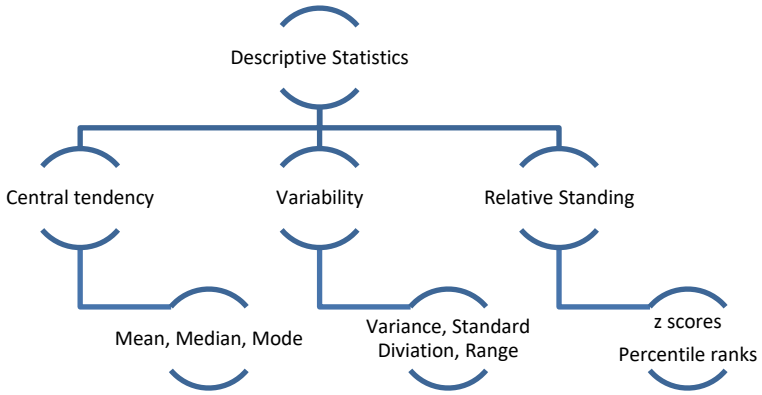


Figure 2: Descriptive statistical procedure **(Creswell, 2012)**

Central tendency is a collection of summaries that each reflect a single value. They were described as an average score (the mean), the midpoint of a group of scores (the median), or the score that appears the most frequently (the mode) (Creswell, 2012).

The range of scores in a distribution was referred to as variability. The degree of variability in the distribution of scores was shown by range, variance, and standard deviation (Creswell, 2012).

Relative standing is a statistic that compares one score to a set of scores (Creswell, 2012).

3.7.2 Inferential analysis

Inferential analysis compares multiple variables to draw inferences about the population (Creswell, 2012). Inferential analysis is done after the descriptive analysis to provide more conclusive outcomes (Ramnath, 2018). Descriptive analysis is different from inferential analysis because it is intended to test hypotheses (Bhattacherjee, 2012).

Inferential statistics refers to the p-value, which measures the likelihood that a hypothesis can be disproved by chance if it is 5% or less. A significant level is defined as 5% and above, which is the highest level we are ready to tolerate as the cost of drawing conclusions about the population from the sample (Bhattacherjee, 2012). If the p-value is less than 5%, there is a 5% chance of being incorrect in rejecting the null hypothesis. If the p-value is greater than 5%, there is not enough evidence to reject a null hypothesis (Bhattacherjee, 2012).

Correlation analysis

Correlation is a statistical technique that was used in this study to determine if there is a significant relationship between two variables (Ramnath, 2018). Correlation analysis was used to determine whether there is a relationship or observed covariance between two variables of interest (Hayes, 2012).

The correlation coefficient (r) range is from -1 to +1.

- If the correlation coefficient (r) equals +1, it will be a perfect positive correlation.

- If the correlation coefficient (r) equals -1, it will be a perfect negative correlation.
- If the correlation coefficient (r) equals 0, the two relevant variables don't relate to one another.
  (Hayes, 2012)

This study aimed to determine if there was a correlation between customers' intentions to use digital banking services, their perceived benefits, and their perceived risks. The study also aimed to determine if there was a correlation between customers whose trust positively affects their intention to adopt digital banking services and whose trust negatively affects their perceived risks of adopting digital banking services.

Regression analysis

Regression analysis was used to determine if the independent variables predicted the dependant variables (Hayes, 2012). A statistical method for assessing the strength of a link between an independent and dependent variable is regression analysis. (Hayes, 2012).

For the regression analysis in this study, simple linear regression was performed (Hayes, 2012). It predicts one dependent variable against one predictor (Hayes, 2012).

Simple linear regression is expressed as follows:

$y = \beta_0 + \beta_1 x + \varepsilon$

y = dependent variable

x = predictor

$\beta_0 =$ y intercept

β_1 = the slope

ε = the error

Simple linear regression aims to determine if the hypotheses positively or negatively affect the adoption of digital banking services.

In this investigation, Goodness of Fit was employed to assess whether the study's data correlated with a model's expected values (Hayes, 2012). R squared is used as an evaluation metric in regression to assess the scatter of data points around the fitted regression line (Keer, Lohiya, & Chouhan, 2023). R-squared measures how much of the variance in the dependent variable can be accounted for by the independent variable (Keer et al., 2023). The value of R-squared is between 0% and 100%. 0% means the model does not justify the irregularity of the response data around the mean. 100% means the model does justify the irregularity of the response data around the mean (Keer et al., 2023).

3.8 Limitations of the Study

The study aimed to determine if there was a perceived risk or benefit in adopting digital banking. Respondents may be unable to recollect their experiences and may be biased (Lee et al., 2022). Respondents may have two types of potential bias in this study, i.e., cognitive bias and social desirability bias. Cognitive bias is a mental flaw that causes people to misperceive information from their environment, which impairs their ability to think clearly and make accurate decisions (Qualtrics, 2023). Social desirability bias is when respondents are questioned about sensitive topics and what they perceive as the more socially acceptable response rather than responding honestly (Qualtrics, 2023).

The study aimed to capture responses from customers 18 years and older. However, The recruitment process could limit responses from older people not on social media or a student at the University of Witwatersrand (Lee et al., 2022).

3.9 Quality Assurance

3.9.1 *External validity*

External validity refers to the validity of how one event makes another event happen, generalizable to other persons, settings, treatment variables and measures (Creswell, 2012). The target population will base their experience on a past event, which may threaten the external validity (Creswell, 2012). The study's external validity may be used to generalize the possibility of digital fraud due to all banks' use of digital banking services.

3.9.2 *Internal validity*

Internal validity referred to the validity of inferences drawn about how one event makes another event happen between the independent and dependent variables (Creswell, 2012). When customers perceive the risks or benefits of digital banking services, their responses may be influenced by a recent good or bad event (Creswell, 2012). If some respondents base their answers on their most recent positive or negative experiences, the study's internal validity may impact the overall outcome. Internal validity reveals if the study's findings are reliable in light of how the study's groups were chosen, the data were collected, or the analyses were carried out (Mohajan, 2017). The study applied content validity, face validity and construct validity. Content validity is the extent to which the questions in the instrument represent all possible questions about the content (Mohajan, 2017). Face validity refers to how well a test appears to measure what it claims to measure (Mohajan, 2017). Construct validity ensures that what was intended to be measured was measured, as well as other variables (Mohajan, 2017). Construct validity is a make-up of two sub-types of validity, i.e., convergent and discriminant validity (Lin et al., 2015). The degree to which results from one measure show a high, medium, or low connection with results from another test intended to evaluate the same construct is known as convergent validity (Mohajan, 2017). When two variables are theoretically anticipated to be

uncorrelated, and the measured scores reveal this realistically, discriminant validity has been established, i.e., to distinguish one group from another, the hypothesis is established (Mohajan, 2017). Marakarkandy et al., (2016) researched decision factors that enabled the adoption of internet banking technology. Five constructs were identified in the study, and the factor loading was more significant than the recommended value of 0.5. This outcome supported convergent validity. Discriminant validity was proven by using the standard that the AVE estimates for the construct should be greater than the square of the estimates of the inter-construct correlation.

3.9.3 *Reliability*

The respondents' responses were on a 5-point Likert scale. This method will make the measurement more reliable as the responses would not vary from respondent to respondent (Bhattacherjee, 2012). The correlation of the scores from two or more independent raters, or the coefficient of agreement of the raters' judgements, determines reliability (Mohajan, 2017). It is helpful because human observers will not always perceive results similarly (Mohajan, 2017). In this study, inter-rater reliability relates to the extent of differences between customers who perceived risk, perceived benefits, and intended to use or trust digital banking services. Cronbach's alpha (α) is the most common indicator of internal consistency and is typically regarded as the mean of all potential split-half coefficients (Mohajan, 2017). It usually ranges between 0 and 1, with 0 denoting a lack of link between the scale's elements and one denoting complete internal consistency (Mohajan, 2017). Alpha values above 0.7 are considered satisfactory and acceptable, above 0.8 are considered reasonably good, and above 0.9 reflect perceptional internal consistency (Mohajan, 2017).

3.10 Ethical considerations

In survey research, researchers typically disassociate names from responses during the coding and recording process (Creswell, 2009). This study did not

request names, surnames, or personal identification numbers. Participation in the survey was voluntary, and respondents had the right not to participate (Bhattacherjee, 2012). The questionnaire link was distributed with full disclosure of the purpose of the study and expected outcomes (Bhattacherjee, 2012). The survey underwent a formal ethics application process via Wits ethical procedures. The ethics protocol number is WBS/DB2030478/827 (Appendix E).

CHAPTER 4. PRESENTATION OF RESULTS / FINDINGS

4.1 Introduction

This chapter presents the study's findings. The chapter will outline the response rate, describe the sample population and then present the results relating to the five hypotheses. The chapter closed with a summary of the results.

4.2 Response rate

The study targeted 350 respondents. 150 respondents responded, representing a 42,9% response rate. The response rate aligns with expectations compared to another online survey and similar populations (Couper et al., 2001).

4.3 Descriptive analysis

4.3.1 Digital Banking usage

Based on the below results (*Table 3*), the majority of respondents (56%) reported high usage of digital banking channels, one-third of respondents (32.7%) reported moderate usage, and a smaller portion of respondents (11.3%) reported limited usage.

Table 3: Please indicate your digital banking usage.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Limited usage on digital banking channels	17	11,3	11,3	11,3
	Moderate usage on digital banking channels	49	32,7	32,7	44,0
	High usage on digital banking channels	84	56,0	56,0	100,0
	Total	150	100.00	100,0	

4.3.2 Type of Device

Based on the below results (*Table 4*), most respondents (91.3%) reported using a mobile device for digital banking services. A small percentage of respondents reported using a personal laptop (6.0%) or a work laptop (2.7%).

Table 4: Type of device when performing a digital banking service.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mobile	137	91,3	91,3	91,3
	Personal laptop	9	6,0	6,0	97,3
	Work laptop	4	2,7	2,7	100,0
	Total	150	100	100,0	

4.4 Results pertaining to Hypothesis 1: A customer's intention to use digital banking services (INTENTION) via a digital banking channel will positively affect the adoption of digital banking services.

The results in *Table 5* and *Figure 3* in Appendix F show that the mean intention score is 1.4133, indicating a generally positive intention to adopt digital banking services. The skewness value of 2.253 suggests a right-skewed distribution, indicating a subgroup of respondents with even higher intention scores. The kurtosis value of 7.797 indicates a distribution with heavy tails and a sharp peak, suggesting a concentration of respondents with high intention scores.

Table 5: Descriptive analysis

		Intention	Risk	Benefits	Trust
N	Valid	150	150	150	150
Mean		1,4133	2,6283	1,4133	1,9867
Median		1,0000	2,5000	1,2500	2,0000
Mode		1,00	2,50	1,00	2,00
Std. Deviation		,65474	,82826	,45427	,62436
Variance		,429	,686	,206	,390
Skewness		2,253	,398	1,004	,087
Std. Error of Skewness		,198	,198	,198	,198
Kurtosis		7,797	-,152	,685	-,356
Std. Error of Kurtosis		,394	,394	,394	,394
Range		4,00	4,00	2,25	2,67

4.5 Results pertaining to Hypothesis 2: A customer's perceived risk negatively affects the adoption of digital banking services.

The results in *Table 5* above and *Figure 4* in Appendix F show that the mean Risk score is 2.6283, indicating a moderate level of perceived risk among respondents. The skewness value of 0.398 suggests a slight right skewness, indicating a subgroup with higher perceived risk. The kurtosis value of -0.152 suggests a distribution with lighter tails, possibly indicating a more even spread of risk perceptions among the respondents.

4.6 Results pertaining to Hypothesis 3: A customer's perceived benefits positively affect the adoption of digital banking services.

The results in *Table 5* above and *Figure 5* in Appendix F show that the mean Benefits score is 1.4133, indicating a generally positive perception of the benefits of digital banking services. The skewness value of 1.004 suggests a right-skewed distribution, indicating a subgroup with even more positive perceptions of benefits. The kurtosis value of 0.685 indicates a distribution with slightly heavier tails, suggesting some variability in perceptions of benefits.

4.7 Results pertaining to Hypothesis 4a and 4b: A customer's trust (TRUST) negatively affects the customers' perceived risk of adopting digital banking services, and A customer's trust (TRUST) positively affects the customer's intention to adopt digital banking services.

The results in *Table 5* show and *Figure 6* in Appendix F a consolidated analysis for Hypotheses 4a and 4b, because one variable was measured being Trust. The mean Trust score is 1.9867, indicating a positive trust level in digital banking

services. The skewness value of 0.087 suggests a nearly symmetric distribution of trust scores. The kurtosis value of -0.356 suggests a distribution with lighter tails, indicating a more even spread of trust perceptions.

4.8 Correlation analysis

The provided correlation analysis output (*Table 6*) explored the relationships between the variables of interest: Intention, Risk, Benefits and Trust. The data is a non-normal distribution showing a combination of heavy and light tails and a right skewness distribution. This has implications for the correlation test selected below.

Table 6: Correlation analysis

Correlations

		Intention	Risk	Benefits	Trust
Intention	Pearson Correlation	1	-,040	,468**	,334**
	Sig. (2-tailed)		,630	<,001	<,001
	N	150	150	150	150
Risk	Pearson Correlation	-,040	1	-,079	-,345**
	Sig. (2-tailed)	,630		,334	<,001
	N	150	150	150	150
Benefits	Pearson Correlation	,468**	-,079	1	,448**
	Sig. (2-tailed)	<,001	,334		<,001
	N	150	150	150	150
Trust	Pearson Correlation	,334**	-,345**	,448**	1
	Sig. (2-tailed)	<,001	<,001	<,001	

	N	150	150	150	150
**. Correlation is significant at the 0.01 level (2-tailed).					

4.8.1 Intention correlations

- Intention and Risk:
  - Pearson Correlation: -0.040
  - Significance (2-tailed): 0.630

Based on the above, the correlation between Intention and Risk is weak and not statistically significant (p = 0.630).

- Intention and Benefits:
  - Pearson Correlation: 0.468 (strong positive correlation)
  - Significance (2-tailed): < 0.001

There is a strong positive correlation (p < 0.001) between Intention and Benefits

- Intention and Trust:
  - Pearson Correlation: 0.334 (moderate positive correlation)
  - Significance (2-tailed): < 0.001

A moderate positive correlation (p < 0.001) exists between Intention and Trust.

4.8.2 Risk correlations

- *Risk and Benefits:*
  - Pearson Correlation: -0.079
  - Significance (2-tailed): 0.334

The above correlation results between Risk and Benefits are weak and not statistically significant (p = 0.334).

- *Risk and Trust:*
  - Pearson Correlation: -0.345 (moderate negative correlation)

- Significance (2-tailed): < 0.001

The above correlation results indicate a moderate negative correlation ($p < 0.001$) between Risk and Trust.

4.8.3 Benefits correlations

- *Benefits and Trust:*
  - Pearson Correlation: 0.448 (strong positive correlation)
  - Significance (2-tailed): < 0.001

Based on the above results, a strong positive correlation ($p < 0.001$) exists between Benefits and Trust.

4.9 Regression analysis

4.9.1 *Results pertaining to the regression analysis: Intention vs Risk*

Model Summary *(Table 7)*:

The R Square value of (0.002) indicates that the model explains only a tiny proportion of the variance in the dependent variable (Intention). The adjusted R Square value of (-0.005) adjusts for the number of predictors in the model and is negative, suggesting that the inclusion of the predictor variable (Risk) does not improve the model fit.

Table 7: Model Summary

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	,040[a]	,002	-,005	,65643	,002	,233	1	148	,630
a. Predictors: (Constant), Risk									

ANOVA (*Table 8*):

The "Regression" section of the table represents the variation explained by the model (predictor variable: Risk), the "Residual" section represents the unexplained or error variation in the model, and the "Total" section includes both the explained and unexplained variations.

The F-statistic (0.233) tests whether the regression model, which includes the predictor variable (Risk), provides a better fit than a model with no predictors (constant only). The p-value (Sig.) associated with the F-statistic is 0.630. This p-value is more significant than the conventional significance level of 0.01, indicating that the regression model is not statistically significant. The non-significant F-statistic aligns with the earlier interpretation of the Model Summary, indicating that the explanation of the change in the variable (Intention) is not substantially improved by the model (Risk as a predictor).

Table 8: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,101	1	,101	,233	,630[b]
	Residual	63,773	148	,431		
	Total	63,873	149			
a. Dependent Variable: Intention						
b. Predictors: (Constant), Risk						

Coefficient (*Table 9*)

The intercept (constant) represents the estimated value of the dependent variable (Intention) when the predictor variable (Risk) is zero. The coefficient for Risk (-0.031) represents the estimated change in the dependent variable for a one-unit change in the predictor variable. The t-values for the constant (8.362) and Risk (-0.483) are associated with the significance of each coefficient. The p-value (Sig.) for the constant is highly significant (< 0.001), indicating that the intercept is significantly different from zero. The p-value for Risk (0.630) is not significant at conventional levels of 0.01, indicating that the coefficient for Risk is not significantly different from zero.

Table 9: Coefficients

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1,496	,179		8,362	<,001		

	Risk	-,031	,065	-,040	-,483	,630	1,000	1,000

a. Dependent Variable: Intention

4.9.2 *Results pertaining to the regression analysis: Intention vs Benefit*

Model Summary *(Table 10*)

The R Square value (0.219) indicated that a substantial proportion of the variance in the dependent variable (Intention) compared to the previous model. The adjusted R Square (0.214), adjusting for the number of predictors, remains high, suggesting that the inclusion of the predictor variable (Benefits) significantly improves the model fit, which is the respondent's intention to adopt the use of digital banking services. The significant F Change ($p < 0.001$) indicates that adding the predictor variable (Benefits) significantly improves the model fit compared to a model with no predictors.

Table 10: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,468[a]	,219	,214	,58050	,219	41,547	1	148	<,001

a. Predictors: (Constant), Benefits

ANOVA (*Table 11*)

The F-statistic of 41.547 is highly significant ($p < 0.001$), indicating that the overall model, with Benefits as a predictor, is a significantly better fit than a model with no predictors (constant only). The substantial difference in the sum of squares between Regression and Residual (14.001 vs 49.873) suggests that including Benefits as a predictor explains significant variation in the dependent variable (Intention).

Table 11: ANOVA

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14,001	1	14,001	41,547	<,001[b]
	Residual	49,873	148	,337		
	Total	63,873	149			
a. Dependent Variable: Intention						
b. Predictors: (Constant), Benefits						

Coefficient *(Table 12)*:

The constant (intercept) of 0.460 is significant ($p = 0.004$), indicating that when Benefits are zero, the estimated intention to adopt digital banking services significantly differs from zero. The Benefits coefficient of 0.675 is highly significant ($p < 0.001$). This outcome suggests that the intention to adopt digital banking services increases by 0.675 units for a one-unit change in Benefits. Benefits have a standardized coefficient (Beta) of 0.468, which indicates the intensity and direction of the association. It suggests that a one-standard-deviation (Std Dev) increase in Benefits is associated with a 0.468 Std Dev increase in the intention to adopt digital banking services.

Table 12: Coefficients

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,460	,155		2,959	,004		
	Benefits	,675	,105	,468	6,446	<,001	1,000	1,000
a. Dependent Variable: Intention								

4.9.3 *Results pertaining to the regression analysis: A customer's trust (TRUST) negativity affects the customer's perceived risk of the adoption of digital banking services.*

Model summary (*Table 13*)

The model explains a moderate proportion of the variance in the dependent variable (Risk), as indicated by the R Square of 0.119. The Adjusted R Square of 0.113 suggests that the inclusion of the predictor variable (Trust) contributes to the model fit. The significant F Change ($p < 0.001$) indicates that adding the predictor variable (Trust) significantly improves the model fit compared to a model with no predictors.

Table 13: Model Summary

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	,345[a]	,119	,113	,77989	,119	20,055	1	148	<,001
a. Predictors: (Constant), Trust									

ANOVA (*Table 14*)

The significant F-statistic of 20.055 ($p < 0.001$) indicates that the model with Trust as a predictor is a significantly better fit than a model with no predictors. The substantial difference in the sum of squares between Regression and Residual (12.198 vs. 90.019) suggests that the inclusion of Trust as a predictor explains significant variation in the dependent variable (Risk).

Table 14: ANOVA

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12,198	1	12,198	20,055	<,001[b]
	Residual	90,019	148	,608		
	Total	102,217	149			
a. Dependent Variable: Risk						
b. Predictors: (Constant), Trust						

Coefficient (*Table 15*)

The constant (intercept) of 3.539 is highly significant ($p < 0.001$), suggesting that when Trust is zero, the estimated risk is significantly different from zero. The Trust coefficient of -0.458 is highly significant ($p < 0.001$), indicating that a one-unit change in Trust is associated with a -0.458 unit change in the risk. The negative coefficient signifies that trust negativity is associated with increased perceived risk. The standardised coefficient (Beta) for Trust is -0.345, reflecting the strength and direction of the association. A one Std Dev increase in Trust is associated with a -0.345 Std-Dev decrease in perceived risk.

Table 15: Coefficients

Coefficients[a]								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	3,539	,213		16,611	<,001		
	Trust	-,458	,102	-,345	-4,478	<,001	1,000	1,000
a. Dependent Variable: Risk								

4.9.4 *Results pertaining to the regression analysis: A customer's trust (TRUST) positively affects the customer's intention to adopt digital banking services.*

Model Summary (*Table 16*)

The model explains a moderate proportion of the variance in the dependent variable (Intention), as indicated by the R Square of 0.111. The adjusted R Square of 0.105 suggests that including the predictor variable (Trust) contributes to the model fit. The significant F Change ($p < 0.001$) indicates that adding the

predictor variable (Trust) significantly improves the model fit. The moderate R Square suggests that trust positively affects the intention to adopt digital banking services.

Table 16: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	,334[a]	,111	,105	,61928	,111	18,548	1	148	<,001

a. Predictors: (Constant), Trust

ANOVA (*Table 17*)

The significant F-statistic of 18.548 ($p < 0.001$) indicates that the model with Trust as a predictor is a significantly better fit than a model with no predictors. The substantial difference in the sum of squares between Regression and Residual (7.113 vs. 56.760) suggests that the inclusion of Trust as a predictor explains significant variation in the dependent variable (Intention). The ANOVA results strongly support Hypothesis 4b, indicating that a customer's trust positively affects their intention to adopt digital banking services.

Table 17: ANOVA

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7,113	1	7,113	18,548	<,001[b]
	Residual	56,760	148	,384		
	Total	63,873	149			
a. Dependent Variable: Intention						
b. Predictors: (Constant), Trust						

Coefficient (*Table 18*)

The constant (intercept) of 0.718 is highly significant ($p < 0.001$), suggesting that when Trust is zero, the estimated intention to adopt digital banking services is significantly different from zero. The Trust coefficient of 0.350 is highly significant ($p < 0.001$), demonstrating that a one-unit change in Trust is connected with a 0.350 units change in the propensity to utilize digital banking services. The positive coefficient indicates that trust improves the propensity to use these services. The standardized coefficient (Beta) for Trust is 0.334, reflecting the strength and direction of the association.. It suggests that a one Std Dev increase in Trust is associated with a 0.334 Std Dev increase in the intention to adopt digital banking services.

Table 18: Coefficients

Coefficients[a]					
Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Collinearity Statistics

		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,718	,169		4,245	<,001		
	Trust	,350	,081	,334	4,307	<,001	1,000	1,000
a. Dependent Variable: Intention								

4.10 Quality Assurance

Table 19: Internal Consistency: Cronbach's Alpha Results for the survey

The survey adopted research question items from past studies to measure the 5 constructs. The table below shows Cronbach's alpha and the sources from which they were adapted.

Construct	Cronbach Alpha	Adapted from
Intention to use	0.918	(Ridleun, 2015)
Perceived Risks	0.795	(Demirdogen et al., 2010)
Perceived Benefits	0.937	(Chaniotakis, 2006)
Trust negatively affects the perceived risk of adopting digital banking services	0.774	(Kim et al., 2007)

Trust positivity affects intention to adopt digital banking services	0.921	(Vejačka & Štofa, 2017)

Alpha values above 0.7 are considered satisfactory and acceptable (Mohajan, 2017).

4.11 Hypothesis Outcomes

Table 20: Hypothesis Outcomes

Hypotheses	Description	Outcome (Accept or reject)
H1	A customer's intention to use digital banking services (INTENTION) via a digital banking channel will positively affect the adoption of the digital banking services.	Accept
H2	A customer's perceived risk negatively affects the adoption of digital banking services.	Reject
H3	A customer's perceived benefits positively affect the adoption of digital banking services.	Accept
H4a	A customer's trust (TRUST) negatively affects the customers perceived risk of the adoption of digital banking services.	Accept

H4b	A customer’s trust (TRUST) positively affects the customer's intention to adopt digital banking services.	Accept

CHAPTER 5. DISCUSSION OF THE RESULTS OR FINDINGS

5.1 Introduction

This chapter discusses the findings of the study. The chapter starts with a discussion and interpretation of the results for each hypothesis. Lastly, the chapter ends with a summary.

5.2 Discussion pertaining to Hypothesis 1: A customer's intention to use digital banking services (INTENTION) via a digital banking channel will positively affect the adoption of digital banking services.

The findings revealed that there was generally a good intent from the customer to utilize digital banking services. Customers' willingness to use digital banking services is favourably influenced by brand recognition and perceived quality (Lee et al., 2019). The descriptive findings align with Hypothesis 1, as the descriptive statistics support the notion of a positive intention to adopt digital banking services. The correlation between Intention and Risk was weak and statistically insignificant ($p = 0.630$), indicating no significant linear relationship between respondents' intention to adopt digital banking services and their perceived risk. On the other hand, strong positive correlations were observed between intention and both perceived benefits ($p < 0.001$) and trust ($p < 0.001$), indicating that the inclination to utilize digital banking services tends to increase along with the perceived benefits and trust in these services. This outcome supports the idea that the link between intention and behaviour was predicted based on the concept that customers try to make sensible decisions based on the information (Kim et al., 2007).

In conclusion, after an analysis of the descriptive analysis and correlation analysis pertaining to Hypothesis 1, the hypothesis is supported, which suggests that a customer's intent to use digital banking services through a digital banking channel will favourably affect the uptake of digital banking services. Therefore, we accept Hypothesis 1, suggesting that, in the context of this study, intention alone does influence the adoption of digital banking services.

5.3 Discussion pertaining to Hypothesis 2: A customer's perceived risk negatively affects the adoption of digital banking services.

The overall mean suggests a moderate level of perceived risk. The skewness and kurtosis values suggest that the distribution is not heavily concentrated in either extreme. This distribution reflects varied perceptions of risk among respondents.

In examining the regression analysis, it is evident that the model incorporating perceived risk (Risk) as a predictor variable does not effectively explain the variation in the dependent variable (Intention). The very low R Square value (0.002) indicated that only a negligible proportion of the variance in intention is accounted for by the inclusion of risk. The negative Adjusted R Square (-0.005) highlighted that the addition of risk did not enhance the overall model fit. Furthermore, the non-significant F-statistic (0.233) in the ANOVA table indicated that the model, inclusive of risk, is not statistically significant, emphasising that different people's intentions to utilize digital banking services cannot be explained by perceived risk alone. The coefficient for risk (-0.031) lacks statistical significance ($p = 0.630$), suggesting that perceived risk does not have a significant linear relationship with the intention to adopt digital banking services. In conclusion, after an analysis of the regression model and ANOVA results pertaining to Hypothesis 2, which posits that a customer's perceived risk negatively affects the adoption of digital banking services, the evidence does not strongly support the hypothesis.

The literature review indicated that perceptions of risks can be associated with perceived risks of technology (Thusi & Maduku, 2020). Sharing of personal information is a perceived risk as customers are afraid that their data is being stolen (Rutherford, 2023). Lastly, there is a perceived risk if a digital channel does not have sufficient security controls (Ramavhona & Mokwena, 2016).

However, we reject Hypothesis 2, suggesting that, in the context of this study, perceived risk alone does not exert a significant negative influence on the intention to adopt digital banking services. This conclusion is drawn from an analysis of the regression model and ANOVA results.

5.4 Discussion pertaining to Hypothesis 3: A customers perceived benefits positively affects the adoption of digital banking services.

There were strong positive correlations observed between intention and both perceived benefits ($p < 0.001$) and trust ($p < 0.001$), indicating that the inclination to utilize digital banking services tends to increase along with the perceived benefits and trust in these services.

The regression analysis strongly supports Hypothesis 3, which posits that a customer's perceived benefits positively affect the adoption of digital banking services. The substantial R Square value (0.219) implies that the model, incorporating perceived benefits (Benefits) as a predictor, explained a significant portion of the variance in the dependent variable (Intention). The significant F Change ($p < 0.001$) further confirmed that the model, enriched by the inclusion of Benefits, significantly enhanced the overall fit compared to a model without predictors. The ANOVA results provided additional support, with a highly significant F-statistic (41.547), indicating that the inclusion of Benefits explained substantial variation in the intention to adopt digital banking services. The coefficients reinforced this, as both the constant and Benefits coefficients were highly significant, with a positive relationship between perceived benefits and

intention to adopt. Therefore, based on the regression analysis, accept Hypothesis 3, affirming that, in the context of this study, a customer's perceived benefits play a pivotal role in positively influencing the adoption of digital banking services.

Drawing from the literature, the results from the regression analysis were consistent with the conceptualisation of perceived benefits in the context of digital banking services. The literature, as evidenced by Kim et al. (2007), Kumar and Diwedi (2021), and observations during the pandemic (Writer, 2023), emphasises that perceived benefits are tied to a customer's estimation of how adopting digital channels will enhance their situation. The results from the regression analysis indicated a favourable and robust correlation between the intent to use digital banking services and the perceived benefits.

5.5 Discussion pertaining to Hypothesis 4a: A customer's trust (TRUST) negatively affects the customer's perceived risk of the adoption of digital banking services.

A moderate negative correlation ($p < 0.001$) was identified between Risk and Trust, indicating that trust in digital banking services tends to decrease as perceived risk increases.

In the context of this study, the results from the regression analysis strongly supported Hypothesis 4a, which posits that a customer's trust negativity influences their perceived risk in adopting digital banking services. The Model Summary highlighted that the inclusion of the predictor variable (Trust) significantly contributed to explaining the variance in the dependent variable (Risk), with a moderate R Square of 0.119. The Adjusted R Square (0.113) reinforced the positive impact of Trust on the model fit. The ANOVA results further highlighted the significance of Trust as a predictor, with a highly significant F-statistic (20.055, $p < 0.001$. The Coefficient analysis provided detailed insights, with a highly significant constant, emphasising that when Trust is zero, the

estimated risk significantly differs from zero. The negative coefficient for Trust (-0.458) and its standardised counterpart (-0.345) affirmed that trust negativity is associated with an increase in perceived risk, offering a quantitative understanding of this relationship. Importantly, the stability of the model, as indicated by collinearity statistics, adds robustness to the conclusion.

Drawing from the literature, the findings related to this hypothesis aligned with the theoretical underpinnings that suggested that trust plays a critical role in mitigating the impact of perceived risk associated with digital banking services. Kim et al. (2007) highlighted that customers engage in digital transactions, trusting that the associated risks will be low. This aligned with the negative relationship observed in Hypothesis 4a, where trust negativity is linked to an increase in perceived risk. Additionally, the literature emphasised the importance of perceived benefits outweighing perceived risks, which resonates with the broader context of digital banking adoption (Kim et al., 2007).

5.6 Discussion pertaining to Hypothesis 4b: A customer's trust (TRUST) positively affects the customer's intention to adopt digital banking services.

The correlation analysis highlighted the importance of perceived benefits and trust in influencing individuals' intentions to adopt digital banking services while highlighting the relationship between the intention to adopt the use of digital banking services and these factors.

The outcome from the regression analysis provided support and acceptance for Hypothesis 4b, which posits that customers' trust in digital banking services favourably increases the use of the service. The model, as indicated by the R Square of 0.111, demonstrated a moderate ability to explain the variance in the dependent variable (Intention), and the Adjusted R Square of 0.105 underscored the contribution of the predictor variable (Trust) to the model fit. The significant F Change ($p < 0.001$) further accentuated that the inclusion of Trust significantly

enhanced the model fit compared to a model without predictors. The ANOVA results reinforced the hypothesis, with a highly significant F-statistic (18.548) indicating that the overall model, with Trust as a predictor, is a superior fit. The substantial difference in the sum of squares between Regression and Residual (7.113 vs. 56.760) emphasised that a substantial variation in the desire to use digital banking services might be explained by Trust. Examining the coefficients, the highly significant intercept and Trust coefficient reinforce that when Trust is zero, the estimated intention is significantly different from zero, and a one-unit change in Trust is associated with a favourable change in the customer's desire to use digital banking services. The standardised coefficient (Beta) for Trust (0.334) provided further insight into the strength and direction of this positive relationship. In conclusion, the findings support Hypothesis 4b, affirming that, in the context of this study, trust plays a pivotal role in shaping customers' intentions to embrace digital banking services.

The literature emphasised that transparency about digital platform security controls enhances customer trust (Dzomira, 2017). As highlighted in the literature, the accelerated shift to digital banking during the Covid-19 pandemic further supports the conclusion that trust significantly influences the intention to adopt digital banking services (Keraan, 2021). In summary, the findings corroborate the literature, emphasising the importance of trust in determining customers' readiness to embrace digital banking services.

5.7 Conclusion

The study aimed to understand the extent of how digital fraud affected customers' adoption of digital banking services in South Africa using the trust-based decision-making model (Kim et al., 2007). The study proposed five hypotheses:

Hypothesis 1 was to determine if a customer intends to use digital services on banking channels, and if so, it will positively impact adoption. The results from the study support the hypothesis, and therefore, Hypothesis 1 is accepted.

Hypothesis 2 was to investigate if a customer's perceived risk negatively affects adopting digital banking services. In the context of this study, perceived risk alone does not exert a significant negative influence on the intention to adopt digital banking services and therefore, Hypothesis 2 is rejected.

Hypothesis 3 was to investigate if customers' perceived benefits positively affect the adoption of digital banking services. The findings indicate a substantial and positive association between perceived benefits and intention to use digital banking services; therefore, Hypothesis 3 is accepted.

Hypothesis 4a was to investigate if a customer's trust negatively affects the perceived risk of adopting digital banking services. The findings related to this hypothesis aligned with the theoretical underpinnings that suggested that trust plays a critical role in mitigating the impact of perceived risk associated with digital banking services. Therefore, Hypothesis 4a is accepted.

Hypothesis 4b was to investigate if a customer's trust positively affects the customer's intention to adopt digital banking services. The results affirmed that trust is pivotal in shaping customers' intentions to embrace digital banking services. Therefore, Hypothesis 4b is accepted.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

The chapter provides a conclusion to this study. The limitations were examined and recommendations for future research were proposed. The chapter concludes with theoretical and practical contributions.

6.2 Conclusions regarding the research question

The study's main question was to determine the extent to which the threat of digital fraud affects customers' adoption of digital banking services in South Africa. The rationale for the study was based on research that indicated that fraud is a problem because there are deliberate fraud incidents experienced by customers (Akinbowale et al., 2023). South Africa is experiencing significant challenges regarding digital crime, and fraudsters are employing various tactics to exploit customers (SABRIC a, 2023). Further research indicated that customers feared adopting digital channels because they thought they had fewer security controls (Rutherford, 2023). A study was conducted to examine customers' intentions, perceived benefits and risks, and trust in adopting digital banking services.

The analysis of Hypothesis 1 indicated that there is a positive intention to adopt digital channels. The factors positively impacting are brand awareness, loyalty, and perceived quality (Lee et al., 2019). This finding indicated that devoted consumers who see the value in their digital banking service are more inclined to use it.

The analysis of Hypothesis 2 indicated that perceived risk alone does not significantly influence the intention to adopt digital banking services. The findings contradicted research that perceived risk impacts adoption (Thusi & Maduku,

2020). This outcome suggests that customers weigh their positive and negative options before rejecting digital banking services.

The analysis of Hypothesis 3 indicated that if a customer perceived benefits when using digital banking channels, this would likely increase their use of the services. The literature, as evidenced by Kim et al. (2007), Kumar and Diwedi (2021), and observations during the pandemic (Writer, 2023), emphasises that perceived benefits are tied to a customer's estimation of how adopting digital channels will enhance their situation.

The analysis of Hypothesis 4a indicated that a customer's trust negativity influences their perceived risk in adopting digital banking services. Kim et al. (2007) highlighted that customers engage in digital transactions, trusting that the associated risks will be low. This outcome aligned with the negative relationship observed in Hypothesis 4a, where trust negativity is linked to an increase in perceived risk.

The analysis of Hypothesis 4b indicated that a customer's trust in digital banking will positively impact the use of the services. The literature emphasised that transparency about digital platform security controls enhances customer trust (Dzomira, 2017). As highlighted in the literature, the accelerated shift to digital banking during the Covid-19 pandemic further supports the conclusion that trust significantly impacts the intention to adopt digital banking services (Keraan, 2021).

In summary, the study revealed that customers will positively use services on digital banking. Perceived risk alone does not impact the adoption of digital banking services. However, when customers' trust decreases when using digital banking services, their perceived risk increases, negatively affecting their use of digital banking services. The adoption of digital banking services increases when customers see benefits when using them, and there was no evidence in the analysis suggesting that increased risk negativity affects adoption when there are benefits.

6.3 Limitations and suggestions for further research

A key limitation of this study is that it only focused on South Africa. There is an opportunity to assess how digital fraud affects the adoption of digital banking services in other countries. Therefore, it might be important to investigate the phenomenon in other developing country contexts. This suggestion may bring learnings which could result in quicker adoption.

The second limitation is that digital fraud affects multiple industries in South Africa and other African countries; hence, a similar study could be conducted in the e-commerce industry to understand if customers prefer physical stores over digital stores because they fear fraud incidents and becoming victims.

The third limitation is selection bias in a quantitative research approach. Further research could be conducted using a qualitative research approach as the analysis and interpretation could deeply comprehend people's meanings (Matsepe & Lingen, 2022).

The study’s results indicated that if a customer perceived risk alone, it would not deter them from using digital banking services. The outcome is contrary to the research review in Chapter 2. Thus, further research could be conducted by collecting data from in-depth interviews or focus groups. Researchers can learn more about people's attitudes and behaviours through these methods (Gøthesen et al., 2023).

The study's results indicated that trust positively influences the adoption of digital banking services. Further studies could be conducted to determine if an organisation has a good brand awareness and public relations strategy that can mitigate the threat of digital fraud.

6.4 Theoretical and practical contributions of the study

Theoretical contributions

The study has used the trust-based decision-making model framework (Kim et al., 2007). The study highlighted that trust was important in the ultimate decision-making process. As a result, this study has offered a holistic perspective on how customers make decisions by considering perceived risk, perceived benefits, and trust (Kim et al., 2007).

This study provides important insights into the customers' decision-making process when adopting digital banking services. South African banks can leverage these insights to enhance their digital experiences.

Practical contributions

This study has the potential of emphasising the impact of digital banking fraud on adoption methods, which may assist the banking industry in South Africa. The study findings may assist stakeholders in the banking industry in creating more awareness of digital banking fraud and highlighting their controls to mitigate the different types of fraud. The study found that perceived benefits increase the adoption of digital banking services; thus, banks can promote the benefits of their digital banking services as an adoption strategy. The study's findings demonstrate how trust is essential when a customer is considering using digital banking services. The research may also create awareness of digital banking fraud and prompt banks to enhance their security features that would create trust with customers and stakeholders.

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APPENDIX A: Consistency table: research questions, propositions, data collection and data analysis

RQ #		State Research Question	Prop/hyp #	State Hypothesis	Data collection detail	Data analysis method
1.2		To what extent does the threat of digital fraud affect the adoption of digital banking services in South Africa?	1, 2, 3, 4a, 4b	1. A customer's intention to use digital banking services (INTENTION) via a digital banking channel will positively affect the adoption of digital banking services. 2. A customer's perceived risk affects the adoption of digital banking services. 3. A customers perceived benefits positively affects	Questionnaire Likert statement 4 - 21	Descriptive analysis, correlation analysis and regression analysis

RQ #		State Research Question	Prop/hyp #	State Hypothesis	Data collection detail	Data analysis method
				the adoption of digital banking services. 4a. A customer's trust (TRUST) negatively affects the customers perceived risk of the adoption of digital banking services. 4b. A customer's trust (TRUST) positively affects the customers intention to adopt digital banking services.		

APPENDIX B: Participant Information Sheet

Good day Participant,

My name is Kevandren Naidoo, I am currently a Master of Management: Digital Business student at Witwatersrand Business School of the University of Witwatersrand. My supervisor is Mr. Mitchell Hughes. A requirement for graduating is the completion of a research report. My research topic is Digital fraud and the adoption of digital banking services in South Africa.

Fraud is a problem on a worldwide scale because it entails deliberate fraud on customers and the misappropriation of organisational resources. The study aims to investigate the role of digital fraud in the adoption of digital banking services in South Africa.

I am inviting you to take part in a questionnaire. If you decide to take part, your participation in this research study will last about 20 minutes. This data will be stored in a password-protected device and will be deleted after 3 years. Only the researcher will have access to the data.

The study will be written up as a research report and available online through the University library website. A copy of the report will be made available upon request. If you have any questions during or afterwards about this research study, feel free to contact me or my supervisor on the details listed below.

Yours sincerely,

Kevandren Naidoo

Researcher:

Kevandren Naidoo, 2030478@students.wits.ac.za

Supervisor: Mitchell Hughes, Mitchell.Hughes@wits.ac.za

APPENDIX C: Consent Form

Participant Consent Form

Topic: Digital fraud and the adoption of digital banking services in South Africa

Name of the researcher: Kevandren Naidoo (Master of Management: Digital Business Student at the Wits Business School of the University of Witwatersrand

Student Number: 2030478

I…… voluntarily agree to participate in this research study.

1. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
2. I understand that I will not benefit directly from participating in this research.
3. I understand that all information I provide for this study will be treated confidentially.
4. I understand that in any report on the results of this research, my identity will remain anonymous.

Signature of research participant

_____

Signature of participant Date:

_____

APPENDIX D: Research Instrument

No.	Section A	Responses
1	I voluntarily choose to participate in this survey	Yes No
2	Please indicate your digital banking usage	Limited usage on digital banking channels Moderate usage on digital banking channels High usage on digital banking channels
3	Type of device used when performing a digital banking service	Mobile Personal laptop Work laptop
	Section B	
4	I intend to continue using internet banking in the future	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
5	I expect my use of internet banking to continue in the future	1) Strongly agree 2) Agree 3) Neither agree or disagree

		4) Disagree 5) Strongly disagree
6	I will frequently use internet banking in the future	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
7	I will strongly recommend others to use internet banking	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
	Section C	
8	I am suspicious about reliability of the Bank chosen for internet banking	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
9	I am suspicious that someone else may access my bank account	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree

10	I am worried that somebody can access my account if I use a computer not belonging to me	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
11	I am worried that I may not be able to cancel incorrectly entered transactions	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
	Section D	
12	I believe that the use of internet banking could offer me better quality service.	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
13	I think that the use of internet banking could be convenient for me	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
14	I believe that the use of internet banking could allow me to do my bank transactions more quickly	1) Strongly agree 2) Agree 3) Neither agree or disagree

		4) Disagree 5) Strongly disagree
15	I think that the use of internet banking could offer me easier access to my bank accounts	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
	Section E	
16	Electronic banking of my bank is trustworthy	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
17	I trust in electronic banking of my Bank	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
18	Electronic banking keeps my best interest in mind	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree

	Section F	
19	The site is trustworthy	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
20	The website vendor gives the impression that it keeps promises and commitments	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree
21	I believe that the website vendor has my best interests in mind	1) Strongly agree 2) Agree 3) Neither agree or disagree 4) Disagree 5) Strongly disagree

APPENDIX E: Ethics approval notification

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

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

Ethics Clearance Certificate

Ethics protocol number: WBS/DB2030478/827

This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).
This certificate is only valid if permission has been granted by the Registrar's Office of Wits University.

Project title	Digital fraud and the adoption of digital banking services in South Africa
Investigator / Researcher	Mr Kevandren Naidoo
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed anonymity and confidentiality.
Issue Date of Certificate	8/29/2023
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba +27 11 717 3976 +27 82 733 6587 pius.oba@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.

Signature

29-08-2023
Date:

APPENDIX F: Figures and Tables

Table 21: Demographics

Statistics			
		Please indicate your digital banking usage	Type of device used when performing a digital banking service
N	Valid	150	150
Mean		2,45	1,11
Median		3,00	1,00
Mode		3	1
Std. Deviation		,691	,394
Variance		,477	,155
Skewness		-,859	3,677
Std. Error of Skewness		,198	,198
Kurtosis		-,473	13,333
Std. Error of Kurtosis		,394	,394
Range		2	2

Figure 3: Description analysis – Intention

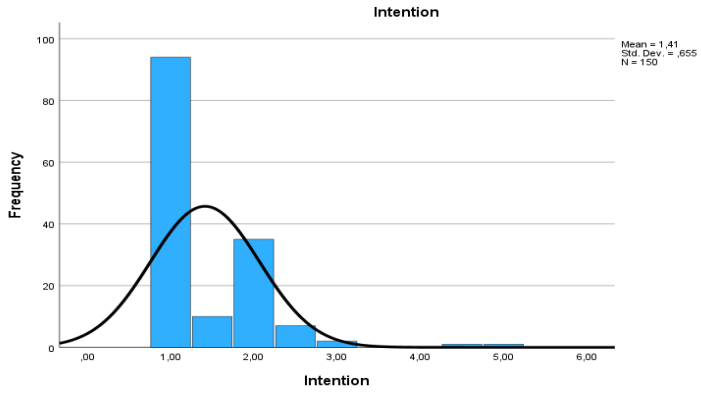


Figure 4: Description analysis – Risk

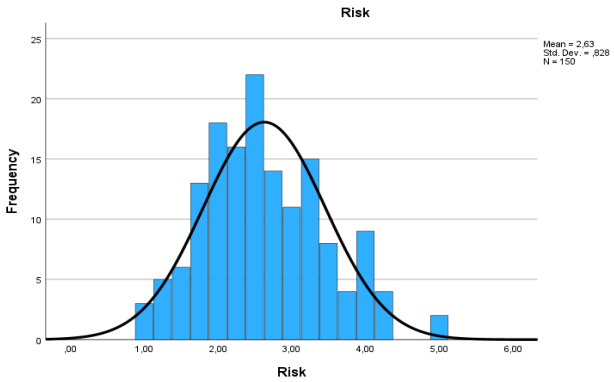


Figure 5: Description analysis – Benefits

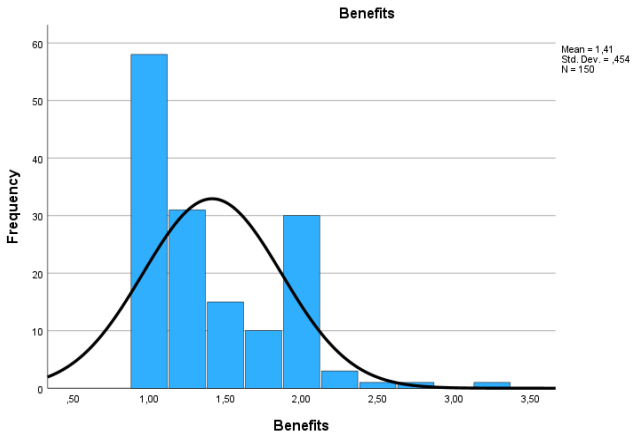


Figure 6: Description analysis – Trust

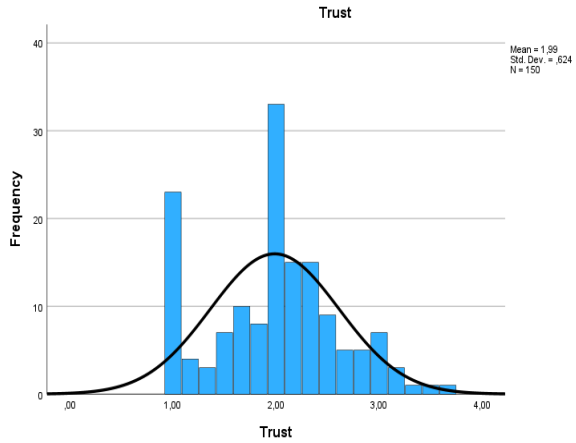


Table 22: Regression analysis - H2: A customer's perceived risk negatively affects the adoption of digital banking services.

Collinearity Diagnostics[a]					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Risk
1	1	1,954	1,000	,02	,02
	2	,046	6,521	,98	,98
a. Dependent Variable: Intention					

Table 23: Regression analysis - H3: A customer's perceived benefits positively affect the adoption of digital banking services.

Collinearity Diagnostics[a]					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Benefits
1	1	1,952	1,000	,02	,02

	2	,048	6,399	,98	,98

a. Dependent Variable: Intention

Table 24: H4a: A customer's trust (TRUST) negativity affects the customer's perceived risk of the adoption of digital banking services.

Collinearity Diagnostics[a]					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Trust
1	1	1,954	1,000	,02	,02
	2	,046	6,538	,98	,98

a. Dependent Variable: Risk

Table 25: H4b: A customer's trust (TRUST) positively affects the customer's intention to adopt digital banking services.

Collinearity Diagnostics[a]					
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Trust
1	1	1,954	1,000	,02	,02
	2	,046	6,538	,98	,98

a. Dependent Variable: Intention