Title

Adoption of electronic banking distribution channels in South Africa: The unified theory of acceptance and use of technology

By

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DECLARATION

I, **Mbuso Emmanuel Nzama**, declare that

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To the Almighty, Father We Thank You!

ABSTRACT

Globally, every industry is on the path of a technological revolution that is radically shaping how people and organisations relate to the world and to one another. The Fourth Industrial Revolution's (4IR) digital technologies are transforming supply chain management from a linear model to a more integrated model in which information flows in multiple directions. The invention of e-banking has provided customers with a whole new experience of banking services. In South Africa, banks have invested heavily in technological solutions. However, socio-economic complexities and challenges are slowing down the adoption of e-banking channels. This study examines the key determinants of the adoption and acceptance of electronic banking through the theoretical constructs of the extended Unified Theory of Acceptance and Use of Technology model (UTAUT2). The first research objective of the study was to determine the magnitude of acceptance and utilisation of downstream electronic banking distribution channels by generation-based clients. The second objective was to determine the effect of the cultural factor, uncertainty avoidance, on the use of electronic banking distribution channels. The third objective was to establish the downstream supply chain customer experience on the underlying impact of facilitating conditions on electronic banking systems. The penultimate objective was to determine the degree to which the downstream electronic banking simplicity practice influences usage of electronic banking distribution channels. The final objective was to develop the integrated electronic banking model that influences the downstream site generation-based customers.

A self-administered questionnaire was used to collect data in this study where the purposive and simple random samplings were selected. The study applied a quantitative approach to a 307 sample size of students doing post-graduate qualifications from three Higher Education Institutions (HEIs) in Durban. The collected data were analysed using univariate, bivariate and multivariate methods. The findings revealed that facilitating conditions, effort expectancy, and social influence are key determinants that explain the users' adoption and use of e-banking channels in South Africa. The study also revealed that uncertainty avoidance influences the use of e-banking channels. The retail banks can use these findings to further improve their electronic channels feature in the future.

Key concepts: Electronic Banking, Unified Theory of Acceptance and Use of Technology Model UTAUT2, Supply Chain Management, Uncertainty Avoidance, Simplicity, and Social Influence.

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ACRONYMS

ABSA	Amalgamated Banks of South Africa
AMPS	All Media and Products Survey
App	Applications
ATM	Automated Teller Machine
BC	Blockchain
DF	Degree of Freedom
DUT	Durban University of Technology
DW	Durbin-Watson
E-banking	Electronic Banking
e-SCM	Electronic supply chain management
FNB	First National Bank
4IR	The Fourth Industrial Revolution
HEI	Higher Education Institutions
IoT	Internet of Things
IT	Information Technology
KPMG	Klynveld Peat Marwick Goerdeler
KZN	KwaZulu-Natal
MS	Mean Square
MSE	Mean Square Error
PC	Personal Computer
PhD	Doctor of Philosophy
PWC	Price Water Coopers
RPA	Robotics Process Automation
SARB	South African Reserve Bank
SCM	Supply Chain Management
SCOR	Supply Chain Operating Procedure
Sig.	Significance
SPSS	Statistical Package for Social Sciences
UKZN	University of KwaZulu-Natal
UTAUT2	Unified theory of acceptance and use of technology
VIF	Variance Inflated Factor
WEF	World Economic Forum

Chapter One: Introduction to the study

1.1 Overview

Worldwide, every sector is on the path of a technological revolution that is radically shaping how people and organisations relate to the world and to one another. “The Fourth Industrial Revolution(4IR) is typified by a medley of current and novel innovations that construct on the structures of previous industrial revolutions, especially on the third industrial revolution which resulted in the introduction of automation, computing and telecommunications, among other things” (Lacy, Long, and Spindler, 2020:34; KPMG,2018). Almost every industry has embraced the integration of 4IR innovations throughout operations, systems and processes to transform the business model and broader economic transformations. The term Fourth Industrial Revolution (4IR) emanated from Germany where it was called Industry 4.0. In the United States, it is known as Connected Enterprise, whereas in the United Kingdom it is recognised as the “Fourth Industrial Revolution” (Li, Hou and Wu, 2018:17).

According to Stefanuk (2019:6-8), “the 4IR digital technologies are transforming supply chain management from a linear model in which instructions flow from supplier to producer to distributor to consumer, and back, to a more integrated model in which information flows in multiple directions (sometimes referred to as Supply Chain 4.0)”. To remain competitive and on par with the swift advancement of technology, financial services have been continuously simplifying accessibility to banking services. The availability of e-banking has presented bank clients with an improved experience of financial services.

The extended unified theory of acceptance and use of technology (UTAUT2) proposes that performance expectancy, effort expectancy, and social influence predict behavioural intentions toward the acceptance of information technology (Venkatesh, Morris, Davis and Davis, 2012: 157-178). The theory further proposes that facilitating conditions and behavioural intentions predict user behaviour in the acceptance of information technology. Since its inception, the theory has been assessed using different applications, and it has become the most used model for measuring user acceptance. This study observes the main determinants of embracing and use of electronic banking through applying the UTAUT2 model (Venkatesh, Morris, Davis and Davis, 2012: 157-178).

Electronic banking has been transforming speedily throughout the world, presenting exciting and relevant content on banking services (Alkhowaiter, 2020: 53:100-102; Zhang, Zhu and Liu, 2012),

strengthening relationships between retail banking and its users (Chong, Choo, Yip, Chan, Teh, & Ng, 2019:134-147; Riquelme and Rios, 2010). For clients and financial institutions to take advantage of these technological delivery services, it becomes important to analyse the sincere insights and key information on user's preparedness to use these innovative solutions (Lee, 2009; Oliveria and Martins, 2013:15). The full extent of electronic banking benefits goes beyond the basic mobile and Internet banking services that are now widely provided (Inegbedion, Inegbedion, Osifo, Eze, Ayeni and Akintimehin, 2019). Riquelme and Rios (2010:115) found that the automation of operations and digitised services in banking has signalled a significant transformation in banking in a way that the functions that were previously performed by humans are now efficiently performed by the system through robotics and artificial intelligence which reduces human errors.

The terms 'Electronic banking' and 'digital banking' are mostly used interchangeably. It is also important to distinguish between digital banking and digitalisation as these terms are used loosely in most studies. Digital banking defines the integration of new and developing technologies all over the financial system and sums up two elements: digitisation and digitalisation. Digitization explains correspondent data that is transmitted into a digital format, for example, automation of manual processes and products (Bican and Brem, 2020:10-13).

1.2 Retail Banking

Currently, banks are distributing banking services to customers through electronic channels. These services are delivered in line with customer requests. Although the variety of services offered by banks through electronic channel differ extensively in content, this channel of banking is known as electronic banking (Alkhowaiter, 2020:100-102; Al-Smadi, Mohammad, 2012; Azouzi, 2009). In retail banking, the terms 'electronic banking' and 'digital banking' are used interchangeably. Digital banking defines the integration of novel and evolving technologies all over the banking system. Digitalisation refers to the use of digital solutions and functionalities to migrate to the digital channels by altering business models, operational processes and the construction of innovative services (Behr, 2016; Dasho *et al*., 2016; Schmidt *et al*., 2017).

In the past, price was a key factor that banks used to focus on together with services provided and optimisation of branch channels. Nowadays, customer demands have forced the banks to shift the focus from operational efficiencies to customer experience in order to remain competitive. That implies a new strategy shift on customer centricity, quicker response to all client queries and a predictive analysis to constant interaction with clients – with a purpose to support clients and to improve financial inclusion (Ernst and Young, 2018:13). The fundamental challenge for retail

banking is to identify the factors that influence customers' decisions to adopt and use electronic banking channels.

Recently, technologies like Internet of Things which connects devices to the internet and transmitting of data have brought together data and communication innovations as these provide benefits associated with cost-efficiencies to create a competitive advantage in the market and to retain customers (Bhat and Bhashir, 2017; Laukkanen, 2016). Cost efficiencies are associated with a state in which the inputs and methods used to produce a service result in the maximum feasible outcome, whereas co-effectiveness refers to the extent to which a system or process is effective or productive in connection with its costs (Tuffaha, Mitchell and Ward, 2018:8-11). Banks have implemented the technological channels to enhance customer experience and concurrently improve operational efficiencies (Lee, 2009).

In the quest to gain competitive advantage, financial services have realised the importance of distinguishing their brands from competitors through unique service delivery channels, which include, mobile banking applications, robotics, and online channels (Kanchan, Banerjee, Wilson, and Sullivan, 2012:15). As a result, financial institutions are continuously investing and utilising electronic service delivery channels to interact with their clients (Nyiranzabamwita and Harelimana, 2019:5-7). Evidently, there is an upward trend of availing banking services on different delivery channels (Fathima and Muthumani, 2015:22), especially online banking channels instead of only offering services through traditional channels (Dajani and Yaseen, 2016:13; Al-jam and Khalil, 2015; Usman and Shah, 2013:2; Hanafizadeh *et al*., 2014:62).

In light of the implementation of different service delivery channels by the banks, many studies have shown that bank clients present several factors for embracing electronic banking (Ayo, Oni, Adewoye, and Eweoya, 2016; Al-sharafi, Fakhreldin, Elayah, Elayah, and Abu-shanab, 2016); these entail, service response, affordability, self-service, flexibility, and ease associated with 24/7 service availability (Lee, 2009; Montazemi and Qahri-Saremi, 2015).

1.3 Research Problem

The rate of adoption of e-banking distribution channels has been relatively slower in some emerging countries whereas the embracing of new innovative solutions is relatively faster in other regions of the world. According to the study by Shipalana (2019:21-25), in South Africa, people in low-income brackets generally do not trust the banks. The study further revealed that, the people in the low-income category have a fear of being exploited; a significant number of low-income earners prefer using cash instead of digital channels simply because of a lack of familiarity or

illiteracy, and a fear of ATM and mobile/Internet banking fraud. Fear of fraud is the number one reason for not utilising digital channels.

It was evident in this study that people with limited or low income prefer using bank branches instead of electronic channels especially when performing transactions, as a branch provides some level of comfort with human intervention should an issue arise. Similarly, Jenkin and Naude (2019:24) mention that "the slow acceptance and use of digital channels is influenced by extremely unequal educational and labour market outcomes in South Africa". Another study conducted by Bernstein, Brits, Ketley, Mela and Mogadime (2018:17-20) found that the adoption of digital banking technologies in South Africa is restricted by the consumer market. South Africa's population is characterised by a high level of income inequality. Most consumers exist in the low-income mass market where paid work is scarce, and many earn an income from the informal economy.

Furthermore, most communities in South Africa rank lowest with regards to financial education and highest on unemployment which implies that most South Africans do not have the necessary tools to participate in online banking services that can be accessed through mobile devices (Shipalane, 2019:20). "The risks of cybersecurity, technology failure, data integrity and privacy are some of the factors that discourage the vast of the population from using electronic banking channels" (Bernstein *et al*., 2018:156).

In their study, Ramavhona and Mokwena (2016) revealed that the absence of customer education on digital banking services and its advantages such as convenience and flexibility are some of the reasons for the slow adoption of electronic banking. Electronic banking is deemed as an innovative and new technology. Different factors could help in inspiring clients to embrace and use the channel. In South Africa, most commercial banks offer digital banking cheaper than traditional channels to entice users to adopt and use electronic banking channels. Despite the affordability of digital channels, the adoption of electronic banking in South Africa remains a problem compared to other countries. In most developing economies, internet penetration still lags, however, in South Africa, some bank customers can connect and use the internet, therefore internet penetration is not the main blocker for users to adopt banking digital channels, which contradicts preceding results by Ramavhona and Mokwena (2016) and Karjaluoto, Mattila and Pento (2016). This signals a gap in understanding other factors that influence the use of electronic banking in South Africa, hence the need for this study.

Therefore, to enhance the use of digital channels within South Africa, a broader consideration of the conditions and factors persuading the use of digital channels is important (Zhao *et al*., 2008).

Through understanding and obtaining a better perspective of the key drivers and barriers that impact South Africa's retail bank customers' willingness to use innovative banking technologies, new insights can be produced for scholars and experts concerning how to improve the use of digital banking in the emerging economies. Nevertheless, despite the relevance of financial innovative solution, in emerging economies, the availability of studies that concentrate on digital channels is inadequate, particularly in South Africa. Thus, the gap in literature requires more studies to gain insight on the determinants that persuade the use of innovative channels and understand the barriers that must be addressed to support the embracing of these technological solutions.

To close the breach identified in the body of knowledge, through this study, the researcher attempted to understand users' perceptions towards electronic banking in South Africa by exploring how the electronic banking distribution channels are accepted and used. The study used the variables extracted from the preceding literature, applying the 'Unified Theory of Acceptance and Use of Technology model (UTAUT2) of technology acceptance'(Venkatesh, *et al*.,2012: 157-178) to assess the variables that customers perceived influential in their choice to embrace electronic banking.

1.4 Research objectives and questions

1.4.1 Primary research objective

The primary objective of this study could be to assess the adoption of electronic banking distribution channels in South Africa using the unified theory of acceptance and use of technology in order to develop the integrated electronic banking model that influences the downstream site generation-based
customers.

1.4.2 Secondary research objective

The research objectives of this study were:

1. To determine the extent of acceptance and use of downstream electronic banking distribution channels by generation-based clients;
2. To determine the effect of the cultural factor, and uncertainty avoidance, on the use of electronic banking distribution channels;
3. To establish the downstream supply chain customer experience of the underlying impact of facilitating conditions in electronic banking systems;
4. To determine the degree to which the downstream electronic banking simplicity practice influences the usage of electronic banking distribution channels; and

5. To develop the integrated electronic banking model that influences the downstream site generation-based customers.

1.4.3 Research questions

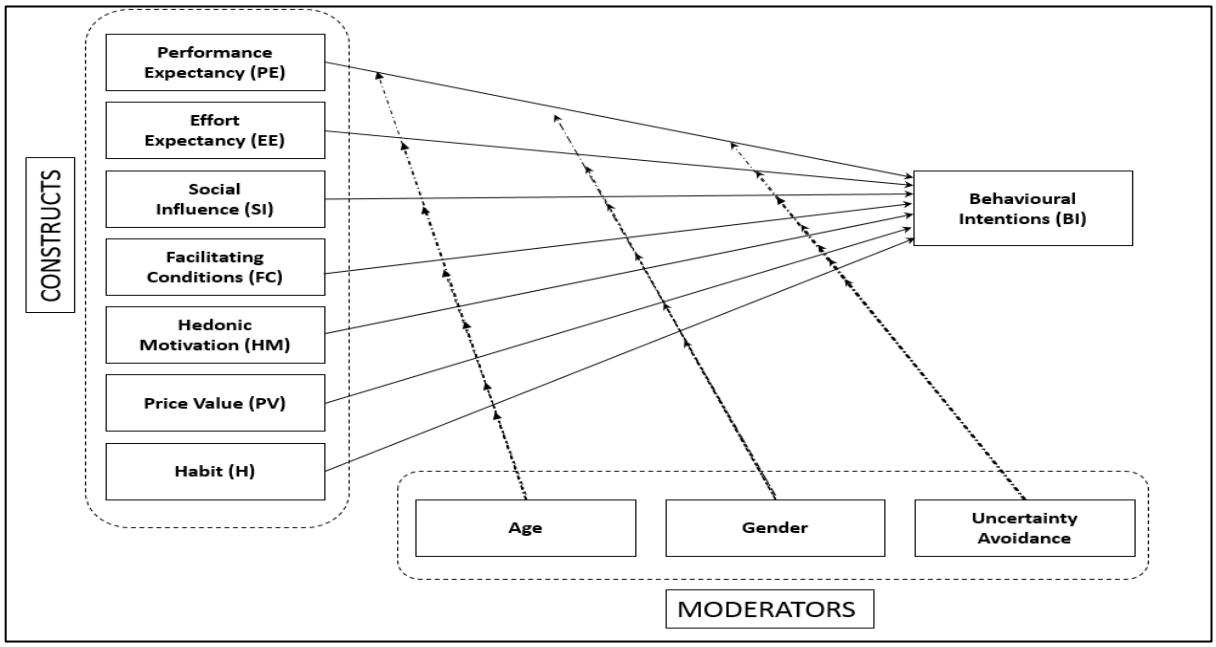
The research questions that guided this study are as follows:

- What is the extent of acceptance and use of downstream electronic banking distribution channels by generation-based clients?
- What is the effect of the cultural factor, and uncertainty avoidance, on the acceptance of electronic banking distribution channels?
- How do electronic banking facilitating conditions impact downstream supply chain customers' experience?
- To what extent does the downstream electronic banking channel simplicity practice impact the use of electronic banking distribution services?
- How can an integrated retail supply chain electronic banking model that influences the downstream site generation-based customers be developed?

1.5 Theoretical framework

This study uses UTAUT2 as a primary source because of its comprehensiveness and strong power of interpretation as compared to other theories of technology access. UTAUT2 is the most prominent and interconnected theory in the field of Information Technology. It has been mentioned frequently in technology adoption studies (Gharaibeh, Arshad and Gharaibeh, 2018:34; Kessler and Martin, 2017; Kim, Chun and Lee, 2012; Usman and Shah, 2013; Zhang, Han, Dang, Meng, Guo and Lin, 2017; Venkatesh *et al*., 2012). Therefore, literature gives a recognised foundation to examine the influence of UTAUT2 constructs on the choice concerning the use of digital channels. Moreover, this study adapts the framework into electronic banking adoption setting by including the 'uncertainty avoidance' constructs (Figure 1.1).

Figure 1. 1: Theoretical framework



Source: Researcher (Adapted from Venkatesh *et al*. (2012)'s UTAUT2 model)

In a study on customer behaviour, price value was highlighted to have noticeable persuasive power on the decision to use the innovative services (Kurila, Lazuras and Ketikidis, 2016). The technology adoption model has been applied commonly when investigating online banking adoption, highlighting that simplicity, convenience, facilitating conditions and price value are influential in the adoption of online banking (Gharaibeh, Arshad and Gharaibeh, 2018:34; Kessler and Martin, 2017:8; Zhang, Han, Dang, Meng, Guo and Lin, 2017; Kurila, Lazuras and Ketikidis, 2016). The UTAUT2 model is most suited as a main source for the study because of its comprehensiveness and strong power of interpretation as compared to other theories of technology access. Furthermore, the theory is the most prominent and interconnected in the field of consumer behaviour.

1.6 Defining Electronic Banking

Banks implement electronic distribution platforms for their current and prospective customers to perform financial transactions. Currently, banks are mostly using electronic channels to receive instructions and deliver their products and services to their customers. Although the range of services provided by banks over the electronic channel varies widely in content, this form of banking is generally referred to as electronic banking (Alkhowaiter 2020:100-102).

The terms 'digital banking' and 'Internet banking' have been used interchangeably. However, the latter has two different meanings as Baraghani (2010:20) describes e-banking as "a high order construct that consists of several distribution channels and a bigger platform than just banking via the internet". "Electronic banking or digital banking is referred to as the umbrella term used to

describe the different forms of electronic retail banking distribution channels or technologies and includes Internet banking, ATMs, telephone- and mobile banking" (Kim *et al.*, 2012:76).

Similarly, Dhurupa *et al.* (2014:588) define online banking and electronic banking as "terms often used to describe online technology-driven bank services". Ombati, Magutu, Nyamwange, and Nyaoga (2011:156) describe electronic banking as a generic term used to describe the process customers use to electronically perform banking transactions without branch visits. Electronic banking is also referred to as "the use of technology to connect with a retail bank where an account is held, for the purpose of communicating instructions and to obtain information" (Gwasira and Nhavira, 2013:26). Dajani and Yaseen (2016:18) describe electronic banking "as the automated delivery of innovative and traditional banking products and services directly to consumers through electronic and interactive communication channels".

Electronic banking encompasses the processes that enable financial services and clients to use bank accounts, receive and send information conveniently using online channels. The retail banking distribution channel has undergone a transformation lifecycle through numerous transformative variations using the current software of information innovations (Riquelme and Rios, 2010:7). The prevalent use of online transactions and digital platforms is confirmation of transformation brought by technological changes to the banking sector. Several banking services and products offered through online services like smartphones, banking applications, online banking are called digital banking services.

The concept of digital banking has been explained in different ways. This study opted to use the description from the Basel report which referred to e-banking as "the provision of retail and small value banking products and services through electronic channels as well as a large value electronic payment and other wholesale banking services which are delivered electronically. Such products and services can include deposit taking, lending, account management, the provision of financial device, electronic bill payment, and the provision for other products and services such as electronic money" (Basel, 2003:22). Several authors (Riquelme and Rios, 2010:329; Laukkanen and Passanen, 2008:87; Barnes, 2006:275) explain banking on smartphones as a subset of electronic banking and functions as a platform that allows consumers with the opportunity to interact with a bank through mobile devices, such as mobile phones.

1.7 Supply Chain Management

"Supply chain management is referred to as a pipeline or conduit for the efficient and effective flow of products/materials, services, information and financials from the supplier's suppliers through the various intermediate organisations out to the customer's or the system of connected

networks between original vendors and the ultimate final consumer" (Coyle, Langley, Novack, and Gibson, 2013:16).

With proper SCM in place, businesses can optimise their processes to operate more efficiently and cost-effectively, improve their services, and also reduce their costs. The end-to-end delivery of banking services by the banks to clients follows the basic SC distribution. The SC network illustrates the flow of materials and information from suppliers, processing of inputs into complete services to be consumed by the end-users or customers. This study focuses on the flow of delivery of services on the retail banking SC distribution chain. The retail banking supply chain distribution network chain will be discussed in the next chapter.

1.8 Structural Constructs of the Study

The next section outlines the structural constructs of the study. These constructs will be discussed further in the next chapter.

Performance Expectancy (PE): "Performance Expectancy is the degree to which an individual believes that using electronic banking will provide benefits in performing banking transactions" (Venkatesh *et al*., 2012:157-178). Performance expectancy proposes that people will only use technological solutions if they are convinced that they will benefit from it (Shaikh, GlaveeGeo and Karjaluoto, 2018:39–60). It demonstrates the view of benefits by applying electronic banking benefits like quick response (Yang, 2009:235-252), simplicity, and availability (Zhou, Lu and Wang, 2010). System performance directly influences the use of a service (Luo, Li, Zhang and Shim, 2010:222-234).

Effort expectancy (EE): "Effort expectancy is a degree of ease associated with the use of electronic banking" (Lin, 2011: 268-272). From an electronic banking perspective, certain users are more technically knowledgeable and, as a result, they embrace and enjoy using the technological services (Faaeq, Ismail, Osman, Al–Swidi and Faieq, 2013:343–360). If customers find the electronic platform simple, they get motivated to use the service as they do not need assistance to use the service (Chopdar, Korfiatis, Sivakumar, and Lytras, 2018:109–128).

Social influence (SI) : "Social influence is the extent to which individuals perceive that others, especially friends and family, believe they should use electronic banking services" (Venkatesh, 2003). In a mobile payments study, Social influence was found to be an important determinant that influences customers to adopt and use online banking (Zhao, Koenig-Lewis, Hanmer and Ward, 2015:205-325). Similarly, social influence was proven to influence users' adoption of online

banking solutions (Oliveira, Thomas, Baptista and Campos, 2016:404-414). In a tourism study, Social influence was revealed to have a positive influence on the acceptance and use of online applications for hotel reservations (Fong, Lam and Law, 2017:331-342).

Facilitating conditions (FC): Facilitating conditions refers to how people believe that technological infrastructure makes it easy to use the technological solution (DeLaCastro, Lui and Qi., 2014; Venkatesh, 2003:425–478). Alalwan, Dwivedi and Williams, (2016:145–157) advocate that electronic solutions offer flexibility that allows clients to use banking services anytime and with no geographic limitations. A client with full access to facilitating conditions like smartphones is more likely to use the digital platforms. Facilitating conditions affect both willingness and use behaviour. Using electronic banking requires a certain level of understanding, like login to profile, navigation, etc. Accessibility of banking services anywhere from a mobile smart device offers convenience to customers (DeLaCastro *et al.*, 2014:428).

Hedonic motivation (HM): "Hedonic motivation refers to the level of fun or pleasure derived from using electronic banking services" (Alalwan, Dwivedi, Rana, Lal and Williams, 2015) and is an influential determinant to the use technology (Oliveira, Thomas, Baptista and Campos, 2016:45); the more fun electronic banking services deliver, the more likely the user will use the service (Zhang, Zhu and Lui 2012:190- 195).

Price value (PV) : "Price value is the consumers' cognitive trade-off between the perceived benefits of using electronic banking services and the monetary cost of using it" (Oliveira, Thomas, Baptista and Campos, 2016:224-235), and comprises aspects like data packages and device prices. "The price value is positive when the benefits associated with the use of electronic banking services are perceived to be greater than the monetary cost" (Megadewandanu, Suyoto and Pranowo, 2017:35).

Habit (HB): "Habit reflects the multiple results of previous experiences (Venkatesh *et al*., 2012) and the frequency of past behaviour is one of the principal determinants of present behaviour" (Mozie, Mustapha, Ghazali, 2012:15-34). Amoroso and Lim (2017:693–702) define a habit as "the extent to which people tend to perform behaviors automatically because of learning" while Isa and Himelboim (2018:1-14) equated habit with automaticity. William, Ritu and Vallabh (2013) maintain that a habit influences willingness toward consumer technology use context, like electronic education while Isa *et al*. (2015) revealed a similar trend on the continual use of Twitter. In a study conducted in Indonesia, Habit revealed strong persuasion among people in Indonesia to accept digital transactions (Megadewandanu, Suyoto and Pranowo, 2017:40). In a tourism study that investigated factors that influence travellers' behavioural intention to buy flight tickets from digital

channels, it was found that the behavioural intention to buy airline tickets electronically was influenced by habit (Escobar-Rodríguez and Carvajal-Trujillo, 2014). In this study, Habit is defined as the instinctive user contact with the electronic banking channels in performing a banking activity.

Behavioural Intention (BI): "Behavioural intention (BI) is defined as the intensity of an individual's intention to complete a specific behavioural and hence predict actual usage" (Venkatesh *et al*., 2012:157-178). This concept comes from the Theory of Reasoned Action (TRA). "The theory of reasoned action has been widely used across the social sciences as a basis to study behavioural intention" (Venkatesh *et al.,* 2003:425-478). The key objective of a technology adoption model is to understand the behavioural intention of customers to adopt and use technology. Behavioural intention underpins the UTAUT2 which is the major theoretical framework for this study which aims to elucidate the adoption of technology from the users' perspective.

1.9 Significance of the Study

This research forms part of literature focusing on the interpretation of the client's use of electronic banking through the extension of Unified Theory of Acceptance and Use of Technology (UTAUT2) as it is considered to be part of only a few studies that introduce the uncertainty avoidance different dimension variable to create an impact on the use of an electronic financial platform to add to the main variables in the model. Therefore, the value of this study is that, while most of the previous studies focused on the problem of the degree of use and the prevalence of Electronic banking, the main purpose of this research is to explore the UTAUT2 variables effect on embracing and use of digital financial channels.

Fundamentally, this research attempts to comprehend the association between electronic banking distribution channels and constructs of UTAUT2, Cultural Dimension (uncertainty avoidance) and electronic banking and its worldwide optimisation methods. The key objective of this study is to develop the integrated retail supply chain electronic banking model that influences the downstream site customers. The study aims to support organisations by providing them with an understanding of the malicious impact of UTAUT2 variables and the importance of considering Cultural Dimensions like Uncertainty Avoidance to improve electronic banking channel usage.

1.10 Justification of the study

The study should contribute to a new body of knowledge through producing an academically-scientific proposition, and it proposes future areas of research in business management and other areas. It should deliver publishable articles both domestically and internationally. The study will

hopefully trigger and augment strategic thinking concerning the setting of the interdisciplinary method.

The study concentrates on complementing the seamless transition of the banking customers from the branch networks into electronic banking distribution channels. In other words, electronic banking channels with a good understanding of adoption factors will be recommended to enhance adoption, promote cost-containment and to increase market share. Eventually, retail banks will compete on the basis of electronic banking services, rather than having a branch network-based approach. As the UTAUT2 is precisely theorised to explain technology acceptance from the customers' perspective (Venkatesh *et al.*, 2012), it has been identified as a suitable theoretical foundation for the conceptual model.

Thus, the research encompasses a considerable influence by contributing to the construction of a theoretical framework built on a suitable theoretical background that focuses on users' perspectives and apprehends the crucial facets of creating a user's intent and attitude towards electronic channels.

1.11 Limitations

The study was limited to KwaZulu-Natal Province. Whilst this is only the seventh largest of the nine provinces it does have a comparatively large population of over eleven million citizens (censusreporter.org Accessed 14/08/2020). The data for this research was gathered from post-graduate students (honours, masters and doctorate students including other post-graduate students) in KwaZulu-Natal. The age group for all the study participants was between 15 and 55 and all of them had one or more bank accounts. The study was governed by literature from the Unified theory of acceptance and use of technology (UTAUT2) and literature on digital banking. The research was informed by the use of textbooks, journals and publications related to electronic banking, digitisation and supply chain management.

1.12 Ethical Considerations

The researcher followed all necessary procedures by applying for ethical clearance and the University of KwaZulu-Natal (UKZN) granted the researcher the Ethical clearance to conduct the study. The authorisation letter allowed the student to progress with the study. All the information gathered will be safely kept and subsequently destroyed as per the Ethical Clearance Committee guidelines. The student acquired approval to continue with research from the academic institutions. All necessary authorisation permissions were obtained from the applicable gatekeepers.

1.13 Chapter Summary

The motive of this study was to assess the main determinants of acceptance and use of digital banking using the UTAUT2 model (Venkatesh *et al*., 2017). This chapter outlined the problem connected with slow embracing and usage of digital channels. It presented the research problem objectives and questions. The chapter also detailed the importance of the study, limitations and delimitations. The subsequent chapter will focus on the literature review which will be used as the foundation of this study. The literature review will cover e-banking channels, the fourth industrial revolution, Supply Chain management and theories that will be used in this study. This section will also cover the nature of electronic banking in South Africa together with e-banking global overview.

1.14 Dissertation Structure

Chapter 1: Introduction

The preface articulates the fundamental basis regarding the purpose, objective, and the study focus. It also encompasses context, the inspiration behind the study, study goals and questions, and outlines of the main constructs, for example, performance expectancy; effort expectancy; social influence; facilitating conditions; price value; and trust.

Chapter: 2: Literature review

This section reviews the present research literature on electronic banking, technology adoption models, global company profiles on selected commercial banks and technology adoption models.

Chapter 3: Research Methodology

This section articulates the procedure applied in undertaking the entire study. It explains the philosophy, study design, research approach, sampling design, target population, sampling frame, sample size, sampling method, data gathering technique, research strategy, pilot-testing of the instrument, validity and reliability, data analysis as well as ethical consideration.

Chapter 4: Data Analysis and Presentation of Results

The data gathered for the study were analysed using SPSS software version 16. To examine differences, relationships and interconnections of disparities between constructs in the study, statistical techniques like univariate, bivariate and multivariate analyses were used.

Chapter 5: Discussion of Results

The discussion of the results in this research is categorised in four sections. Section one outlines the population, section two concentrates on the graphical statistics, section three assesses the bivariate scrutiny by ascertaining the statistical importance of connected associations and variances amongst multiple constructs, lastly, section four examines associations among constructs.

Chapter 7: Recommendations and Conclusions

This section details the brief, deduction and endorsements drawn from results, boundaries and recommendations for forthcoming studies.

Chapter Two: Literature Review

2.1 Introduction

The previous chapter introduced the study and how the document is structured. This section details the literature consulted that provided the foundation for this study. It reviews relevant literature regarding user acceptance in the banking industry. It begins with a background of the study, a brief introduction of the fourth industrial revolution and its associated technologies, banking concepts, followed by a detailed discussion of various technology acceptance theories This chapter also provides a theoretical framework, concepts related to supply chain management, electronic supply chain management electronic banking, an overview of Electronic Banking and the Banking landscape in South Africa, and lastly adoption theories and models. In line with this, gaps were identified, and the research propositions were constructed based on the UTAUT2 model.

2.2 Background of the Study

The emergence of financial applications, cashless payments and futuristic bank branches over the past ten years have pointed to a shift in banking from bricks to clicks. An application is a software program that's designed to perform a specific function directly for the user or, in some cases, for another application program (Hair, Matthews, Matthews, Sarstedt, 2017:13-15).

Investigating customer adoption and the use of electronic/online channels has recently captured the interest of a growing number of researchers and investigators globally (Tran, Nguyen and Nong, 2020; Afshan and Sharif, 2016; Lin, 2011; Zhou, 2012). This has resulted in the growth of online banking literature. Certainly, by applying different methods, researchers continuously strive to comprehend how customers develop behaviour, perspectives, and a willingness to respond positively toward digital channels (Alalwan, Dwivedi, Rana and Williams, 2016; Lee *et al.*, 2015). From a South African perspective, the study found that banking customers are more enthused to adopt mobile banking by relative advantage, trialability and consumer banking needs (Brown, Cajee, Davies and Stroebel, 2003:14). Likewise, Lin (2011:24) found that South African customers' perception towards digital banking were significantly influence by simplicity, price and trust.

Trialability is defined as "the chance in which technologies are allowed for potential adopters to experiment or use on a trial basis before adoption. Also, the trialable service makes it easier for people to adopt new technology" (Akturan and Tazcan, 2010:38). With *Compatibility*,

"individuals are more likely to adopt an innovation if they find it compatible with their past experience, beliefs and the way they are accustomed to work" (Purwanegara, Apriningsih and Andika 2014:34). Hanafizadeh *et al*.(2014) and Lin (2005) found that compatibility indirectly influences intention to use online banking through perceived ease of use.

Relative advantage shows the degree to which an innovation is perceived as better than the idea it supersedes. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be (Odumeru, 2013:11-12). According to Hanafizadeh *et al.* (2014:24) and Wessels and Drennan (2010:36), the study conducted in Iran revealed that users are more willing to use online banking if they perceived online banking as being beneficial to them, affordable, and accommodative to their habits and other technologies. In Singapore, a study revealed that customer willingness to adopt mobile banking was positively influenced by the role of perceived usefulness and social norms, and negatively predicted by increasing the level of perceived risk Riquelme and Rios (2010:13). In Nigeria, Odumeru (2013) found that comparative relative benefit, complexity, similarity, and trialability were important factors that persuaded people to accept mobile banking. In a study conducted in Indonesia, Habit was found to be an important factor among Indonesians to use mobile wallet applications (Megadewandanu, Suyoto and Pranowo, 2017:40). The customers' apprehensions regarding safety issues and initial costs pertaining to setting up the Internet connections were found to influence the acceptance of cellphone banking (Yang, 2009).

According to Yu (2012) and Hanafizadeh *et al*. (2014), customers are less likely to accept mobile banking if they perceive a higher monetary cost in comparison with other traditional channels. Similarly, Jeong and Yoon (2013) discovered that "financial cost was the least important factor when predicting a customer's intention to adopt mobile banking". "Perceived risk has been commonly observed as a negative factor hindering the customers' tendency to adopt online banking" (Megadewandanu, Suyoto and Pranowo, 2017:40; Brown *et al*., 2003; Hanafizadeh *et al*., 2014; Jeong and Yoon, 2013; Lee *et al.*, 2003, Lee and Kim, 2007; Luo, Li, Zhang, and Shim, 2010; Purwanegara *et al.*, 2014). In a nutshell, despite the findings of these studies, the understanding of additional factors that affect the acceptance of digital channels must still be understood.

According to Venkatesh, Thong and Xu, (2012:42), "electronic banking is considered as a novel and pioneer technology". Literature mentions that, in the information system/information technology (IS/IT) literature, inherent incentive persuades users to accept technology (Venkatesh *et al.*, 2012). Nevertheless, the impact of the inherent incentive has still not been explored

extensively in the pertinent literature on digital channels. Venkatesh *et al*. (2012) mention that in the customer context, price issues were found to be critical and received interest from customers when they were in the process of accepting or rejecting innovations. Additionally, "customers seem to be weighing up the benefits received and the financial cost of using new technology" (Kanchan *et al.*, 2012:12). However, several prior studies on electronic channels have focused on features like flexibility, practicality and presentation (Zhou, 2012).

While striving for competitive advantage, financial institutions have realised the importance of distinguishing their brands from competitors by introducing unique service delivery platforms, like, robotics, banking-application and online channels (Hanafizadeh *et al.*, 2014:13). Subsequently, financial institutions are regularly investing while utilising new innovative service delivery channels to influence their users (Thornton and White, 2001:184). "Evidently, there is growing popularity of delivering banking services through multiple distribution channels" (Martins and Oliveira, 2014:2), "particularly electronic or digital banking distribution channels as opposed to only branch networks" (Yu and Guo, 2008:8; Kim *et al.*, 2012:76; Usman and Shah, 2013:2; Hanafizadeh *et al.*, 2014:62).

2.3 South African Banking Landscape

Banking in the South African region is an important part of the economy. South African banks are amongst the biggest banking corporations in the entire African continent (SARB, 2018:34). The presence of financial organisations in South Africa has drawn interest internationally and locally. As of 2011, the five biggest banks in Africa were from South Africa. They included the Standard bank group, ABSA group, FirstRand group, Nedbank group and Investec group, but currently, the Capitec bank group is overtaking the Nedbank group (BusinessTech, 2019:17).

The five largest banks in South Africa, with each boasting asset of around R1 million or more, include: ABSA, Nedbank, FNB, Standard Bank, and Capitec Bank (SARB, 2017, 2018). "Most South African banks currently provide slightly cheaper online banking service in bundled banking packages to encourage clients' uptake of the service. Even individual transactions through digital channels incur low additional charges, as opposed to high fees for conducting the same transactions inside the branch" (SARB, 2018). Irrespective of these benefits to customers, the use of digital channels in South Africa remains low relative to other developing countries. Internet penetration in South Africa is not a block to the use of digital channels, as a quantifiable percentage of bank customers can surf the Internet; this contradicts the study findings conducted by Karjaluoto *et al*. (2016). In a nutshell, this implies that, besides internet penetration, additional determinants influence the use of electronic channels.

2.3.1 The Emergence of Digital Banks in South Africa

Many analysts share the same sentiments that "the newly-licensed South African banks that intended to start operations in 2019, having acquired SA's first banking licenses since 1999, are likely to pose disruptions to the local banking industry" (PwC, 2019:21). "Non-traditional banks are increasingly exploring new opportunities, enabling them to challenge traditional banks and continually change the state of financial services in South Africa" (BusinessTech, 2018:12). It was a historic moment when the South African Banking industry granted banking licences to three new banks, namely, Tyme Digital Bank; Discovery Bank; and Bank Zero (Fin24, 2019). Surprisingly, two of these new banks, namely, Tyme Digital Bank and Bank Zero will be launching a full digital banking service (Econex, 2019). The new digital banks strive to benefit from low digital costs and run operations without depending on old systems (PwC, 2019).

These full-digital retail banks, Tyme Digital Bank and Bank Zero aim to "bridge the gap between traditional banking and the new, digital-savvy generation in South Africa, also aiming to make banking services simple, more accessible and convenient" (CNBC Africa, 2018:12). According to Writer (2018), "Bank Zero will make use of a mutual bank licence, which mirrors current social media trends and benefits customers by allowing for the support and creation of financial communities" (BusinessTech, 2018:17). Despite the establishment of these digital banks in South Africa, the country's financial regulation still has a gap in creating a favorable setting for fintech establishment. The impediment is to craft a legal and regulatory framework that is accommodative and balanced which encourages innovation. The obscurity of how fintech conforms to current regulations implies that South Africa's governing landscape discourages new entrants and creates noticeable compliance jeopardy (Shipalane, 2019).

E-banking helps banks to increase speed, shorten processing periods, improve the flexibility of business transactions and reduce costs associated with having personnel serve customers physically (Ayo *et al.,* 2010: 37). It has been witnessed that the four retail banks in South Africa, FNB, ABSA, Nedbank, and Standard Bank, are responding to advancing digital disruption by making significant investments in digital transformation (Businesstech, 2018). Financial Times (2018) describes the move as "part of a fightback by banks in Africa, where telecommunications and financial technology companies have grabbed market share from banks by offering services such as mobile money and mobile payments, often to previously unbanked customers". Capitec has been lagging on electronic banking service, however, it is the fastest-growing retail bank in South Africa (Fin24, 2018).

The review of studies on the adoption and use of electronic banking channels revealed that most available studies were concentrated on advanced and industrialised economies (Malik, 2020; Yiu, Grant and Edgar, 2007; Pikkarainen, Pikkarainen, Karjaluoto and Pahnila, 2004). In short, limited studies have been conducted in emerging economies (Al-Somali, Gholami and Clegg, 2009:201-202; Jabnoun and Al-Tamimi, 2003). This breach is predominantly noticeable in South Africa. Additionally, preceding studies concentrated on the implementation of information technologies from an organisational perspective. This study concentrates on user perspectives, where the use of innovative solutions is charitable.

Table 2.1: Electronic Banking studies in emerging economies

Study	Author/s
Elements influencing the adoption of electronic banking in Pakistan. An investigation carried out using a unified theory of acceptance and use of technology (UTAUT) theory.	Malik (2020)
User's adoption and use of e-banking services: The South African perspective. Banks and Bank Systems.	Maduku (2012)
Predicting retail banking customers' attitudes towards Internet banking in South Africa.	Maduku (2013)
E-banking adoption by customers in the rural milieus of South Africa: A case of Eastern Cape.	Masocha, Chiliya, and Zindiye (2010)
Internet banking adoption in South Africa: An exploratory study.	Shambare, Mbieleu, and Ebewo (2012)
Internet banking adoption in South Africa: The mediating role of Consumer readiness.	Aguidisspo *et al.* (2017)
Online banking users' perceptions in South Africa: An exploratory empirical study.	Mujinga *et al*. (2016)
Determinants of Internet and Cellular phone banking adoption in South Africa.	Brown and Molla (2005)
An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust.	Lin (2011)
Digitising financial services: A tool for financial inclusion in South Africa?' African perspectives Global insights.	Shipalana (2019)

Source: Developed by the researcher from literature

2.4 Digital Banking Global Overview

The *Global Digital Report* revealed that more than 4.5 billion people across the world now use the internet. This is just 59% of the global population of 7.8 billion. Furthermore, approximately 40% of the world's population remains 'unconnected' to the internet (Kemp, 2020:24-30). The financial sector is getting further multifaceted driven by the evolution of cellphone and digital channels, escalating the need for instant engagement coupled with customised products. The rapid demand for enhanced client services throughout banking platforms has produced extraordinary rivalry between financial institutions and non-bank organisations (Chow, 2020:14). The beginning of 2020 witnessed a fierce competition for digital banking certificates in Singapore; likewise, in the European financial sector, start-up financial institutions like Monzo, Revolut and N26 entered the market, fuelling the existing competitive environment. Numerous innovative 'neo-banks' which provide services digitally are emerging in the United States financial sector specifically for millennials who prefer banking at their fingertips (Statista, 2020). "A neobank is a digital- or mobile-only bank with no physical locations, and it provides users with basic financial services such as checking and savings accounts and money-transfer services" (Kemp, 2020:24-30).

Globally, banks continue partnering with organisations to provide financial services, enabling non-financial companies to provide financial services (Statista, 2020). Despite relatively slow adoption, banks are gradually exploring Artificial Intelligence (AI) to advance processes and to improve client service by implementing robotics features (Travaly, Munyampenda and Kunda, 2019:17). In North America, by 2023, AI is anticipated to become the most adopted 4IR technology in banking. However, the banking institutions in Asia-Pacific, Europe and other global regions are expected to implement more AI technologies from 2024 to 2030 (Travaly, Munyampenda and Kunda, 2019:24). Meanwhile, online banking has not been widespread in some Western markets. This has resulted in the very slow growth of direct banks.

"The UK is characterised by deep online banking diffusion; direct banks have started to establish limited branch networks in major European markets to augment banking services" (Maguire, T'serclaes, Bison and Monter, 2020:6-10). The online banking adoption rate in America for 2020 has been reported to be 90% of the total population, with Norway having the highest rate of 95% (Statista, 2020). In America, 63% of Generation Y, 38% Generation X, and 17% Baby boomers use digital banking (Chow, 2020:15-20).

In 2019, the total number of people in South Africa was estimated at 59 000 000 (Stats SA, 2019). A significant number of South African citizens, 62%, have access to the network, implying that 37 000 000 people are connected to the network (Kemp, 2020). From the 37 000 000 connected

residents, 94% own a mobile phone and 94% of those phones are smartphones. Only 54% of smartphone owners have banking applications on their phones. Of the 59 million, 67% have an account with a financial institution, whereas 19% have a mobile money account (Statista, 2020). Based on 2020 estimates, 34.7 million (52%) banking adults make digitally-enabled payment transactions, whereas 48% of banking adults use cash and credit cards to pay for goods and services (*PPRO Payments and Ecommerce Report*, 2020:67-89). This signifies a disturbingly low use of electronic banking channels.

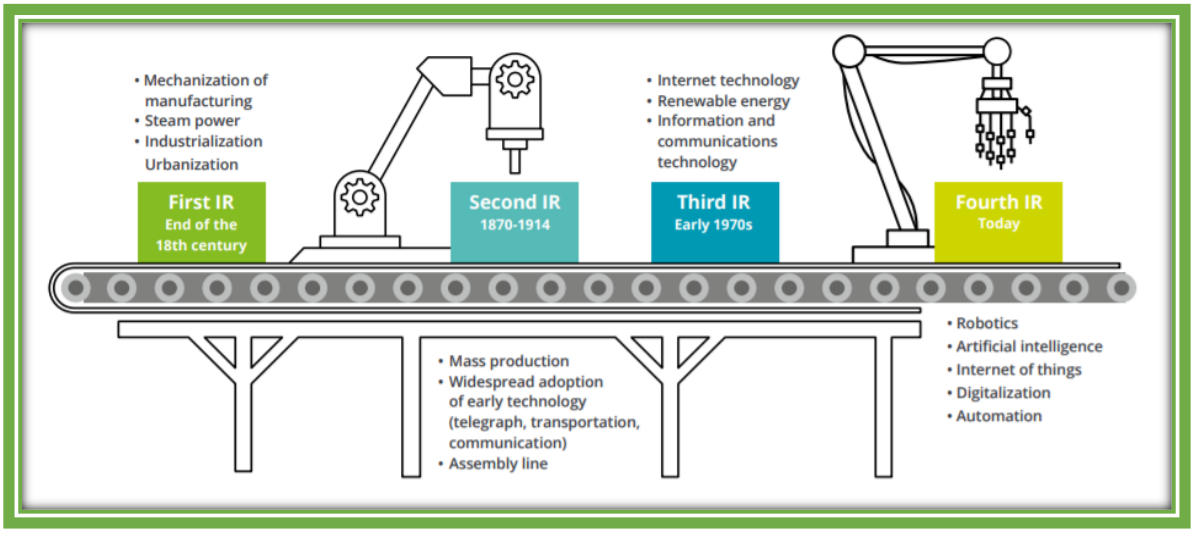
The concepts of 'online banking', 'digital banking' and 'Internet banking' are used interchangeably. However, the latter has two different meanings as Baraghani (2007:20) describes electronic banking as a high order construct that consists of several distribution channels and a bigger platform than just banking via the Internet. Electronic banking or digital banking is the umbrella term used to describe the "different forms of electronic retail banking distribution channels or technologies and includes Internet banking, Automated Teller Machines (ATMs), telephone and mobile banking" (Nguyen & Dang 2018:418-420; Kanchan *et al*., 2012:12; Kim *et al*., 2012:76). Similarly, Dhurup *et al.* (2014:588) define digital banking and electronic financial channels as "terms often used to describe online technology-driven bank services".

Ombati, Magutu, Nyamwange and Nyaoga (2010:11) describe digital banking as "a generic term used to describe the process customers use to electronically perform banking transactions without branch visits". Salhieh *et al*. (2011:325) characterise digital banking as the automated delivery of innovative and traditional banking products and services directly to consumers through electronic and interactive communication channels. E-banking contains the processes that enable financial institutions and users to obtain financial services and data by accessing the network. From the supply chain management perspective, this could mean integration of all activities involved in the production of products and services, from suppliers to customers.

2.5 The Fourth Industrial Revolution (4IR)

The term Fourth Industrial Revolution (4IR) emanates from Germany where it was called Industry 4.0. In the United States, it is known as 'Connected Enterprise' whereas in the United Kingdom it is recognised as 'Fourth Industrial Revolution'(Li, Hou and Wu, 2018).

Figure 2. 1: Technological changes marked by industrial revolution



Source: Mekinjić (2019: 9-24).

According to Hirschi (2018:192-204), Akwen, Moorthy and Daud (2020:5-8), "the economic and scientific transformations in human history before now signified three major industrial revolutions:

Firstly, the late 18th-century mechanical manufacturing, which started in Britain. This development made Britain the workshop of the World. Secondly, the later 19th-century bulk goods production as a result of the division of labour, and Thirdly, the 1960's era of personal computers and the internet. Fourthly, the fourth wave of economic and technological development is known as the 4IR". The fourth industrial revolution (4IR) is characterised by key technologies, such as blockchain, artificial intelligence, cloud computing, 3D printing, robotics, and simulation among others (Stibli, 2020: 1–7; Manescu, 2019:100-130)

The 4IR digital technologies are challenging the status quo by "transforming supply chain management from a linear model in which instructions flow from supplier to producer to distributor to consumer, and back, to a more integrated model in which information flows in multiple directions (sometimes referred to as Supply Chain 4.0)" (Stefanuk, 2019:6-8). Digital innovations help customers and strengthen healthy engagements with banks. The speed with which clients adopt innovative solutions is gradually improving, taking over traditional banks that are reluctant to implement innovative solutions. Digitisation benefits have been revealed to deliver a great experience in a different perspective, particularly in improving communities (Ordieres-Mere, Remon, and Rubio, 2020:13-20; Niemand, Rigtering, Kallmünzer, Kraus, and Maalaoui, 2020:217-256) and in cultivating society advancement (Ordieres-Mere, Remon and Rubio, 2020; Hossain and Quaddus, 2011).

The rules that controls this process is mapped-out in the Supply-Chain Operations Reference (SCOR) model, which was introduced in 1996 by the management consulting firm PRTM (now part of PriceWaterhouseCooper) and AMR Research (now part of Gartner) (Ferrantino and Koten, 2018:4-5; Lambert 2008:305). This is now part of a "…de facto standard strategic, management, and process improvement methodology for the supply chain management. The ideas behind SCOR, and their implementation, have been important for the development of global value chains and supply coordination among networks of firms" (Ferrantino and Koten, 2018:4-5). In most cases, the SCOR model is a commonly applied to determine Supply Chain performance (Divsalar, Ahmadi and Nemati, 2020:8).

A comparative study conducted by, Estampe, Lamouri, Paris and Brahim-Djelloul (2013:247) reviewed multiple evaluation models highlighting their unique features instead of suggesting a specific model for businesses (Divsalar, Ahmadi and Nemati, 2020:4-11; Estampe, Lamouri, Paris and Brahim-Djelloul, 2013). The findings of their study revealed that the SCOR model looks at Supply Chain as a unified network throughout from suppliers to end-users (Divsalar, Ahmadi and Nemati, 2020:13). The cultivation classification of the SCOR model relates to the capacity of the organisation to control the end-to-end SC activities. "It encompasses broad performance facets comprising of monetary, organisational, and societal aspects" (Divsalar, *et al*., 2020:10-24). "The SCOR -model, developed by the Supply Chain Council, is a diagnostic tool for SC management" (Garg, Kumar and Garg, 2019:24; Rotaru, Wilkin and Ceglowski, 2014). The SCOR is a commendable guide that details integrated topics and rules for supply chain analysis and arrangement (Divsalar, *et al*., 2020:7-15; Persson, 2011). There are no studies that have shown how retail banks have applied the SCOR model.

Most banks are moving towards 4IR business practices that involve additional technology and fewer personnel which leads to vast value savings. Technology empowers organisations to offer better customised and more valuable, integrated experiences across bank physical branches and electronic platforms. Customers are spoilt for choice and switching between financial institutions has become a norm if client needs are satisfied. The South African banks have embraced the 4IR and have started incorporating some of the 4IR associated technologies into banking processes. The next section discusses some of the 4IR associated technologies.

2.5.1 The Fourth Industrial Revolution (4IR) associated technologies

The 4IR presented several associated technologies which are widely used in different industries. The below section highlights some of these 4IR associated technologies.

Data Analytics: "refers to large and complex data sets that contain potentially valuable information. Amongst others, big data is generated by smart factories from various sources such

as production equipment and associated business management software such as enterprise resource planning (ERP) and customer relationship management (CRM) systems. Big data analytics as the name implies is the process of evaluating big data to elicit trends and other actionable business insights which could ultimately benefit a company's operations, enhance sales and customer experience" (Elgendy and Elragal, 2018:26). Integrating bulk data into processes provides numerous projections to increase competitiveness and improve throughput (Bayode, van der Poll and Ramphal, 2019).

Simulation: "is a method of executing a model to safely and efficiently solve practical problems in a virtual environment" (Lacy, Long and Spindler, 2020). Simulation provides numerous benefits, for example, lower costs and enhanced turnaround time. In most cases, simulations are used for forecasting, presentation, training, theatre, teaching, and resilience. Conventionally, simulations were employed for formulating diagnostic and augmented results, but the paradigm has gradually transitioned to guiding supervisory decision-making (Bayode, van der Poll and Ramphal, 2019).

Internet of Things (IoT): "is the succeeding developmental phase of the Internet which was originally developed over two decades ago. IoT is a computing notion that defines the incorporation of diverse physical objects attached with sensors or actuators through the internet to remotely monitor and control specific activities" (Ullah, Sohail, Khan and Kim, 2018:22-25; Baldini, Botterman, Neisse and Tallacchini, 2018:13).

These integrated activities can gather and share bulk information instantly. "The number of IoT connected devices is growing rapidly, over 23 billion devices are presently connected and that number is expected to rise to approximately 75 billion devices by 2025" (Bayode *et al*., 2019: 26-30). Quantifiable benefits for organisations are; easily gather clients' information from connected services and enables businesses to measure the rate at which services are used, and craft specific customised campaign collateral material. The customer data available through IoT helps banks to gain insights into customer needs, provide value-added services and customised products and services to satisfy and retain customers.

Artificial intelligence (AI): "is a cognitive science which covers several research areas, amongst others robotics, machine learning (ML) and image processing" (Vijai, 2019:15). Kunwar and Manju, (2019: 25) explains AI as "an artless technology that enables machines to copy human tasks, therefore, make life easier for everybody".

It represents a sensor that can detect and accomplish responsibilities naturally carried out by people that usually necessitates specific insight and analysis. AI can analyse and explain issues by applying arithmetic tools, which promotes mechanism to regulate and administer services that deliver bulk and miscellaneous instant data (Bayode, van der Poll and Ramphal, 2019). Artificial Intelligence shows great prospects and massive potential in practically all sectors. AI is new and currently costly. These technologies, artificial intelligence (AI) and blockchain (BC), are attracting interest in Africa, as they have the potential to successfully address social and economic challenges and there are so many other areas in which 4IR technology can be transformational (Ndung'u and Signé, 2020:15). This has been witnessed in South Africa as banks are continuously transforming the physical branches in order to generate efficiencies and to reduce operational costs.

Blockchain (BC): This technology gained popularity around 2008 when Satoshi Nakamoto introduced bitcoin cryptocurrency. Blockchain make use of peer-to-peer (PTP) systems to administer the veracity and flow of data. "This technology has several applications besides managing cryptocurrency transactions, for example, it can be used to enhance transparency and security in logistics processes and supply chains" (Shrivas and Thomas, 2018:20-36). Generally, blockchain is labelled as "…a distributed database for storing and sharing securely" (Huang, 2018: 243-248). Blockchain make use person-to-person process to administer the veracity and transmission of information.

2.5.2 The impact of Fourth Industrial Revolution on financial services supply chains

Progressively, the impact of the fourth industrial revolution on revolutionising of the SC is visible. Empowered by rapid changes in business environment and disturbance risks, large organisations, mostly multinational corporations (MNCs) and well-established local organisations in developed economies, are shifting towards Supply Chain 4.0. According to World Economic Forum, "The supply chain is a strategic component of our business model. This obliges us to be the best in terms of optimization and, consequently, in thinking about the 4IR transformation of the supply chain" (WEF, 2019:8-9).

Several researchers (Ndung'u and Signé, 2020:18; Bayode *et al*., 2019:8; Financial, 2020; Ullah, Sohail, Khan and Kim, 2018; Baldini, Botterman, Neisse and Tallacchini, 2018) have outlined the impact of industry 4.0 on financial services. This includes, the improved speed of financial transactions globally; significant decrease in operational cost of financial institutions; simpler access to financial services round the clock, increase deployment of robotics and artificial

intelligence. The bank customers benefit from better customer support through robotics at lower fees.

The Fourth Industrial Revolution (4IR) associated technologies such as technologies – "from big data analytics, the internet of things (IoT) and advanced robotics, to 3D printing, machine learning and artificial intelligence – have transformed supply chain visibility, synchronisation and performance to new heights" (Ndung'u and Signé, 2020:24). Some of the witnessed benefits brought by this transformation are; improved stock management; condensed resistance, minimal blockades and minimum wastage in non-value adding processes; better predictive data analytics and faster response to market demands fluctuations; shorter lead times; enhanced flexibility and quicker delivery (Christopher and Holweg, 2017:17). From the fourth industrial revolution perspective, SC in retail banking are typified by a high degree of cyber-physical interconnectivity, empowered by systems that collect bulk data, which enables real-time choices to optimize supply chain performance (Calatayud, Mangan and Christopher, 2018:19).

The extensive distribution of IoT instruments and big data analytics introduces precautionary maintenance, evading destructions from unplanned downtimes. Furthermore, the application of IoT instruments coupled with artificial intelligence allows computerised inventory management, therefore reducing human errors (Lehmacher and Betti, 2019:7). Similarly, the deployment of IoT, blockchain and artificial intelligence in banking operations and delivery channels enables real-time processes and systems optimisation, thus enhancing reliability, effectiveness and efficiency in banking processes. Additionally, the implementation of cutting-edge automation and predictive analytics enables SC methods to be vastly digitised, and the extent of SC is condensed by means of 3D production (Christopher and Holweg, 2017:5).

2.6 Description of Banking Concepts

Electronic banking channels are widely implemented and availed by the several banks globally (Ayo, Oni, Adewoye, and Eweoya, 2016:8). In recent years, the adoption of e-banking has been quite extensively considered as an innovate banking distribution channel due to rapid advances in e-banking applications and intensive competitive banking markets (Mortimer *et al*., 2015:9, Sikdar *et al*., 2015, Harrison *et al*., 2014). Most people use the term electronic banking, also known as e-banking, in the same way as online banking. The concept digital banking is generally broader and thus it is typically applied with no validation. The Internet of Things (IoT) connects the devices through the internet which receive and send data. It is through IoT that digital channels and online banking can transfer and receive data between the bank and customers.

Internet banking: "Internet banking is a method of banking that is popular due to the convenience of having an online banking account, sometimes called online banking" (Kim *et al*., 2012:76). Internet banking is dependent on the network as the distribution channel to perform banking processes, for example, sending and receiving money, making payments, and checking available funds (Im, Hong, and Kang, 2011). "Internet banking, sometimes called online banking, is an outgrowth of PC banking" (Abushanab and Pearson, 2007:12).

Online banking: "Online banking is a self-service channel which offers consumers the ability to conduct their banking via the website without any human interaction with banking staff such as bank tellers" (Muzofa, 2015:13). It allows a user to execute financial transactions via the Internet. Online banking is also known as Internet banking. Online banking is part of digital banking. Digital banking in simple terms means transactions not done through human intervention after activation. Online banking largely concentrates on payments and basic administration of financial transactions (Bracken and Ben, 2006). All this transmission of data is made possible through internet of things (IoT), as it connects devices through the internet.

Mobile banking: "Mobile banking is defined as an occurrence when customers access a bank's networks using cellular phones, pagers, personal digital assistants, or similar devices through telecommunication wireless networks" (Quick, 2009:11; Segun, 2011:19). In their study, Kanchan *et al*. (2012:12) explains cellphone banking as an application of mobile commerce that enables customers to bank virtually at any convenient time and place.

Electronic Banking: As referred to by Kanchan *et al*. (2012:12) and (Kim *et al*., 2012:76) as "an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution. The following terms all refer to one form or another of electronic banking: personal computer (PC) banking, Internet banking (IB), virtual banking, online banking (OB), home banking, remote electronic banking, and phone banking". E-banking is defined as "the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels" (Chou and Chou, 2000:32-34).

Digital banking: "is the digitisation (or moving online) of all the traditional banking activities and programs that historically were only available to customers when physically inside of a bank branch" (Oliveira, Thomas, Baptista and Campos, 2016:22). Digital banking incorporates digitising all processes and actions assumed by banks and clients, whereas online channels focus on digitising the 'core' aspects of banking (Avoka, 2016).

Several studies have been conducted on electronic banking, where some focus on the adoption while others concentrate on diffusion of digital channels. It is imperative to recognise the distinction between *adoption* and *diffusion*. Oliveira, Thomas, Baptista and Campos (2016:45) define diffusion as "the process by which an innovation is communicated through certain channels over a period among the members of a social system". According to Berg and Lingen (2019:3) technology adoption is "the choice to acquire and use an invention or innovation and diffusion as the process by which something new spreads throughout a population". This study is more inclined towards *adoption* of electronic banking that have evolved with integrated business processes.

2.7 Electronic Banking Distribution Channels

The retail banking distribution channel has undergone a transformation lifecycle through several innovative changes hinging on effective application of information technology innovations (Yu and Guo, 2008:7). The widespread use of electronic payments, network and mobile channels are testimony to the changes in financial sector driven by information technology. Several banking services and products offered through technologies like computers, telephones, television, Internet and mobile phone are termed electronic banking. The South African Banks have embraced technological advancements through introduction of electronic banking services. First National Bank (FNB) has been leading the South African banking industry when it comes to technological banking services (BusinessTech, 2018). The healthy competition amongst the commercial banks has benefited customers as more electronic banking services are introduced into the market. In 2018, Amalgamated Banks of South Africa (Absa) became the first South African bank, if not African, to introduce the very first WhatsApp banking service (Absa, 2018), enabling its customers to perform banking services via WhatsApp.

2.8 Benefits of Electronic Banking

Chong *et al.* (2019:134-147) claims that "electronic banking, from an organisational perspective, offers major opportunities in terms of competitive advantage". Essentially, it offers financial institutions a chance to construct a better and more sustainable engagement with its clients. For example, it enables banks to render services quicker to customers with less transaction errors therefore it minimises wastage (Suhaimi and Hassan 2018), and clients are afforded an option to make financial transactions at any time (Yeh, 2020:13-29). Other benefits include increased customer satisfaction, expanded service offerings and extended geographic reach. The advantages of digital channels can thus be summarized into enhanced bank productivity (Chong *et al.*, 2019:134-147), convenience and timesaving, quick and improved information sharing, better cash

management (Raza, Shah, and Ali 2019:357-376) and improved customer experience (Huang 2018:243-248).

In supply chain management, e-banking provides an advantage in the form of electronic information integration that enhances the information flow to be in line with the flow of services resulting in improved transparency and flexibility in the planning and implementation of supply chains. Supply chain integration with regard to clients and internal processing capability construed as a representation of strong obligation to the support functionalities, applicability, receptiveness, and flexibility. Sileyew (2019:22) points to the competitive advantage in terms of competing on response strategy where a set of values relate to rapid, flexible, and reliable performance.

2.9 Nature of Supply Chain and E-banking

A SC is "a set of nodes which consist of product plants, a central distribution centre/warehouse, regional warehouses and point-of-sales" (SimchiLevi, *et al*., 2008:18). The supply chain connects sellers and users and it begins with the manufacturing of services by a service provider and ends with use of a complete service by the user. According to Carmignani (2009:18), "a supply chain involves all facilities, tasks and activities that suppliers and customers involve in it in production and delivery of a good or service, and it also encompasses planning and supply and demand management, material procurement, production and scheduling of product or service, storage, inventory control, distribution, delivery and customer service". Thus, "the supply chain management focuses on the flow of physical products/services from suppliers through manufacturing and distribution all the way to retail outlets and customers" (Cirtita and Segura, 2012; SimchiLevi, *et al*., 2008:6).

A SCM is considered as a pipeline or conduit for the efficient and effective flow of products/materials, services, information and financials from the supplier's suppliers through the various intermediate organisations out to the customer's customers or the system of connected networks between original vendors and the ultimate final consumer (Coyle *et al*., 2013:16). Schroeder (2008:19) notes that supply chain management involves a sequence of value-added processes that try to match supply and demand. SCM systematises activities so that the flow of services from service providers to customers is smooth and delivered as planned. Supply chain management can pave the way for the company to exploit [the market] from competitive advantage (Cirtita and Segura, 2012:22).

With increasing development of electronic business globally and regarding the demand for fast, easy and precise banking processes to perform banking transactions, digital banking makes it all possible (Daniela and Octavian, 2005; Bauer and Hein, 2006). Electronic banking, as defined by

(Kim *et al*., 2012:76), is "the umbrella term used to describe the different forms of electronic retail banking distribution channels or technologies and includes digital banking, Internet banking, ATMs, telephone- and mobile banking".

Certainly, digital banking indicates best combination of processes through application of latest innovations related to banking (Wendy *et al*., 2005:15). It is for this reason that this study looks at electronic banking from a supply chain management perspective, and electronic banking distribution channels specifically. Electronic banking and SCM are closely associated, the electronic banking deliver efficiency by effectively integrating activities from suppliers and by sequencing the value adding processes through electronic banking channels for customers to use. Throughout this process the information flows from the organisation (downstream) to customers, and from customers (upstream) to the organisation/bank. Similarly, in a supply chain management linear model instructions/information flows from contractors to manufacturers to wholesalers to clients, and back, and now with Supply Chain 4.0, information flows in a more integrated model in which information flows in multiple directions (Silewey,2019).

The SCM description suitably contextualises e-banking as it puts the focus on integrated activities, as a conduit for efficiency and effectiveness, as a distribution channel, as a flow of information in multiple directions (suppliers to customers), as a sequence of value-adding activities/processes, and as linkage with suppliers and customers, with an organisation of integrated activities.

2.10 Electronic Supply Chain Management (e-SCM)

"Electronic supply chain management (E-SCM) is the collaborative use of Internet to enhance Business-to-Business (B2B) and Business-to-Customer (C2C) processes and improve speed, agility, real-time control, and customer satisfaction" (Khan, Shahzad and Liand, 2018:3). "Internet infrastructures such as web-based information system and reliability of both hardware and software, are critical to E-SCM formation and effective communication among supply chain members" (Akyuz and Rehan, 2009).

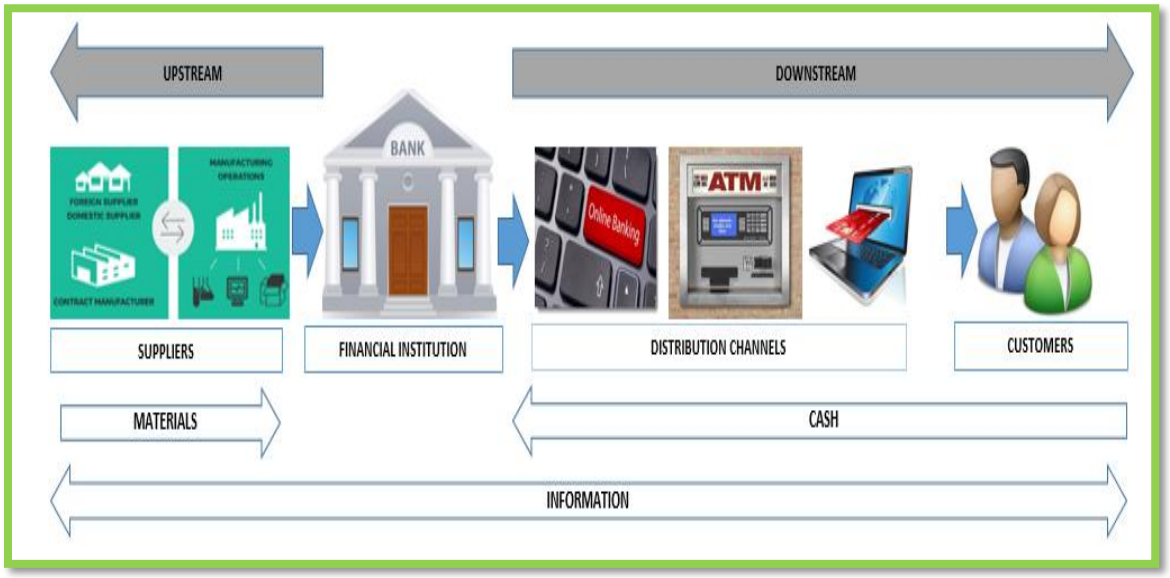
E-SCM attempts to assimilate data from end users or service providers and to simplify construction of services for satisfying the needs of the users (Khan *et al.,* 2014). The study concentrates on downstream of the SC network where all SC activities are focused on providing the final services to customers. Christopher (2011:3) advocates that supply chain management is the network of mutually connected and interdependent organisational linkages that involve, the management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at less cost to the supply chain as a whole. Put differently, a SC

network encompasses multifaceted synchronisation of unified processes from service providers to customers (Mbhele, 2017:124-139).

According Wang *et al.* (2008:15), a supply chain is "a network of organisations and a set of activities that work together to produce value for the customers". The end-to-end delivery of banking products by the banks to clients follows the basic supply chain distribution network (Hamidianpour *et al*., 2016). A distribution network is an amalgamation of transportation, terminal and warehousing services that are established to best serve the needs of customers. Simply put, the system used to get services or products from A to B (Khan, Shahzad and Liand, 2018:5-8).

The SC network illustrates the flow of materials and information from suppliers, processing of inputs to complete services for consumption by the end users or customers. The figure below customises the supply distribution chain network into a retail bank supply chain distribution network.

Figure 2. 2: Retail Banking Supply Chain Distribution Network



Source: Developed by the researcher from the literature analysis

"The supply chain network represents the complex nature of relationships and flows of information, services and materials on five-dimensional chains such as the development chain, demand chain, service chain, distribution chain and supply chain management" (Mbhele, 2017: 124-139).The above figure 2.2 illustrates the end-to-end supply chain distribution network or value chain proposition in retail electronic banking. The upstream part comprises materials/component services, facilities, retail bank products and activities that the sequence of

suppliers provide as the input to the electronic business. Alternatively, the downstream side focuses on provision of banking services to users through bank distribution channels.

Electronic banking channels are used to better manage the downstream component of the SC in order to delight the customers, build long term relationships and shape customer loyalty (Basu and Wright, 2008:9; Luck and Lancaster, 2013). This study looks at determining the extent of acceptance and use of downstream digital retail banking services by South Africa's banking customers.

2.11 Evolution of Technology Acceptance Models

The UTAUT is an integrated framework of eight related technology acceptance theories or models (Venkatesh *et al*., 2003). UTAUT integrates these major theories, into a unified theory as the main dependent variables (Venkatesh *et al*., 2003). These technology acceptance models are outlined in the evolution of technology acceptance models table below. Most previous studies on technology adoption did not adequately cover the consumer perspective (Kim and Crowston, 2011:15).

To understand people's perception of embracing or avoiding technological solutions; several scholars have constructed and applied numerous models to comprehend the adoption factors that influence people to use technological solutions. These technology adoption models are continuously evolving to incorporate ever-changing human behaviour. The most prominent technology acceptance behaviour models are outlined below.

Table 2.2:Evolution of Technology Acceptance Models

Theory/Model	Acronym	Developed By	Year
Theory of Reasoned Action	TRA	Fishbein and Ajzen	1975
Innovation Diffusion Theory	IDT	Rogers	1983
Social Cognitive Theory	SCT	Bandura	1986
Theory of Planned Behaviour	TPB	Davis,Bagozzi and Warshaw	1989
Model of PC Utilization	MPUC	Thompson,Higginsand and Howel	1991
Motivational Model	MM	Davis,Bagozzi,and Warshaw	1992
Technology Acceptance Model	TAM	Taylor and Todd	1995
Unified Theory of Acceptance -1	UTAUT1	Venkatesh, Morris, and Davis	2003
Unified Theory of Acceptance and Use of Technology-2	UTAUT2	Viswanath,Venkatesh,	2012

Source: Adopted by the researcher from the literature

According to Venkatesh *et al.* (2003:425-478), Fishbein introduced the Theory of Reasoned Action (TRA) for the first time which asserted that the most important determinant of an individual's behaviour is his behavioural intention. Later, it was revised and expanded so that it identifies a person's intention to behave a certain way. Behavioural intent is seen as the main determinant of behaviour, and the TRA focusses on an individual's behaviour as well as the subjective norms of influential people or groups that could impact those attitudes.

TRA has limitations in predicting behaviour (Peterson and Bredow, 2009) as shown in Figure 2.6. According to Venkatesh *et al.* (2003:425-478), "Ajzen suggested that the determinants for intention are not always limited to attitudes, subjective norms, and perceived behavioural control, but there are other factors that influence human behaviour. Studies which conducted empirical validation claim that TRA explains only 40% of the variance of behaviour". Furthermore, researchers have found that the TRA neglected the importance of those social factors that could be determinants for individual behaviour (Grandon and Mykytyn, 2004).

TPB was introduced due to impreciseness of the TRA to explain attitudes that depended on the degree to which it was self-controlled. Therefore, Ajzen and Fishbein proposed TPB as an extension to TRA's framework. The underlying principal of the Theory of Planned Behaviour is to predict behaviour in which people do not have complete self-control (Venkatesh *et al.*, 2003:425-478).

Venkatesh *et al.* (2003:425-478) states that "The Technology Acceptance Model (TAM) theory' was proposed by Davis, Bagozzi, and Warshaw . TAM was widely applied and accepted as the foundation for explaining human behaviour in accepting technology. The TAM maintains that user acceptance can be explained by two beliefs: perceived usefulness and perceived ease of use, based on the Theory of Reasoned Action (TRA)". Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance (Venkatesh *et al.*, 2003:425-478).

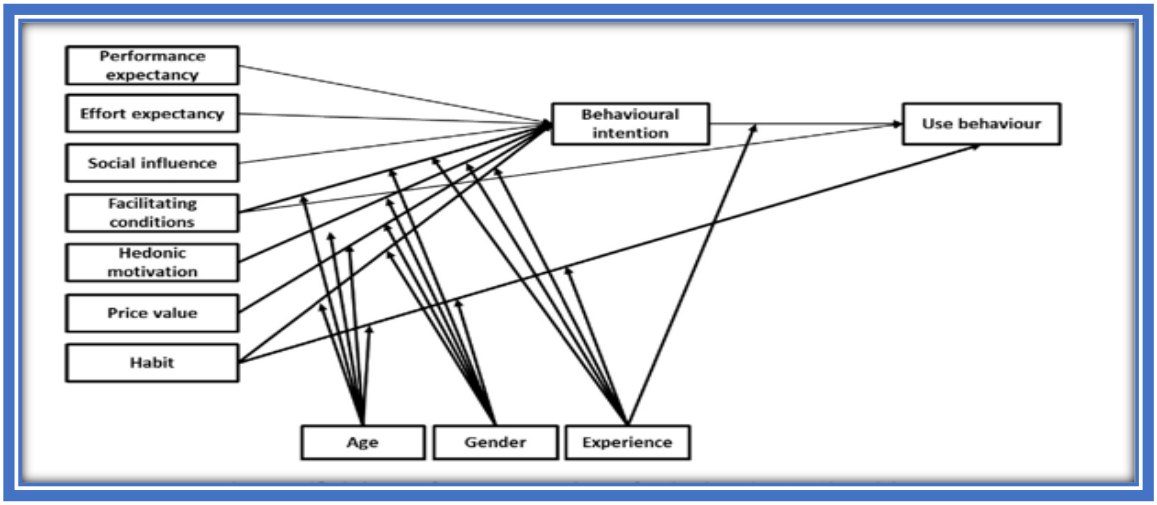
Later, a third construct was added to the model which was called Perceived enjoyment (Venkatesh *et al.*, 2003; 2012). Many researchers have tried to simplify TAM by eliminating the TRA attitude construct (e.g. (Venkatesh *et al*., 2003). TPB and TAM advocate strong behavioural elements; they assume that when a user intends to act, the user will not hesitate to act. But a valid scenario contains some constraints like incapability, availability, organisational constraints and unintended conduct that are expected to prohibit the user's preference to adopt technology (Kwong and Park, 2008).

Perceived usefulness and perceived ease of use are some of the determinants in TPB. Thus, Taylor and Todd (1995) combined TAM and TPB to incorporate both individual norms and apparent attitude controls to their technology adoption model. Next a practical investigation was conducted into the students' adoption of technological systems and consequently proposed the C-TAM-TPB. The practical findings by Taylor and Todd (1995) revealed that C-TAM-TPB is more suitable to elucidate user's behaviour whilst using new technology. C-TAM-TPB showed suitability for new and existing users after analysing the classifying of users based on their experience. Jen *et al*. (2009) in their attempt to compare the three models (TRA, TAM and UTAUT) concluded that (Davis Jr., 1986) had only considered the attitude of a person towards a given behaviour in his TAM model. TAM has also been found to be forecasting with only about forty percent precision when predicting people's behaviour to adopt technology (Kim and Crowston, 2011).

2.11.1 Unified theory of acceptance and use of technology (UTAUT2)

Kim and Crowston (2011) advocate the application of a philosophic model of knowledge as the establishment of a foundation to use and to understand findings. The UTAUT was developed as a comprehensive integrated model for better understanding consumer acceptance toward new technology or system (Venkatesh *et al*., 2012:157-178).

Figure 2. 3: The Unified theory of acceptance and use of technology (UTAUT2) model



Source: Venkatesh *et al.* (2012:157-178)

According to Venkatesh *et al.* (2012: 157-178), there are three types which can enhance the prediction ratio of technology acceptance. For the first type, the author considers the consumer acceptance of new technology in a variety of contexts such as culture and population. For the second type, the author considered to add different concepts to the model so as to widen the theoretic relationships of UTAUT. For the third type, the author considered to synthesize a new

predictor of variables into the UTAUT. However, despite the integrated model in which some variables are usually added, Venkatesh *et al.* (2012) emphasize the need to include salient predictor variables that can be used within a user technology use context. This model has been adopted for exploring various issues such as self-service technology, smart mobile device adoption, learning management software acceptance, and in the healthcare industry.

For the purpose of this study, UTAUT2 is being applied as a main source for the study because of its comprehensiveness and its strong power of interpretation as compared to other theories of technology access, it being the most prominent and interconnected in the area of innovation. Furthermore, in this study UTAUT2 (Venkatesh *et al*., 2012:157-178) will be used as a theoretical framework to understand and explain the user's acceptance and use of electronic banking channels. The next section details how UTAUT2 has been applied in other sectors.

2.11.2 Applicability of UTAUT2

UTAUT has been used in numerous technologies, for example; instant messengers (Lin and Anol, 2008), and Web-based learning (Chiu and Wang, 2008). Several scholars have used almost ever construct from the UTAUT2 model and explored the impact of the constructs on: cellphone application adoption (Ally and Gardiner, 2012), acceptance of network by urban people (LaRose *et al*., 2012), use of electronic public service innovations (Krishnaraju *et al*., 2013; Vinodh and Mathew, 2012), and electronic booking solutions (Cohen *et al.*, 2013). In an academic setting, the UTAUT2 model has been applied and it revealed the effect of UTAUT2 factors on educators' attitude towards embracing innovative solutions (Lewis *et al*., 2013).

A study conducted by Tan, Chong, Loh, and Lin, (2010) on the mobile banking adoption in Malaysia applied the UTAUT2; model. Yuen *et al.* (2010) applied the UTAUT2 model in several countries with different cultures, such as, USA; Australia and other developing countries, such as, Malaysia. Although UTAUT is very persuasive in terms of being a model for technology adoption, like any theories, it has its pros and cons (Nagahban *et al.*, 2014). In 2012, Venkatesh presented UTAUT2, which focused on the consumer context. This theory (UTAUT2) has been made suitable to discuss the adoption of technology by customers by addition of a number of the original models. These additions were price value, and habit, as well as deleting voluntarily use variable from the theory. To be more consistent with the voluntary technology, it is presented from a customer's viewpoint (Venkatesh *et al*., 2012). In their study, Attuquayefio and Addo (2014) found that in Ghana, UTAUT2's constructs did not have an effect on the use of communication solutions. Similarly, in Nigeria Nicholas-Omoregbe, Azeta, Chiazor and Omoregbe (2017) also

reported the UTAUT2's constructs to have had no effect on acceptance of an online learning platform.

Table 2.3: Examples of application of UTAUT

Application	Authors
E-banking	Maduku (2013); Ahmad Al-Zu'bi (2011); Chavan (2013); Al-Somali (2009); Alhujran (2009); Al-Smadi Al-Wabel (2011); Almazari and Siam (2008).
Mobile banking	Zhou, Lu, and Wang (2010); Baptista and Oliveira (2015).
Mobile payment	De Sena Abrahaoa, Moriguchib and Andrade (2016)
Mobile phone technologies	Lu, Yao Yu (2005); Park, Yang and Lehto (2007); Wang and Wang (2010); Zhou (2011).

Source: Adopted from literature by the researcher

The UTAUT2 model has been extensively applied to understand adoption of digital banking channels, revealing that simplicity, usefulness, convenience and conviction are critical factors to the adoption of digital channels (Afshan and Sharif, 2016; Kurila, Lazuras, and Ketikidis, 2016; Williams, Rana, Nripendra, and Dwivedi, 2015, Hui Ling, Islam, Abdul Manaf, and Wan Mustafa, 2015).

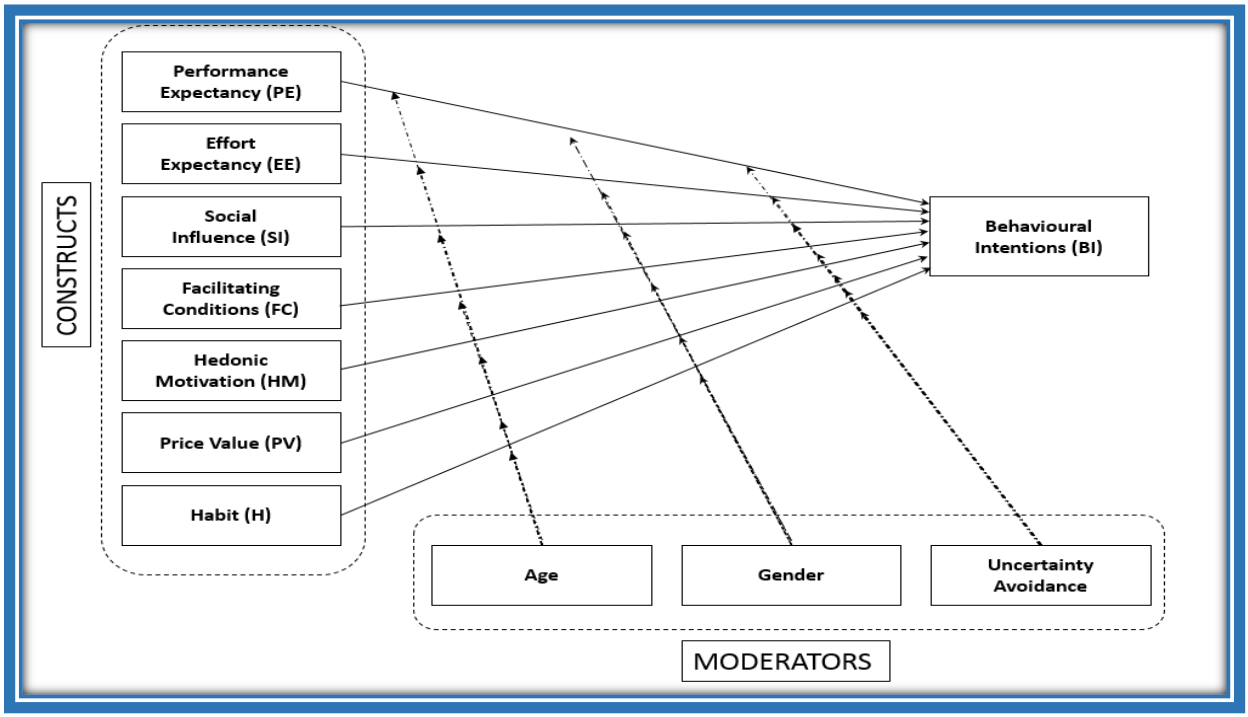
2.12 Theoretical Framework

The extended Unified Theory of Acceptance and Use of Technology (UTAUT2) is particularly recommended to elucidate the adoption of innovative solutions from the user's viewpoint. Thus, in pursuit of establishing a suitable model that entails multiple variables to ascertain South African user acceptance and use of electronic banking channels, the UTAUT2 has been identified as a suitable empirical model for suggesting the theoretical framework to be applied in this research.

The variables of the UTAUT2 model reflect the goal of the study and are relevant for exploring determinants that affect the use of electronic banking distribution channels in South Africa. However, this study's focus is not on experience, and it therefore replaced experience with uncertainty avoidance. This was decided on the basis that for experience to be assessed, users should have a long history in utilising innovative solutions. Many respondents of this study are fairly new and have only used electronic banking for a limited period. Thus, it is challenging to assess the significance of experience in this research.

As shown in the below Figure, the model is adopted from the UTAUT2 philosophy. "The main constructs in the UTAUT2: performance expectancy (PE), effort expectancy (EE), social influence (SI), hedonic motivation (HM), and price value (PV)" (Venkatesh *et al*., 2012). These are suggested as key constructs of users' intention to accept electronic banking channels. In line with Venkatesh *et al*. (2012), behavioural intention (BI) and facilitating conditions (FC) are recognised as core predictors of acceptance attitude of electronic channels. Finally, in this research framework, age, gender and uncertainty avoidance are the moderating constructs on every association amongst the independent variables and the dependent variable. The reason behind using the above said moderators is that their presence is in line with the aims of the study which propose to compare the contexts of the selected respondents.

Figure 2. 4: Proposed Research Framework



Source: Adopted from Venkatesh *et al.* (2012:157-178)'s UTAUT2 model)

2.13 Hypotheses Development

The following eight hypotheses are proposed:

H_1: Performance expectancy positively affects the use of e-banking channels.

H_2: Effort expectancy positively influences the use of e-banking channels.

H_3: Social influence positively drives the use of e-banking channels.

H_4: Facilitating conditions positively influence the use of e-banking channels.

H_5: Hedonic motivation affects the use of e-banking channels.

H_6: Price value influences the use of e-banking channels.
H_7: Habit has a positive influence on the use of e-banking channels.
H_8: Uncertainty Avoidance affects the use of e-banking channels.

Performance expectancy: "is the belief and conviction an individual hold concerning the use of electronic banking services" (Venkatesh *et al*., 2012:157-178). Performance expectancy can simply be explained as features as well as benefits that are derived from utilising technological channels (Venkatesh *et al*., 2012). Individual's apparent practicality in using electronic banking channels and its intended advantage to save time and convenience are motivating factors to adopt electronic banking services. Several studies observe that customers seem to be more motivated to use and accept new technology if they perceive that technology is more advantageous and useful in their daily life (Alalwan, Dwivedi, and Williams, 2016).

Preceding studies reveal that, electronic banking is broadly known as an innovative platform that enables users to perform a broad variety of financial transactions with convenience of time and location (Raza, Shah, and Ali 2019: 357-376; Alalwan, Dwivedi, Rana, Williams, 2017:17; Riquelme and Rios, 2010). Specifically, in the study conducted by Raza, Shah, and Ali 2019: 357-376 which investigated the acceptance of electronic banking, they found that the users' willingness to use electronic channels is influenced by the performance of e-banking.

The work on Internet banking, undertaken by Raza, Shah, and Ali (2019: 357-376) and Chopdar, Korfiatis, Sivakumar, and Lytras, (2018) revealed that customers with strong PE have high behavioural intention to use Internet banking. Venkatesh *et al*., (2012:157-178) propose that there is a pervasive effect of age on technological adoption. Most studies have identified performance expectancy as an important factor that affects user's intention to accept (Dwivedi *et al*., 2017a, 2017b, 2017b, 2017a, Rana *et al.*, 2015, 2016, 2017) Internet banking specifically (Alalwan *et al.*, 2017; Chopdar, Korfiatis, Sivakumar, and Lytras, 2018).

In his study, Huang (2018:243-248) findings validated that performance expectancy affects the decision to use technology, which corresponds with the UTAUT2 model (Venkatesh *et al*., 2012). Several other studies that applied the UTAUT2 model have revealed similar findings for different settings utilising different innovations (Raja Yusof, Qazi, & Inayat, 2017; Hosizah, Kuntoro, & Basuki, 2016; Morosan & DeFranco, 2016; Huang & Kao, 2015; Albugami & Bellaaj, 2014). Huang and Kao (2015:14) advocate that performance expectancy is one of the most important predictors of technology adoption. Morosan and DeFranco (2016:12) also accentuated that

performance expectancy is the important predictor of intention in their study of consumers' intention to use mobile payment in hotels.

Several empirical studies have found that performance expectancy is a strong and positive predictor of users' acceptance of technology (Chen and Lin,2018; Choi *et al*., 2018; Cilliers *et al*., 2018; Dou *et al*., 2017; Dwivedi *et al*., 2016; Zhang *et al*., 2017). Therefore, the following hypotheses are proposed:

H_1: Performance expectancy has a positive effect on the use of e-banking channels.
H_{01}: Performance expectancy negatively influences the use of e-banking channels.

Effort expectancy (EE): Venkatesh *et al*. (2012:167) defines effort expectancy (EE) as "the degree of simplicity associated with the use of a particular system". In line with Davis *et al*. (1989), the user's willingness to embrace technology is not only projected by how the technology is esteemed but also by ease of utilising the technology. Thus, "…due to the nature of electronic banking, which requires a certain level of knowledge and skill, effort expectancy could play a crucial role in determining the customers' intention to use such technology" (Chopdar, Korfiatis, Sivakumar, and Lytras, 2018; Alalwan, Dwivedi, Rana, Williams, 2017:17).

Numerous studies have tested the impact of effort expectancy on the user's willingness to use digital banking platforms (Alalwan, Dwivedi and Williams, 2016). The perceived ease of utilising has been validated in numerous studies that attempted to explain users' willingness to use electronic banking channels (Raza, Shah, and Ali 2019: 357-376). Similarly, Huang (2018:243-248); Yusof, Qazi, & Inayat (2017:274-288) in their work on Internet banking revealed that effort expectancy influences the willingness to adopt the technology. Several studies also revealed comparable association between effort expectancy and use of technology (Raja Yusof *et al*., 2017; Hosizah *et al*., 2016; Magsamen-Conrad, Upadhyaya, Joa and Dowd, 2015). This study did not come across any preceding studies that revealed insignificant effect of effort expectancy on use intention. Accordingly, the following hypotheses are proposed:

H_2: Effort expectancy positively influences the use of e-banking channels.
H_{02}: Effort expectancy has no effect the use of e-banking channels.

Social influence: The UTAUT model defines social influence as "the extent to which an individual perceives that important others believe the individual should apply the new system" (Venkatesh *et al.*, 2012:167). In electronic banking adoption, social influence can be contextualised as the impact

of the communal surroundings on a users' willingness to embrace electronic banking; such as, social media, household, celebrities, community leaders and peers (Zhou *et al*., 2010). In different words, the information and encouragements provided by people surrounding customers could play a dynamic role in contributing to the customers' awareness as well as the intention toward technology (Alalwan, Dwivedi, and Williams, 2016:145-157; Alalwan, Rana *et al*., 2015).

The selection of social influence as an influential factor on willingness to adopt is drawn from preceding literature that advocates for the influential position of social influence on users' willingness to use digital banking platforms (Alalwan, Dwivedi, and Williams, 2017; Martins *et al*., 2014). Several other studies discovered comparable findings about the effect of social influence (Arain, Hussain, Rizvi & Vighio 2019:659–673; Nicholas-Omoregbe, Azeta, Chiazor, & Omoregbe 2017:106-121). However, in Ghana, Agyei & Adzobu (2020:27-42) "…found social influence to have statistically insignificant effect on intention to use ICT for undergraduate students". As such, the following hypotheses are proposed:

H_3: Social influence positively drives the use of e-banking channels.
H_{03}: Social influence has no effect on the use of e-banking channels.

Facilitating Condition: "Facilitating condition is defined as the degree to which an individual believes that an organisational and technical infrastructure exists to support the system used" (Venkatesh *et al*., 2012: 157-178). Users of any technology expect support when the need arises. It is very important for designers to help users by embedding user support and feedback systems into computer-mediated communication tools. In accessing computer-mediated communication tools, the aesthetic design could facilitate the behavioural intentions to use computer-mediated tools.

Hypothetically, the influential position of facilitating conditions on the willingness behaviour toward utilising cellphone banking is backed up by several digital banking studies (Arain, Hussain, Rizvi & Vighio 2019:659–673; Huang 2018:243-248; Alalwan, Dwivedi, and Williams 2017). Certainly, in order to use digital channels usually entails a certain level of understanding, tools and network connectivity (Huang 2018:243-248; Alalwan, Dwivedi, and Williams, 2017). Thus, users could be persuaded to use electronic channels if they have enough knowledge of the system.

Huang (2018) found Facilitating conditions to have a significant effect on the use of social media, as suggested in the UTAUT2 model (Venkatesh *et al*., 2003; Venkatesh *et al*., 2012). Several researchers also confirmed this relationship (Arain, Hussain, Rizvi & Vighio 2019:659–673;

Khechine *et al*., 2014; Raja Yusof *et al*., 2017; Raman and Don, 2013; Hosizah *et al*., 2016). Similarly, in Ghana, Attuquayefio and Addo (2014) discovered that facilitating conditions significantly impact on information system technology use behaviour. As such, the following hypotheses are proposed:

H_4: Facilitating conditions positively influence the use of e-banking channels.
H_{04}: Facilitating conditions have no effect on the use of e-banking channels.

Hedonic motivation: Venkatesh *et al*. (2012: 157-178) proposed "a direct link between hedonic motivation and customer intention to use technology". Hedonic motivation is defined as the fun or pleasure derived from using a technology. Hedonic motivation was shown to play an important role in determining technology acceptance and use (Fox *et al*., 2011:22).

Users like to use technologies that come with novel tools and functionalities. Intrinsic utilities such as fun and enjoyment have been incorporated under the ambit of hedonic motivation together with extrinsic factors such as efficiency, in the equivalent framework (Venkatesh *et al*., 2012). Certainly, most studies have asserted that intrinsic utilities have a role in explaining the willingness to accept the technological innovations (van der Heijden, 2004). This hedonic prevailing role is more visible in the case of technologies that illustrate ingenuity and exclusivity as in the case of cellphone banking in Jordan (Alalwan *et al*., 2014; Brown and Venkatesh, 2005; Püschel, Mazzon, Hernandez 2010; van der Heijden, 2004). Alalwan, Dwivedi and Williams (2016) presented a robust substantiation advocating the position of hedonic motivation in influencing users' willingness to accept electronic banking. Consequently, the following hypotheses are proposed:

H_5: Hedonic motivation affects the use of e-banking channels.
H_{05}: Hedonic motivation has no effect on the use of e-banking channels.

Price value (PV): "In comparison with organisational sitting, using technology over the customer's context could carry customers' further financial cost. Therefore, customers could cognitively compare the utilities comprised in using new systems with the financial cost that should be paid for using such systems" (Venkatesh *et al*., 2012:157-178).

Evidently, when the expected gains of utilising an online solution are anticipated to compensate for the costs, the price value becomes important and the solution price delivers a positive effect on the willingness to use a technological solution (Hungilo and Setyohadi, 2020:86-98; Alalwan, Dwivedi, and Williams, 2017). Correspondingly, the users' willingness to embrace cellphone banking is highly influenced by price (Nikolopoulou, Gialamas, & Lavidas, 2020). Valverde,

Solas, and Fernandez, (2019) and Yang, (2009) contended that although the cost of cellphone banking was discovered to have negative effect on the acceptance of cellphone banking, relatively cheaper fees charged for digital transactions performed on cellphone banking were discovered to have a positive effect on the acceptance of cellphone banking.

The association between perceived channel benefits and costs has been contended and discussed in the pertinent studies of digital channels. For example, Chun *et al*. (2012) practically validated the influence of expected value in the users' willingness to use online banking channels. Similarly, cost is acknowledged as an important factor that influences the acceptance of online banking, specifically for users with high likelihood to embrace digital channels (Alalwan, Dwivedi, and Williams, 2017; Lee, Kwon, and Schumann, 2005). Surprisingly, Valverde, Solas, and Fernandez, (2019:9) found that younger customers who are knowledgeable about digital services are more likely to adopt electronic banking. The younger generation is perceived to worry less about the costs of online channels relative to the older generation. As such, the following hypotheses are proposed:

H_6: Price value influences the use of e-banking channels.
H_{06}: Price value has no influence on the use of e-banking channels.

Habit (H): Amoroso and Lim (2017:22) define habit as "the extent to which people tend to perform behaviours automatically because of learning" while Isa *et al*. (2015) equated habit with automaticity. Yousafzai, Foxall, Pallister, (2010) claim that habit influences decision toward consumer technology acceptance context. For example, for online education while Barnes (2011) revealed a similar trend on continual use Twitter. Therefore, the following hypotheses are suggested:

H_7: Habit positively influences the use of e-banking channels.
H_{07}: Habit negatively influences the use of e-banking channels.

Behavioural Intention (BI): Baptista and Oliveira, (2016:13) describe behavioural intention (BI) as "the intensity of an individual's intention to complete a specific behaviour and hence predict actual usage". This variable derives from the Theory of Reasoned Action (TRA) Ajzen and Fishbein, which has been applied extensively throughout the different studies to study behaviour purpose (Venkatesh *et al.,* (2003:425-478).

The original introduction of behavioural intention emanates from the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB). Both TBP and TAM posits

Behavioural Intention as the precursor to Usage behaviour (Venkatesh *et al.*, (2003:425-478). It is worth stating that that Behavioural Intention is the closest interpreter of the actual attitude (Venkatesh *et al.,* 2003:425-478). This link between attitude and use has been explored broadly and has been validated in the area of social sciences. Every Technology Acceptance Model derives constructs from preceding models, which claim that user attitude is projected and impacted by user's intention. The Unified Theory of Acceptance models (UTAUT1 and UTAUT2) also contended and proved that behavioural intention had significant influence on technology usage (Venkatesh *et al.,* 2003).

In a practical analysis performed by Venkatesh *et al*. (2012) the use of the Theory of Acceptance and Use of Technology (UTAUT2) model leap-frogged ahead of eight preceding models in predicting the determinants influencing attitude and use of technology. The differentiator of the UTUAT2 model is its illustrative authority in a situation. The UTAUT2 can explain approximately seventy percent of the deviation in attitude to use a technological solution. The researcher confirmed the impact of Performance Expectancy, Effort Expectancy, Facilitating Conditions, Hedonic motivation, Price value and Habit on Behavioural Intention as suggested by Venkatesh *et al*. (2012). The UTAUT2 is a commanding philosophy that can assist in comprehending technology acceptance attitude (Venkatesh *et al*., 2012). Hence, if the usage is mandatory it is highly recommended to assess attitude towards use of technology. In this study, user behaviour intention is used as the indicator of user acceptance.

Uncertainty Avoidance (UA): The cultural dimension of uncertainty avoidance (UA), is also included in Hofstede's cultural dimensions and in most of the cultural technology adoption studies researchers frequently incorporate the UA (Srite, 2006; Yang, 2013; Hofstede, 2001;). Uncertainty avoidance negatively affects the use of technology. Researchers mentioned that people in high UA cultures are less interested in accepting information technology innovations like mobile banking (Chong, *et al*., 2012) as this channel is not well understood as compared to face-to-face engagements in physical channels (Hong, 2013). Societal challenges, assertiveness, earnings, ambition and dealings are considered as valued factors (Yang, 2013; Srite, 2006) compared to feminist societies. Likewise, Raman and Don, (2013); Leidner and Kayworth (2006:18) found that uncertainty Avoidance has a negative relationship with the acceptance of information technology.

This study will only focus on Uncertainty Avoidance dimension from the Hofstede's four cultural dimensions to test its significance in acceptance of digital financial channels in South Africa. According to Valverde, Solas, and Fernandez, (2019:13) the use of digital banking platforms starts

with information-based services, for example, customers start by checking their bank balances, should this be simple enough for them, it is then followed by transactional services.

It is also supposed that the individuals with low uncertainty avoidance are willing to take risks and to take individual decisions (McCoy *et al*., 2010:23) and this forms the central hypothesis of this study. Most studies have empirically tested and substantiated the significance of the original moderators (Fehrenbacher, 2018: 94-180; Alrawashdeh, Thamer, Muhairat, Alqatawnah, and Sokyna, 2012; Pahnila *et al*., 2011; Pheeraphuttharangkoon *et al*., 2014; Pitchayadejanant, 2011; Raman and Don, 2013; Venkatesh *et al*., 2012; Xu, 2014; Yang, 2013). Alrawashdeh *et al*. 2012 , found that in addition to understanding the adoption of digital tools and technologies use, it is crucial to pay attention to Uncertainty Avoidance as it has been found to have a negative relationship with the acceptance of information technology

H_8: Uncertainty Avoidance influences the use of e-banking channels.
H_{08}: Uncertainty Avoidance has no influence on the use of e-banking channels.

2.14 Chapter Summary

Based on the overview of outlined technology acceptance models, UTAUT2 will be applied as a main source for the study because of its comprehensiveness and its strong power of interpretation as compared to other theories of technology access, it being the most prominent and interconnected in the field of information technology. Therefore, through application of UTAUT2, this study will attempt to better understand and explain the user's attitudes towards embracing and utilising digital banking channels. Key studies revealed that in different countries and industries performance expectancy, effort expectancy, social influence and facilitation were discovered to be important determinants that influence the acceptance and use of technological solutions. The existing literature does not look at uncertainty avoidance as a possible factor that could influence the use of technological solutions .

Although South African banks continue to embrace and adopt the 4IR associated technologies, the banking industry operates within the limitations of an emerging country confined to significant socio-economic challenges. The adoption and use of financial services and products, digital channels and fintech innovations are limited by, income inequality, low-income consumer market with most getting a stipend from the informal economy. This results in significant gaps when it comes to financial inclusion, therefore using digital banking channels become impossible for the low-income consumer market.

The 4IR digital technologies are challenging the status quo by progressively revolutionising the SCM. With regard to banking, the status quo has always been that customers are served through face-to-face interactions, and walk-in facilities at branches, the electronic banking in supply chain management is challenging this by delivering these banking services through digital banking channels. Furthermore, the financial institutions and users, through IoT, can now share data easily without walk-ins and face-to face engagement.

Chapter Three: Research Methodology

3.1 Introduction

According to Saunders, Lewis and Thornhill, (2019:27) "research methodology defines what the activity of the research is, how it proceeds, how its progress is measured, and what constitutes its success". Research methodology is the end-to-end process through which the researcher follows to carry out the research study. It presents the process through which the researcher articulates the study problem and objective, then present the study outcomes from the analysis of data collected (Sileyew, 2019). It is also explained as a logical approach for collection and interpretation of data followed by an analysis of the findings (Sekaran and Bougie, 2016:50).

Research methodology is a widely applied procedure to conduct research (Aaker, Kumar, Leone, and Day 2017:42). The research methodology chapter deals with the research approach, research structure, research procedure, the study scope, data sources such as primary data sources and secondary data. It also covers the study demographics and how the sample was determined, data collection approaches such as primary data collection methods, secondary data collection methods, data scrutiny methods applied, the process of analysing data, the internal consistency and rationality, and ethical considerations. In order to achieve the objectives of this study, a quantitative research method was applied, as this approach is most suitable to address the study objectives.

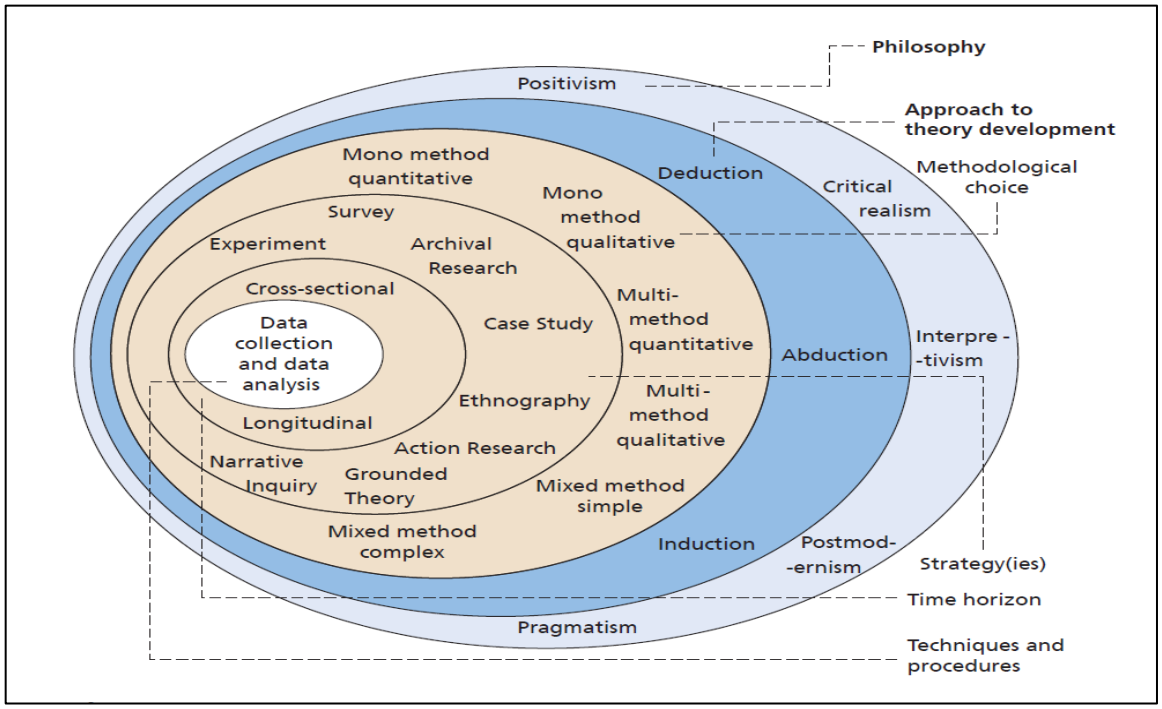
3.2 The Research Onion

This study applied the research onion conceived by Saunders, Lewis and Thornhill, (2019) to do this research. The research onion applied in the study is a confined framework which consists of six layers: research philosophies; research approaches; research strategies; research methods; time horizon and the techniques and procedures used to collect and analyse data to achieve key findings. "In management research, the 'research onion' framework has been successfully used to depict the different methodological dimensions, in terms of the choice of data collection and data analysis techniques" (Saunders *et al.,* 2019:14).

The research onion was established to be a reference guide on research approaches and procedure. "A research method is defined as a technique for collecting data and which can involve one or more specific instruments such as self-completion questionnaires, structured surveys, focus group discussions, observations, interpretation of documents, secondary data and internet research methods" (Bryman et al., 2014:380-384). Saunders *et al*. (2019:600) referred to methodology as the theory of how research should be undertaken, including the theoretical and philosophical

assumptions upon which research is based and the implications of this for the method or methods adopted. It encapsulates the study techniques and procedure that the study adopted, to enable users to comprehend the process that was undertaken to conduct this study.

Figure 3. 1: The Research onion



Source: Saunders, Lewis and Thornhill, (2019:18)

3.2.1 Research philosophy

The first layer of the research onion focuses on philosophy. According to Saunders *et al*. (2019:105-109), "research philosophy is a predominant term concerning the development of knowledge and the nature of the knowledge that the researcher will obtain in a specific research field".

There are four key research philosophies the researcher needs to consider, these are, positivism, interpretivism, critical realism and pragmatism (Armat, Assarroundi, Shariffi and Heydari, 2018). These philosophies are categories under Epistemology, Postmodernism, Pragmatism (Saunders *et al*., 2019). According to Armat *et al*. (2018:25) "Epistemology refers to what is acceptable knowledge in a particular field of study, and they can be classified into 3 main taxonomies: positivism, realism, and interpretivism.… Positivism concerns working in the position of the natural scientist" (Saunders *et al*., 2019:112).

This philosophy is objective-driven, implying that the study cannot make any inferences before the results are adequately analysed. Positivism perceives knowledge as objective, real, tangible and hard

the same way science perceives phenomena. On the other hand, "Realism is a technical enquiry to determine if objects exist independently of our knowledge of their existence" (Saunders *et al*., 2019:114). "Interpretivism is concerned with understanding the differences between humans as social actors and advocates that it is necessary, for the researcher to understand differences between humans in our role as social actors" (Saunders *et al*., 2019:100-110).

This study adopted positivism because this philosophy is mostly used to show the association among the variables. For example, the researcher attempts to understand why different people accept electronic banking channels while others are reluctant to adopt them. This will be achieved through collection of primary data from the substantial sample size supported by the positivist philosophy. The other reason this study used the positivism philosophy is because positivism focuses on using existing theories and relies on measurable observations which result in statistical analysis (Saunders *et al*., 2019:14). This study used the UTAUT2 model to construct hypotheses which guided the researcher to apply objectivity in interpretation. This study was undertaken from the perspective of positivist philosophy.

3.2.2 Research approach

The next layer of the research onion deals with research method, which incorporates deductive and inductive approaches (Saunders *et al*., 2019). This research adopted the deductive approach for a number of reasons. This study investigates the behaviour of South African bank customers and there is a significant amount of published empirical evidence on this aspect of the topic. In the context of adoption of electronic banking, a deductive approach is more suitable to use as Bilau *et al*. (2018) acknowledge. They claim that the deductive approach is most appropriate to use when preceding studies exist for specific social phenomenon. The other important reason for adopting a deductive approach is its compatibility with positivist philosophy (Armat *et al*., 2018), coupled with a large sample size (Saunders *et al*., 2019). An inductive research approach is mostly used when there is little preceding evidence available on the topic. In an inductive approach, the researcher begins with a research question then moves to observation before getting to theory. Whereas with the deductive research approach, the researcher begins with the theory then moves to the research questions which are verified through collected data (Sileyew, 2019). In general, a deductive approach is linked to quantitative research while the inductive approach goes with the qualitative approach (Saunders *et al*., 2019).

This study did not use the inductive approach for two reasons. The inductive approach requires development of new theories or hypotheses which is not part of this study. Secondly, the inferences drawn from an inductive research are subjected to no rational rigor and objectivity (Saunders *et al*., 2019).

3.2.3 Quantitative or qualitative research method

The research onion's third layer is research strategy which aids the researcher in the selection of the most suitable strategy which depends entirely on the type of research questions, objectives, and data sources. Saunders *et al*. (2019) outlined multiple suggested research strategies which includes quantitative, qualitative, and mixed-approaches. To fulfil the main research objectives, this research applied the quantitative method. Since quantitative research methods are suitable for studies involving numeric data and where findings are generated through statistical analyses (Saunders *et al*., 2019). In a quantitative method, the problem is best addressed by understanding what factors or variables influence an outcome (Creswell, 2018:152) for example, the researcher attempts to understand the determinants that influence the use of digital banking channels. Furthermore, the quantitative method helps the researcher who has concerns over each variable measurement (Biggam, 2018). Positivism embraces the use of the quantitative method as numbers have accurate, objective, and have concrete meanings (Saunders *et al*., 2019). McCusker and Gunaydin (2015:32) mentions that numbers are accurate; therefore, the quantitative method is more suitable for classification of relationships between different things.

By contrast, the qualitative method is supported by interpretivism which focuses on the assortment, bias, difficulty, and dynamics of phenomena (Saunders *et al*., 2019). This study does not use the qualitative method as it limits the researcher from testing the study hypotheses objectively and in a precise manner.

3.2.4 Research design

The research design section focuses on how the collection of data will be conducted, the instrument to be used to collect data, the understanding of how the instrument will be used and how the collected data will be analysed. According to Biggam (2018:20) the research design stipulates the research aim. In order to select the most suitable research structure for the study, the research objectives guide the selection of which research design to use. Saunders *et al*. (2019) distinguishes between different research approaches that may be applied in empirical studies, such as, descriptive, experimental; and exploratory. Descriptive research is part of quantitative research methodology that aims to gather measurable data that can be used for statistical analysis. It is often used as a market research method that is capable of collecting and explaining the extent of the demographic data (Saunders *et al*., 2019). Tham *et al*. (2019:30) defines descriptive research as "a process of describing the characteristics of any selected phenomenon".

According to Sharma (2019:4-11) “experimental research designs are the primary approach used to investigate causal (cause/effect) relationships and to study the relationship between one variable and another.” For the purpose of this research, a causal research design was used by the researcher.
This study applied a descriptive research design as it intended to gather data that would explain the features of people, situations and in a more organised way than in exploratory research. Furthermore, descriptive research method is most suitable for this study as it is part of the quantitative research tools that focus on collecting measurable information that can be used for numerical analysis. The additional research structures are outlined below.

Causal research design: The causal study is mostly used when causal implications are required to be established (Babin & Zikmund, 2016:34). The causal study could be an extension of exploratory or descriptive research (Sunders *et al*., 2019). Zikmund (2006) maintains that this design deals with the cause and effect relationships between two variables that are the independent and dependent variables.

According to (Babin & Zikmund, 2016:46-50),“causal studies should adhere to the following prescribed settings: the independent and the dependent variable should co-vary; the independent variable (the presumed causal factor) should precede the dependent variable; no other factor should be a possible cause of the change in the dependent variable; and a logical explanation (a theory) is needed and it must address why the independent variable affects the dependent variable”. In this study the focus is not on investigating the cause or the effect, hence this research design was not adopted for this research.

Exploratory research design: Exploratory research is mostly employed to explain the delinquent aspects of the topic and to undertake research in the early phase of the enquiry without definite evidence which requires supplementary investigation (Babin & Zikmund, 2016). According to Sekaran and Bongie (2016:96), studies only adopt the exploratory research design when there is limited knowledge about the situation at hand. This method is effective when the study aims to understand the problem. According to Shajahan (2009:33), exploratory research design must conform to the following settings: to design a problem for investigation and to formulate a hypothesis; to determine the priorities for further research; gather data about the practical problems in carrying out research on particular conjectural statements; to increase interest of the analyst towards the problem; and to explain basic concepts. This study focus is not in line with the above conditions, therefore exploratory research design was not suitable for this study.

3.2.5 Research strategy

Questionnaire Survey: A research strategy is a plan that outlines how the researcher will address the research questions (Saunders *et al*., 2019:22). Research strategy can also be defined as a guide which assists the researcher to decide on data collection methods and instruments to address the research question and to fulfil the research objectives (Sileyew, 2019:15). Saunders *et al*. (2019) outlined multiple suggested research strategies which included: experiments, surveys, grounded theory, case studies, and ethnography. In social science, survey research is often used for quantitative research as it is most appropriate for studies that involve people.

This study used the questionnaire survey strategy for a number of reasons. One of the reasons for using this strategy was that such strategies often results from a deductive approach (Bilau *et al*., 2018). According to Saunders *et al*. (2019) survey strategy is relatively less expensive, is capable of collecting a large quantity of data that is important for statistical analysis, and it is quicker compared to other strategies. "A survey is a system of collecting information from or about people to describe, compare, or explain their knowledge, attitudes, and behaviour" (Armat *et al*., 2018:20).

Survey systems follow a certain pattern which includes defining objectives for data collection, study design, selection of an authentic and well-grounded instrument, managing of the survey, administering and analysing the survey data, and outlining results (Sileyew, 2019). In a most cases, surveys are used to gain insight into consumer-behaviour patterns, customer loyalty and satisfaction, the adoption of online service, and are often used in exploratory, descriptive, and causal research (Tham *et al*., 2019:15). Survey research is "a research method involving the use of standardized questionnaires or interviews to collect data about people and their preferences, thoughts, and behaviours' in a systematic manner. The survey method can be used for descriptive, exploratory, or explanatory research" (Saunders *et al*., (2019). It is for this reason that this study used a survey as a data collection method.

Saunders *et al*. (2019:22) further outlined other strategies that researchers can use in a research study, such as, experiments, observations, grounded theory and action research. According to Sekeran and Bongie (2016:102), generally experiments are connected to deductive research and a scientific hypothetical deductive approach, whereas case study concentrates on gatherimg data about a definite object, or activity (Sekeran and Bongie, 2016:103). On the other hand, Sekeran and Bongie (2016:103-104) define a grounded theory as a "systematic set of procedures to develop an inductively-derived theory from the data". This study had no intention of creating a theory, hence grounded theory was not adopted.

Measurement Scale: In line with the overview of preceding empirical studies outlined in the table below, the variables encompassed in this study's theoretical model have been used in earlier research. Therefore, the measurements applied in these preceding studies can be reused by this study with slight adjustments to suit the study. The questionnaire development adhered to the following principles. The researcher revised the questionnaire measures applied in the earlier studies. Furthermore, the researcher selected applicable questionnaire scales from these preceding studies. The researcher then cautiously compared the distinctive measurements of similar variables and adopted the most applicable measurements. Finally, the research adjusted the measurements to suit this study.

As presented in the table below, the questionnaire contains 12 variables, which include 1 response variable (user's Behavioural willingness to use e-banking channels), 9 explanatory variables, which include: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, uncertainty avoidance, behavioural Intention and 2 control variables (gender, and education). The study used Likert-5-Point items to measure respective dependent and independent variable, i.e., respondents were asked to self-report their satisfaction levels of agreement between 1 (strongly disagree) to 5 (strongly agree), on a set of statements, which describe their perception and experiences of e-banking channels. By doing this, these 10 variables were converted into numbers between 1 and 10. The other 2 control variables were measured by closed-ended questions. After the questionnaire was drafted, the researcher requested fellow PhD researchers to peer-review the research instrument and the student obtained professional guidance from the study supervisor and guidance form the UKZN Ethics Committee.

Table 3. 1: Measurement Scales

Variables		Items	Adapted from
Dependent Variable	Intention to use e-banking channels	I intend to use e-banking channels soon. I predict I will use e-banking channels in the future. I plan to use mobile e-banking channels in future.	Sun *et al.* (2013), Zhang *et al.*, (2017)
Independent Variables	Performance Expectancy	Using e-banking makes it easier for me to do my daily financial transactions. Using e-banking is more useful than traditional forms of banking (physical branch). Using e-banking facilitates easier communication with my bank.	Sun *et al.* (2013), Venkatesh *et al.*, (2012), Zhang *et al.* (2017)

	Effort Expectancy	I find electronic banking easy to use and flexible as I can bank at any time. It is easy to find and use the features in electronic banking. It is easy to learn how to operate electronic banking channels.	Sun *et al.* (2013), Venkatesh *et al.* (2012), Zhang *et al.* (2017)
	Social Influence	People who I look up to think that I should use electronic banking. People who are important to me (family) think that I should use electronic banking. In general, the community encourages me to use electronic banking	Gao, Li, and Luo, (2015), Sun *et al.*(2013)
	Facilitating Conditions	I have the necessary resources to use electronic banking (smartphone; internet) I have the necessary knowledge to use electronic banking. Support from an individual or service is available when I encounter problems with e-banking. Electronic banking is not the only channel I use for banking. I do not need assistance to use electronic banking.	Dwivedi *et al.* (2016), Gao *et al.* (2015)
	Hedonic Motivation	Using e-banking channels is fun. Using e-banking channels is enjoyable. Using e-banking channels is very entertaining.	Gao *et al.* (2015)
		E-banking services are reasonably priced	Venkatesh *et al.* (2012)
	Price Value	E-banking is good value for money	Choi *et al.* (2018), Gao *et al.*(2015)
	Habit	Using e-banking channels has become a habit for me I depend on e-banking to perform my banking activities Using e-banking channels has become natural to me	Choi, Lee, Choi, Rho, and Kim, (2018), Gao *et al.*(2015)
	Uncertainty Avoidance	Information on electronic banking channels is simple to understand I get confused when a lot of information is presented on electronic banking	Venkatesh *et al.* (2012)
	Behavioural Intention	I intend to use e-banking channels in my daily life. I predict that I will use e-banking channels more frequently. I plan to use e-banking channels in the near future.	Venkatesh *et al.* (2012)
Control Variables	Gender	Gender (male and female)	Self-administered
	Education	Educational Level (from honours degree to Doctorate)	Self-administered

Source: Adapted by the researcher from literature

3.2.6 Time horizon

Saunders *et al.* (2019) outlined two types of time horizon available for researcher to choose from.

"Longitudinal research involves the study of a sample on more than one occasion. Longitudinal research incorporates long periods of time, sometimes a decade and follows the sample a repeated number of times" (Saunders *et al*., 2019:40). According to Sekeran and Bongie (2016:18), "longitudinal studies requires data to be collected at two different time frames". The other type of time horizon is a cross-sectional study, which is defined as "a survey research in which each respondent completes the survey at one point in time" (Saunders *et al*., (2019:40).

According to Shajahan (2009:34) "longitudinal studies take the form of a sample of respondents who are studied over a period of time from a few months, to a few years". Sileyew (2019:14) explained cross-sectional research as a study in which data is gathered just once, perhaps over a period of days or weeks, or months in order to answer a research question and can also be regarded as a 'one-shot' study. Since this study was conducted within a specific limited time period, this study adopted the cross-sectional approach.

3.2.7 Data collection methods

The final layer of the research onions focuses on methods of data collection such as primary and secondary data, which plays an important role in academic research as it guides data scrutiny to fulfil the crucial findings of the study. The researcher decided to use the self-administered questionnaire to collect data, which is an effective data collection instrument especially in quantitative research (Saunders *et al*., 2019, Tham *et al*., (2019). This researcher collected the secondary data from published statistics, the South African Reserve Bank official publications in South Africa and international published reports that relate to the study.

In the data collection process, the researcher managed to obtain the services of research assistants in order to reach and collect data from all the UKZN five campuses, Durban-University of Technology's seven campuses and The Supply Chain Academy in KwaZulu-Natal. The research assistants were mostly students doing post-graduate qualifications. The main reason for the researcher to make use of research assistants was because the researcher was not going to be able to reach all the participating academic institutions on his own, therefore having research assistants made it easy to distribute questionnaire and to collect data on time. The researcher also decided to use students who were doing post-graduate studies as these students had some knowledge and understanding of research. The researcher also distributed and collected a portion of the questionnaires from the respondents himself. Prior arrangements were made with participants where all the participants took part voluntarily in the study. To improve the consistency of findings, the researcher indicated clearly that the survey should be completed by the respondents who are bank customer(s) and who are aware of electronic banking.

3.2.8 Study Site

The study was conducted in KwaZulu-Natal Province, also known as KZN. According to Statistics South Africa (StatsSA), KZN has is the province with the second largest population, with an estimated 11,3 million people (19,2%) living in this province. In terms of the number of municipalities, KwaZulu-Natal is one of the biggest provinces in South Africa, with the highest membership municipalities (54 municipalities in total this included 10 district municipalities and 1 Metro) (StatsSA, 2020).

The province of KZN has 4 recognised higher-education institutions, namely, University of KwaZulu-Natal (UKZN), Durban University of Technology (DUT), University of Zululand (UniZulu) and Mangosuthu University of Technology (MUT) (StatsSA, 2020). This study was conducted with UKZN, DUT and The Supply Chain Academy, as these were the most accessible higher education institutions and they were willing to participate in the study.

3.2.9 Target Population

Saunders *et al*. (2019) defines population as the holistic set of cases from which a sample is drawn, or a cluster of persons from which the anticipated data is required (Tham *et al*., 2019:18). The researcher drew the sample from a population of 1500, as per 2019 Department of Higher Education survey in KwaZulu Natal. This category constitutes the target batch for electronic banking channels and, thus, this batch has some knowledge and understanding of electronic banking channels in South Africa.

3.2.10 Sampling Strategies

Sampling is defined as the collection of data from a sub-group of all possible cases or elements. (Saunders *et al*., 2019:38-45). Approaching the 1500 population, two types of sampling methods, which includes, probability sampling and nonprobability sampling were considered but the researcher decided to use purposive and simple random samplings for this study. “The simple random sampling warrants that each member of the population has an equal chance for the selection or the chance of getting a response which can be more than equal to the chance depending on the data analysis justification” (Sileyew, 2019:22-23). The other reason for researcher to select simple random sampling technique is because of the availability of people at the academic institutions. Furthermore, the other reason is that probability sampling technique allows the researcher to manage the systematic errors and sampling biases. The reason for using purposive is because the study targeted only postgraduate students from specific sample population, and simple random sampling was used due to the difficulty to find post-graduate students together at the same time because they are both part-time and full-time students. The reason for selecting post-graduate students is because

they understand banking channels and they are bank customers. Saunders *et al*. (2019:27) contended that non-probability sampling is the selection of components applying sampling techniques in which the likelihood of respective case being chosen from a population is not unknown.

3.2.10.1 Simple random sampling

According to Saunders *et al*. (2019), and Sileyew, (2019:4-6) "simple random sampling is the type of sampling where each and every element of the population has an equal chance of being selected in the sample". Furthermore, Saunders *et al*. (2019:30-32) emphasise that the population must encompass a limited number of elements that can be itemised or mapped. Each element must be mutually exclusive, for example, able to distinguish from one another and does not have any overlapping characteristics. The researcher decided to use a simple random sampling for this study in collecting and distributing the questionnaire to participants. Each respondent was was selected based on the qualification level they were undertaken, this being honours to PhD.

3.2.10.2 Convenience sampling

Convenience sampling involves selection of cases that are simplest to get for the sample, for example, interviewing random persons at a mall for a new product. The sample selection process becomes iterative until the expected sample size is achieved (Sileyew, 2019). The convenience sampling is a relatively simple method particularly for a large population where the sampling frame is complicated to obtain. Moreover, it saves time when carrying out research (Saunders *et al*., 2019:11).

The other non-probability sampling types includes; volunteer sampling, Purposive sampling, quota sampling (proportional and non-proportional), Snowball sampling, matched Sampling, genealogy-based sampling (Sileyew, 2019; Saunders *et al*., 2019; Naderifar, Goli, and Ghaljaie, 2017).

3.2.11 Sample Size

In order to decide on the suitable sample size for the study, the researcher used Krejcie and Morgan's (1971) statistical table of sample sizes at 5% margin of error and 95% confidence level. As per the DHET, there were approximately 1500 registered post-graduate students in 2019, this study used this population to determine the sample size, based on Krejcie and Morgan's (1971) table the recommended sample scope for such a population is 307. This was dispersed across the involved academic institutions proportionally.

Table 3. 2: Post-graduates Population and Sample by Academic Institution

Academic Institution	Population	Sample per institution
University of KwaZulu-Natal	610	110
Durban University of Technology	780	159
The Supply Chain Academy	110	38
Total	**1500**	**307**

3.2.12 Sources of Data

The study data was collected from books and academic journals focusing on quantitative data as it supports information analysis to fulfil the crucial findings of the study. The data collection instruments were developed and arranged using prescribed procedures.

Primary data :The primary data sources can be qualitative or quantitative. The quantitative data sources include survey questionnaires, interviews etc. whereas qualitative fata sources cover interviews, field observation, and informal engagements. As discussed in the previous section this study applied a quantitative approach and the original information was gathered through a self-administered survey instrument.

Sileyew (2019:7-10) outlined the advantages of primary data as being: The degree of precision is high as primary data is unique and applicable to the topic of the study; primary data are characterised with a relatively higher degree of reliability as the researcher collects data himself /herself; primary data can be gathered in numerous ways such as in using interviews, telephone surveys, focus groups etc. It also makes it easy to obtain data across the national borders through online surveys, and emails; and primary data provides an accurate view to the researcher as it is recent and relevant.

The following were the disadvantages listed for primary data: primary data collection requires many hours and a great deal of effort. At times, when the collected data are analysed and reported on, they may be outdated; they have design problems like how to design the surveys. The questions must be simple for everyone to understand, otherwise the research goals may not be achieved; and the primary data may be costly to collect as it requires time and monetary investment.

3.2.13 Research Instruments

The research instruments are defined as tools for collecting the required data to discover solutions to a problem under investigation (Sileyew, 2019). In this study, a questionnaire was employed as a data gathering instrument. A prior arrangement was made with participants where all the participants

voluntarily participated in the study. A questionnaire was then circulated to all users, both current and potential, of electronic banking channels.

3.2.13.1 Questionnaire design

Tham *et al*. (2019:20) described a questionnaire as "an efficient data collection mechanism with a pre-formulated, written set of questions to which respondents record their answers, usually within rather closely defined alternatives". Biggam (2018) defines a questionnaire as a sequence of questions presented to individuals to attain statistically valuable data about a specific topic. It is characterised by four key drives: to gather the suitable data, ensure data is analogous and agreeable to examination, reduce bias in articulating and prompting questions, as well as to ensure that questions are understood. When appropriately constructed and sensibly administered, questionnaires become an important instrument by which conclusions and inferences can be drawn about specific clusters or entire populations. This study applied a survey instrument as a data collection instrument comprising a sequence of questions intended to obtain data from the respondents. The questionnaires for this study contained both closed-ended and open-ended questions. In order to avoid ambiguity, the researcher ensured that the questions were simple and direct and that they would be understood by the respondents. The fundamental purpose of designing the questionnaire was to obtain data to address the research questions, and thereby achieve the study objectives.

The data collection instrument for this study had four organised sections:
The first section encompassed distinctive demographic, individual profile and respective respondents' common information. The second section encompasses dichotomous questions (Yes or No) on common insights of, electronic banking distribution channels to improve electronic banking adoption, and the third and fourth part of the questionnaire measured the relevant constructs of interest to this study. These were performance expectancy, effort expectancy, Social Influence, Hedonic motivation, habit, facilitating conditions, and behavioural intention to use (Venkatesh, *et al*., 2012). In order to originate merged scores for respective constructs, 5-point Likert-scales were applied. The Likert scale ranges are: strongly disagree, disagree, neutral, agree and strongly disagree. The participants were asked to signal if they concurred or differed with presented statements, where 5 denoted 'strongly agree', 4 denoted 'disagree', 3 denoted 'neutral neither agree nor disagree. 2 denoted 'agree' and 1 denoted 'strongly disagree'. The respondents were guaranteed that they would be provided with summarised research findings to inspire and enhance the questionnaire's total completion rate. To honour the privacy of the participants from a moral perspective, the respondents were guaranteed that the research would not reveal the personal details of the participants.

3.2.14 Data collection Procedure

A prior arrangement was made with participants where all the participants participated voluntarily in the study. In most instances, the researcher gathered data himself, travelling to Durban where different campuses are located while, in some instances, the researcher used research assistants to collect data, but the researcher monitored this carefully to avoid bias and inconsistency. More than enough people participated in the study and, consequently, it only took the researcher two months to complete the data collection process. On average, it took 10-15 minutes for respondents to complete the questionnaire.

3.2.15 Data Quality Control

In this study, Cronbach's alpha correlation coefficients were used to examine consistency of the questionnaire. Field (2013) mentions that the Cronbach's alpha index indicates the extent to which all items in the measuring instrument are measuring the same characteristic and that the set of variables was consistent within what it was intended to measure.

This study validated correlations between variables, where constant association specified the strength of the association between constructs (Hair *et al*., 2014). Despite the debates around what is an acceptable threshold to ensure satisfactory reliability, in marketing research, values between 0.70 and 0.80 normally indicate good reliability (Iacobucci and Churchill, 2010:30; Malhotra 2010). After the reliability of the questionnaire was examined, the scales were loaded for factor analysis, to evaluate the rationality of the questionnaire. Before proceeding with analysis of linear regression, the postulations of multicollinearity were evaluated. "Multicollinearity is the extent to which a variable can be explained by the other variables in the analysis. In effect, as multicollinearity increases, it complicates the interpretation of the variate because it is more difficult to ascertain the effect of any single variable, owing to their interrelationships" (Hair *et al*., 2014:15).The questionnaires were also evaluated by other PhD researchers and the researcher also obtained professional guidance from the study supervisor and from the Ethics Committee at UKZN.

3.3 Reliability and Validity of the Research

The reliability of measurements details the extent to which it is without bias (error free), and it guarantees reliable measurement across time and across the several items in the questionnaire (Sekaran and Bougie, 2016:14). This study was checked for stability and consistency of data to ensure reliability, where the researcher inspected the precision and accuracy of the method of measurement. According to Sileyew (2019), the measurement is deemed reliable when it

consistently produces reliable results when data analysis procedure is conducted. The next techniques were applied to assess the rationality of the questionnaire:

3.3.1 Reliability Analysis

The internal reliability of the research tool was evaluated through Cronbach's alpha correlation coefficients. According to Field (2013) the Cronbach's alpha index signals the degree to which all variables in the computing instrument are calculating the identical feature and that the pair of variables is constant within what it is envisioned to calculate. In spite of the arguments around tolerable threshold to confirm acceptable reliability, values in a range of 0.70 and 0.80 generally show acceptable internal consistency (Iacobucci & Churchill 2010; Malhotra 2010).

The researcher conducted the consistency test to the confirm the internal consistency among items of one variable. According to Sekaran and Bougie (2016), Cronbach's Alpha can be used to determine the average intercorrelation among the items loaded to measure the concepts. In line with Sekaran and Bougie (2016)'s suggestion, this study applied Cronbach's alpha to test the inter-items consistency. "The closer Cronbach's Alpha is to 1, the higher the internal consistency reliability, the range of 0.70 is acceptable, if the figure is 0.80 that will be good and excellent for 0.90. On the other hand, if the range is low under 0.60, the variable will be considered not good for the study and should find the item that effects the measurement, to see whether to remove it to improve the inter-item consistency" (Sekaran and Bougie, 2016; Sileyew, 2019).

According to Field (2013) "the Cronbach's alpha index signals the degree to which all variables in the computing instrument are calculating the identical feature and that the pair of variables is constant within what it is envisioned to calculate". Values in a range of 0.70 and 0.80 generally show acceptable consistency (Iacobucci & Churchill 2010; Malhotra 2010). This study tested the correlation between variables, where an association coefficient indicated the strength of the association among variables (Armat *et al*., 2018; Hair *et al*., 2014).

Both reliability and validity significance tests were observed to determine the 'goodness' of measure for a model. According to Sekaran and Bougie (2013), "reliability is a test of measuring the consistency of the instruments while validity is a test that indicates the wellness of the developed instrument in measuring a particular concept of the study". According to Iacobucci & Churchill, (2010); Malhotra (2010), reliability measures objectivity, dependability of data, precision, consistency, and the stability of data A Cronbach Alpha value of above 0.7 might be viewed as a good measure to assess internal consistency (Chase and Jacobs, 2011:13). However, a value below 0.70 has been deemed acceptable if the research is an exploratory nature (Hair *et al*., 2014).

As the constant approaches 1, the tool applied to measure is considered consistence in forecasting the required findings (Sekeran, 2010). In this study, Cronbach's alpha was used to assess internal consistency and the reliability of a measure. All variables should present merged consistencies beyond the 60% proposed percentage for descriptive study (Black and Babin 2019:58). "The statistical barometers will help to evaluate the factorability of the data with Bartlett's test of sphericity, which is crucial at 5% for the factor analysis to be deemed relevant" (Hair *et al*., 2014), as well as "the Kaiser Meyer-Olkin (KMO) measure of sampling adequacy" (Field, 2013).

3.3.2 Validity

Validity tests how well an instrument that was developed measures the particular concept it was supposed to measure (Sekaran and Bougie, 2016; Sekaran, 2010). Sekaran and Bougie (2016) reported that there are numerous methods to explore the quality of assessment tools, that are formulated with the aim of epitomising the social methodical perceptions. The researcher anticipated classifying hypothetically maintained associations from preceding studies and then to examine whether or not the measures had consistent associations. The research used research questions based on a theory that is appropriate to the topic. This study applied content validity to ascertain whether or not the accurate concepts are evaluated with the data gathering tool, that is, the questionnaire. As long as the results are as expected, they are considered valid on their face (Hair *et al*., 2014). The researcher also applied Face validity as explained by Sekaran and Bougie (2016) as an indicator that makes it seem a reasonable measure of some variables, and it is the subjective judgment that the instrument measures what it intends to measure in terms of relevance (Sileyew, 2019:11).

In this study, the researcher attempted to ensure, during the questionnaire development, that uncertainties were minimised by using suitable terms and concepts with an aim to improve precision and general understanding (Sekaran and Bougie, 2016). Additionally, the researcher reviewed the research instruments with the research supervisor, to ascertain if the instrument should be deemed effective on a face value and to confirm the validity of the measuring instruments. The other type of validity is nomological validity which helps to establish whether or not the scale presents the associations deemed to be present, based on existing research in the multiple regression method and factor analysis. In this study nomological validity was applied to establish whether or not the scale represents the associations deemed to be present based on existing study in the multiple regression method and factorability. On the other hand,

Convergent validity is a set of alternative measures accurately represents the construct of interest (Sileyew, 2019; Iacobucci & Churchill 2010; Churchill, 1979), will examine the significance level for all the factor loadings. Put simply, when the total of all the respective factor loadings is

substantial, then the pointers are joining to calculate identical construct (Sileyew, 2019; Hair *et al*., 2014; Anderson and Gerbing, 1988). The study will evaluate and detect significant divergence from projection of findings or to unexpected findings by applying multicollinearity, normality, Bartlett test, Cronbach's Alpha and eigenvalues.

In this research, prior to development of the questionnaire, the researcher was guided by existing literature and data collection methods. In addition, the peer-reviews by fellow PhD students were conducted which enabled the researcher to address doubts regarding details in the questionnaire. An in-depth review of the questionnaire, by the study supervisor was performed, to be certain that concepts relating to the study were incorporated, and to confirm that the instrument had been improved.

Expert opinion: An exhaustive review of the questionnaire by the study supervisor was performed who recommended a number of changes which were noted and incorporated into the measuring instrument.

Peer reviews : Several suggestions from fellow PhD students were noted and incorporated into the measuring instrument to quell doubts of the details contained in the questionnaire.

3.4 Administering the Survey Instrument

Every research study involving the use of questionnaires aims to gather as many responses as possible by circulating the questionnaire to the selected respondents. This study collected data through a survey instrument; a questionnaire. The motivation for using a questionnaire emanated from its effectiveness in gathering a relatively higher number of responses and the fact that this survey instrument offered the possibility of secrecy as the respondents' personal details were not required in answers to questions in the research instrument. The approach of circulating the survey instrument was managed by the researcher through pre-arranged distribution and gathering of survey responses over a specified period to improve the response rate. The researcher manually distributed 310 questionnaires, with the help of research assistants, to participants to fill in and they were gathered from the participants by the researcher. Overall, 307 completed questionnaires were gathered from the respondents, representing a return rate of 99% (=307/310).

3.5 Data Analysis Plan

According to Sileyew, (2019:31) "data analysis is the process of dissecting bulk volumes of collected data to analyse it to understand" and Vaske, (2019:32) mentions that data analysis is a body of methods that helps to explain facts, distinguish patterns, construct meanings and test the

hypothesis. The data analysis plan includes understanding and presentation of the data gathered from the study. Data analysis remains the centre of the study where the researcher dissects, analyses, scrutinises and presents all the details in the study. In this study, the information was loaded onto numerical tools, tables and diagrams that were used to present the analysed data. All the data collected in this study were analysed through the Statistical Package for Social Scientists (SPSS) version sixteen (16). The next section discusses the methods used in the study to analyse and present data.

3.6 Methods

3.6.1 Univariate

The univariate method was used to evaluate the dispersion of items on each variable at a time such as: nonfiction data, realistic parts of common attitude towards electronic banking channels, and basic information on the banking sector. In this respect, the measures of central tendency will allow a researcher to summarise information using mean and mode (Hair, Black, Babin, and Anderson (2010), to find the central dispersion. The procedures of distribution that defines the propensity for feedback to deviate from the essential inclination such as mean, will be evaluated by variance, standard deviation, minimum and maximum, and Cronbach's Alpha as measure of internal consistency of reliability (Hair, Black, Babin, and Anderson, 2010). Frequency distribution diagrams were used to display the analysis.

3.6.2 Bivariate technique

3.6.2.1 Cross-tabulation and Chi-square

According to Bhattacherjee, (2012:125) and Shui *et al*. (2009:509), when the study intends to simultaneously compare two or more constructs, Cross-tabulation is used. This technique is mostly recommended as it classifies the total participants based on collected feedback.

"This technique is known for its ability to assess goodness of fit of the detected distribution with the projected distribution" (Hair, Black, Babin, and Anderson (2010). The Chi-square measurement establishes the statistical importance amongst the occurrence dispersion of 2 or more clusters (Aaker *et al*., 2017). The rationale behind applying these techniques is to try to address, hypothetically, the key questions that are associated with the study purpose that involves analysis of electronic banking channels:

- What is the extent of acceptance and use of downstream electronic banking distribution channels by generation-based clients?
- What is the effect of the cultural factor and uncertainty avoidance, on the adoption of electronic banking distribution channels?

- How do the facilitating conditions of electronic banking channels impact on the downstream supply chain customers experience?
- To what extent does the downstream electronic banking channel's simplicity of operation affect the use of digital banking distribution channels?
- How can one develop an integrated retail supply chain electronic banking model that influences the downstream site generation-based customers?

3.6.2.2 Non-parametric Statistics

The widely used and recommended technique for the study to measure data on labels and non-numerical scales uses non-parametric techniques. According to Aaker *et al*. (2017:30) "nonparametric (no parameter or characteristic of a population) techniques do not have stringent requirements and do not make assumptions about the underlying population distribution and these tests are referred to as distribution-free tests". This study will apply one non-parametric tests called the Friedman test, which is a is applied to assess variance among groups where the dependant variable being evaluated is ordinal. This test concentrates on important alterations to mean position adoption determinants for selected proportions.

3.6.2.3 Correlation Analysis

The correlation matrix methods are concerned with the simultaneous occurrence between variables" (Bhattacherjee, 2012: 120-130). This method is designed to provide information about the degree and association between the variables (Wiid & Diggines, 2009:248). Hair, Black, Babin, and Anderson (2010) mentions that Pearson correlation coefficient measures the degree to which there is a linear association between two variables.

This study used the Pearson correlation matrix to test the relationships between the variables involved in this study. Pearson correlation has been extensively applied in research to determine the importance of the relationship between the linear related variables (Aaker *et al*., 2017). In order to determine the extent of direct relationship among variables within the properties of degree and direction, Pearson's r is a useful descriptor to use (Fox and Weisberg, 2011; Cooper and Schindler, 2008 and Pallant, 2006).

3.6.3 Multivariate Analysis

The multivariate analysis determines the relationships between a set of variables, where the intention is to predict which variable has a contingency effect on another (Aaker *et al*., 2017).

According to Hair *et al*. (2010:13) multivariate analysis "refers to all statistical methods that simultaneously analyse multiple measurements of each individual or object under investigation". The objective of this analysis is to construct models and dimensions suitable to incorporate the entire populace. This numerical method is built on a design that incorporates disparate connectedness and dependence measures. Collectively, connectedness and dependence settings are entangled whereby the captured factor is equivalent to or exceeds sixty percent ($\geq 60\%$) in the factor analysis technique and will be exposed to the dependence requirement. The important position of multivariate analysis in this research as a numerical method will reveal the association between variables in the study.

3.6.3.1 Factor Analysis

Factor analysis is mainly used to reduce the sum of items to manageable factors. Put differently, factor analysis is a technique that takes a bulk of variables and investigate to ascertain whether these variables have common incremental number of factors that explains intercorrelation (Aaker *et al*., 2017; Bryman and Bell, 2007). Kaiser Meyer-Olkin (KMO) and Bartlett's test of Sphericity are numerical procedures that aid in ascertaining the incorporation of the information and the sampling appropriateness. The Bartlett's test of Sphericity authenticates the suggestion of similarity of variance.

According to William, Brown and Onsman (2012), factor analysis is a multivariate procedure that clarifies the problem of assessing the structure of the intercorrelations among a bulk number of variables by explaining a group of mutual fundamental factors. The clarification of factor analysis is motivated by a fundamental opinion of – how significant respective construct is captured with other respective constructs with the purpose of establishing groups of constructs. The dominant use of factor analysis in research is to comprehend the multifaceted associations of values on electronic banking channels and influential factors for respective fundamental constructs and replaces these with the primary constructs.

In terms of principal component analysis (PCA), it is used to reduce input variables complexity when one has a huge volume of information and one wants to have a better interpretation of variables (Hair *et al*., 2014; Camdevyren, Demyr, Kanik and Keskyn, 2005). This study applied principal component analysis to identify a group of determinants that are categorised as a direct grouping of the constructs in the association matrix. This method alternates the contributing variables into primary mechanisms that are autonomous and a direct composite of contributing items (William, Brown and Onsman, 2012). The principal component methods extract dimensions that account for the variance with eigenvalues above one (Fox and Weisberg, 2011), whereas the 'varimax rotation' simplifies clarification of the 'actor matrix'. In this study, the factor analysis procedure focuses on

formulating a theoretical framework of factors for bringing into line the planned constructs and the basic development of SCM.

3.6.3.2 Multiple Regression Analysis

Multiple regression is a numerical instrument aimed at predicting a score for the criterion variable (dependent variable) on the basis of scores of several other predictor variables (independent variables). It is an extension of the bivariate linear regression model, the only difference being that multiple regression uses three or more variables (Cooper and Schindler, 2008:46). Similarly, Fox & Weisberg (2011); Aaker *et al*. (2014) "defines multiple regression as an analysis where more than one predictor is jointly regressed against the criterion variables".

According to Nusair and Hua (2010:314-324) multiple regression evolved to a sophisticated and versatile tool for various kinds of data analyses, particularly powerful when samples exhibit distinctive characteristics, and research questions are tailored to address probability related issues. The model applies adjusted r-squared (R^2) to envisage its correctness. The proximity of adjusted R^2 to 1 assures better accuracy of the model prediction (Cooper and Schindler, 2008:38). The study will apply multivariate regression analysis to the guidelines of the factor analysis model.

According to Cooper and Schindler (2008:548-550), "Collinearity exists when two independent variables are highly correlated, and these variables have a negative impact on the model". Multiple regression can be applied when determining direct associations among the explanatory and criterion variable. Multiple regression entails many annotations. The number of participants should substantially exceed the number of predictor variables used for regression (Johnson, 2009). The outcomes of multiple regression indicate the inclusive descriptive strength of the entire explanatory variables with measures of R^2 or adjusted R^2 along with the relative importance of individual predictors after calculating the β coefficients (Nusair and Hua, 2010). The correlations amongst predictor as well as criterion variables from range measure applying r, R-square, F statistic and the significance level is analysed to assess the extent of the deviation in the criterion variable that is explained by a group of predictors.

To test the degree and impact of multicollinearity, the acceptance value and deviation increase factor will be appropriate evaluators. Stepwise assessment as chronological technique enables assessment of each explanatory variable's influence on the regression model. "A sequential (chronological) approach in which the regression equation is estimated with a set of independent variables that are selectively added or deleted from the model" (Babin *et al*., 2003:307). The method will be applied where respective predictor variables are identified for insertion into the regression before the equation is constructed. This study applies the stepwise assessment (step-up procedure) to assess

the influence of the respective explanatory variables on the regression model. The stepwise step-up procedure allows for development of the regression equation after in-depth consideration of independent variables without multicollinearity.

3.6.4 Multicollinearity

Multicollinearity is "a statistical phenomenon in which two or more predictor variables in the multiple regression model are highly correlated and provide redundant information about the response, and as a result the standard errors of estimates of the β's increased and simultaneously indicates decreased reliability" (Black and Babin, 2019:56). "Multicollinearity exists when two independent variables are highly correlated, and these variables have a negative impact on the model" (Aaker *et al*., 2017:115).

This study examined the association statistics among all the constructs to recognise the multicollinearity issues. As a result, the application statistic test (DW) was applied to assess the extent of multicollinearity, and "the values should be within 1.5 and 2.5 tolerable to disclose individuality of observations" (Rahlin, Awang, Afthanorhan, and Aimarn, 2019:351-370), Lei and Wu, 2007)."Multicollinearity is expressed as a problem in multiple regression since it narrows the prognostic power of an independent variable. A high degree of multicollinearity can lead to regression estimates being estimated incorrectly and even to showing wrong signs" (Oyewole and Obadina, 2020:14). The misrepresentation of the findings can present unreliable outcomes to a considerable extent, and therefore the findings should not be generalised. "Multicollinearity as the situation where two or more of the independent variables are highly correlated" (Blumberg, Cooper and Schidler, 2008:746).

The study aligned to a universal criterion which states that a sample correlation coefficient between two independent variables greater that +0.70 or less than -.70 will be an apparent of potential problems with multicollinearity. Multicollinearity arises because one or more of the regressors are exact or approximately linear combinations of the other regressors (Oyewole and Obadina, 2020: 17; Gujarati, 2003). It is essential that the explanatory variables contain moderate dependency and an effort should be made to detect and extract the multicollinearity among explanatory variables. The variance increased factor (VIF) measure is typically used to analyse the outcomes and the perfect figure for VIF must be 1. As a rule of thumb, "the greater values, the more multicollinearity between independent variables exist" (Alexandrov *et al*., 2011).

3.6.4.1 The tools of Multicollinearity

In order to test the degree and impact of multicollinearity, the tolerance value and variance inflation factor are two important measures available to apply (Ayinde, Alao and Ayoola, 2012:41-52). The main purpose of these procedures explains the extent to which the respective explanatory variable is described by the supplementary explanatory variable. The dimensions of variance magnitude of the regression constants are influenced by multicollinearity issues present in the likely solution. According to Alhassan, Balakarishnan, and Jah (2019:156-160) "VIF equals 0 = no correlation, VIF measure of 1 = an indication of some association between predictor variables and VIF value of 5.0 as maximum acceptable value; anything higher indicates a problem with multicollinearity".

The VIF must present less serious multicollinearity among independent variables in the model. The model must be reliable at p-value for $F < 0.01$ and adequate with adjusted R-square (Gujarati, 2005). The amount of variance in an independent variable that is not explained by the other independent variables (tolerance) also presents possible solutions (Alhassan *et al*., 2019). "The amount of variability and the selected independent variable is not explained by other independent variables" (Hair, Jr (1998:193). The accepted figure should be below .10 to show a multicollinearity issue. This implies that as tolerance values get smaller, it signals the degree of multicollinearity issues.

3.7 Outliers of Multivariate Analysis

3.7.1 Distance Procedures

This study incorporated distance of measure to establish the divergence of case values of explanatory items from standard values. Garson (2012) and Tabachnick and Fidell (2007) outlines these distances procedures as 'Mahalanobis distance' and 'Cook's distance' as well as plot diagram. According to Fox and Weisberg (2011:166), Mahalanobis distance "is the distance of a case from the centroid of the remaining cases where the centroid is the point created by the means of all the variable". A common conventional likelihood evaluation for an event deemed as an outlier, Mahalanobis distance of $p < 0.001$ is deemed suitable. The rule of thumb is that, the wider the Mahalanobis interval for an event, the further that event's values of explanatory variables deviate from normal values.

The other measure of distance this study employed was distance centred influence statistic, where h (hat-value) detects events with greater regression constant impact. Hair *et al*. (2014) claim that the cases with influence below 0.2 pose no threat, however cases with leverage that exceeds 0.5 presents unwarranted leverage. It is advisable that every case must be assessed for likelihood of measurement error. This study also employed Cook's distance, where D evaluates the influence of the residuals for the rest of annotations of removing a specified remark. "A cut-off for deleting influential cases,

is values of D greater than 4/(N-k-1), where N is sample size and k is the number of independents" (Fox and Weisberg, 2011:34).

The plot diagram is a graphical method with data labels reflecting influential cases with high leverage that can be spotted graphically (Garson, 2012). The plot diagram plots the dependent variable on the x-axis and normalised residuals on the y-axis. The plot of normalised evaluations of the outcome 'horizontal axis' versus normalised residuals 'vertical axes would have a variance in scores on one variable that is similar to all values of the other variables displayed in a group of dots.

3.7.2 Residuals Analysis

According to Hair *et al*. 2014:58), Residual examination indicates the distinction between projected and obtained y-values, detect outliers in the solution and are available in raw or standardised form with or without the outlying case. A pictorial technique based on residuals plots influence on the horizontal axis and residuals on the vertical axis. The analytical measure for anomaly detection in the proposition is subject to the sample scope, with bigger selection the likelihood of additional residuals will be inconsistent (Garson, 2012, Tabachnick and Fidell, 2007 and Pallant, 2005). For example, "a criterion of $p = 0.001$ is appropriate for $N < 1000$, defining outlying cases as those with standardised residuals in excess of about $\pm$ 3.3" (Fox and Weisberg, 2011). Generally, the residual evaluation is applied for the important reasons: i) to identify heteroscedasticity (escalating error as the detected vertical-axes escalates); ii) to detect anomaly (persuasive cases); and iii) to recognise other designs of error (X variables).

3.8 Ethical Considerations

Since this research involved human participants, it is important to address ethical concerns in order to avoid the potential ethical contraventions, negative impact on participants and researchers, and to maintain the ethical behaviour of researchers (Collis & Hussey, 2013). This study applied a number of measures to ensure ethical concerns are prioritised. First, prior arrangement was made with participants where all the participants participated voluntarily in the study. Respondents could voluntarily withdraw if they thought their participation was no longer required and no coercion would be used against them. Furthermore, all questionnaires were safely stored and kept in a safe holding where permission to entry was strictly controlled to avoid any data leakage. If any company name were to be documented, permission would be obtained from the organisation prior to any distribution of the document.

The participants were not requested to provide their names on the questionnaire to ensure anonymity of the respondents. Secondly in the recruitment of research assistants, the researcher took it upon

himself that the purpose of the study was fully understood and that their personal details were not shared with the other participants. The researcher explained the purpose, procedures, and matters that required consideration by research assistants and respondents. All the information collected for this study was stringently and cautiously kept safe avoiding any data loss.

3.9 Limitations

There were a number of limitations identified in this study and most of them were methodological. Since this study adopted a positivist philosophy, there are issues associated with positivism. Firstly, positivism perceives individuals' behavioural patterns as fully rational, therefore disregarding and omitting the subjective and imperceptible factors that may influence their behaviour. Furthermore, positivism concentrates on collective characteristics, therefore disregarding individual differences (Tham *et al*., 2019; Collis and Hussey, 2013). Secondly, using the deductive approach comes with some limitation, although the study will contribute new knowledge, the deductive approach makes this contribution to new knowledge difficult as the research hypotheses used in the study are abundantly discussed by current knowledge and theories (Sileyew, 2019:24; Feilzer, 2010). Thirdly, the study adopted the quantitative method, according to Tham *et al*. (2019:19) the quantitative method provides relatively fewer comprehensive considerations of social phenomena as compared to the qualitative method because numbers are inaccessible to describe the complex and rich implications of social phenomena (Tham *et al*., 2019:19). Finally, this study only focused on the post-graduate students as participants, not on the entire population.

3.10 Conclusion

This section detailed the philosophies, approach and procedures that were applied to gather and interpret data. The study used positivism, simple random sampling, purposive sampling and the quantitative method. The chapter also highlighted the major reasons why the researcher decided to use certain methods. Furthermore, the chapter presented the research strategy the study applied and the rationale to use the descriptive research design. The Sample number was vindicated by means of the Krejci and Morgan's table. The chapter also outlined how the study tested for rationality and consistency. Finally, the chapter discussed the data analyses process where SPSS was applied. The subsequent chapter will outline the key findings of the study as well as the interpretation of the results.

Chapter Four: Data Analysis and Presentation of Results

4.1 Introduction

The focus of this chapter is to determine the general insights of participants towards the factors affecting adoption of electronic banking distribution channels. The preceding chapter on research methodology proposed the use of the univariate, bivariate and multivariate as the suitable methods for this study since the questionnaire was used to gather the data for the study. The study will analyse and interpret the solicited data by examining the effects of each variable on a set of data and the conventional statistical models are applied to evaluate patterns in multidimensional data by recognising multiple data variables, as well as multiple regression analysis by using the Statistical Package of Social Science (SPSS) software for quantitative approach.

4.2 Univariate Analysis

According to Hair *et al*. (2014:28); Fox and Weisberg (2011:42-46), univariate analysis examines the distribution of cases on only one variable at a time for purely descriptive reasons, while bivariate analysis involves measuring the association between variables themselves. Exploring associations among variables implies that investigating for proof that the disparity in one variable concurs with variance in another variable (Hair *et al*., 2014). In respect of descriptive statistic, the breakdown begins with the development of the frequency distribution and ultimately scrutinise sample data to evaluate core location, inconsistency, and biasness and the intensity of the summit of a frequency-distribution.

In this study, there are three reasons for applying the descriptive analysis : i) lay out preparatory perceptions into the essence of the feedback acquired as replicated in the dispersion of the values for respective construct; ii) furnish a method of demonstrating the data in a simple and clear way with tables and diagrams; and iii) provide an occasion for assessing whether the dispersal expectations of subsequent statistical measures within bivariate and multivariate analysis are probable to be suitable and reasonable.

4.2.1 Frequency distribution

Frequency distribution signifies how dissimilar figures of the variable are amid the components of review by typifying the data schematically. “Frequency distributions are used to describe the responses to a particular variable by displaying the counts and percentages both before and after adjustment for non-responses, and determine the amount of non-response, if any” (Hair *et al*., 2014:32). These encapsulation procedures enable the researcher to draw the important features

of diverse disseminations, summarise material in the distinct values and allowing the elucidation of data more practicable.

Figure 4. 1: Education Level

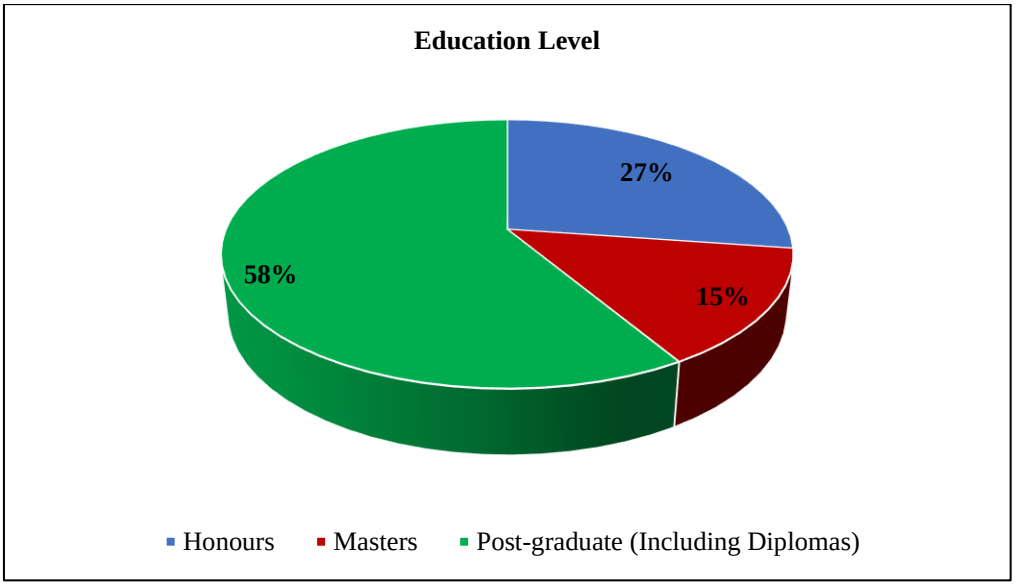
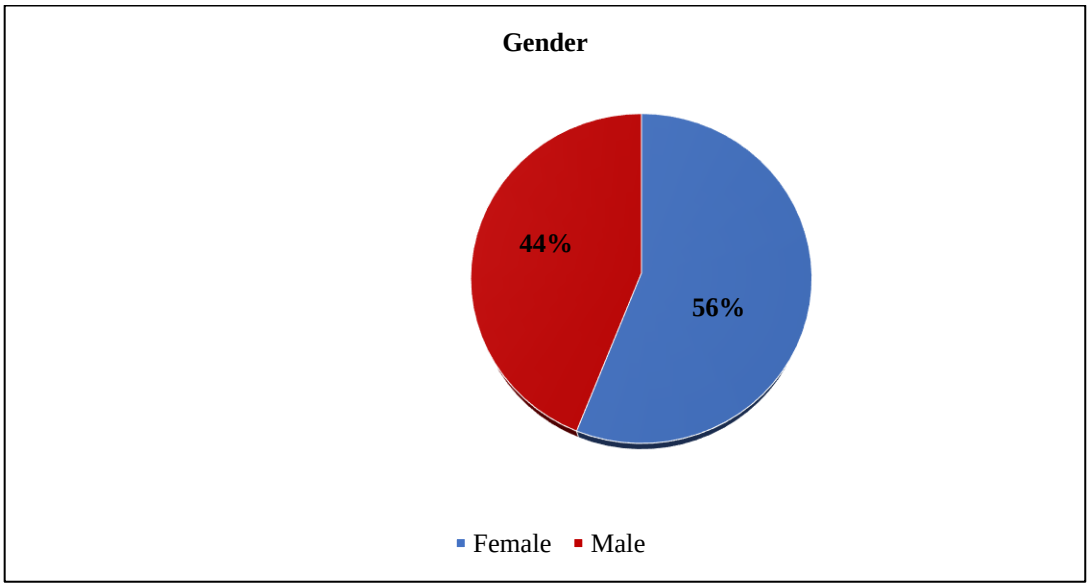


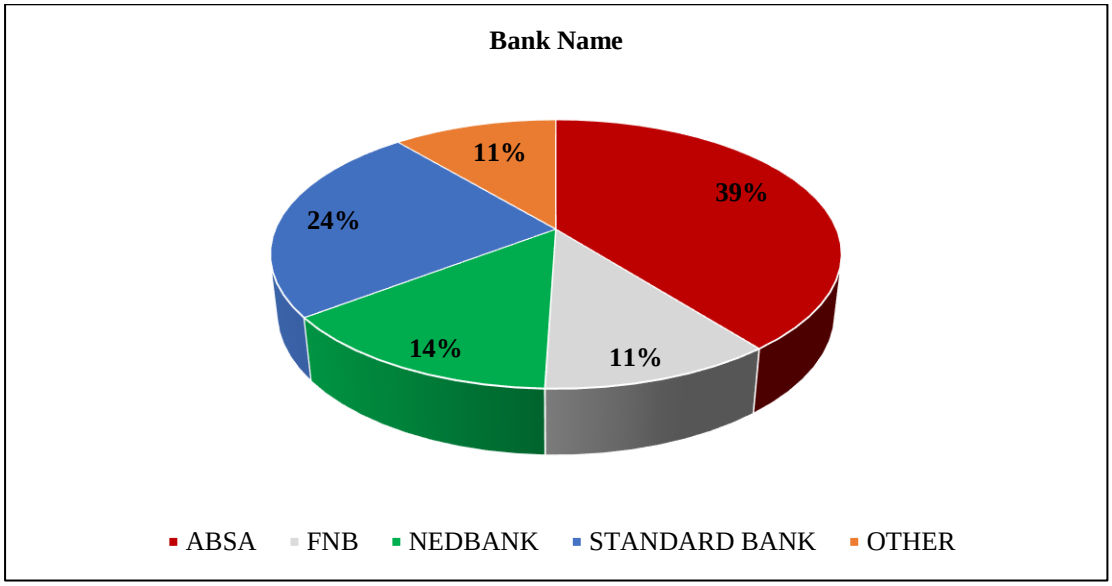
Figure 4.1 shows the percentage of respondents from different education levels. The Masters level represents 15% of the participants in this study whereas the other Post-graduate (including diplomas) indicate most representation of 58% among the listed education levels. The Honours level represents 27% participants in this research.

Figure 4. 2: Gender



An indicative numerical (figure 4.2) presentation between female and male respondents indicates 56% and 44% respectively.

Figure 4. 3: Bank Name



The respondents with bank accounts had the inclination to contribute to this study, Figure 4.3 shows 39% participants banks with Absa, while 24% respondents bank with Standard bank. The remainder of respondents 11%, 11%, and 14% represents FNB, other banks, Nedbank, respectively.

Figure 4. 4: Duration with current bank

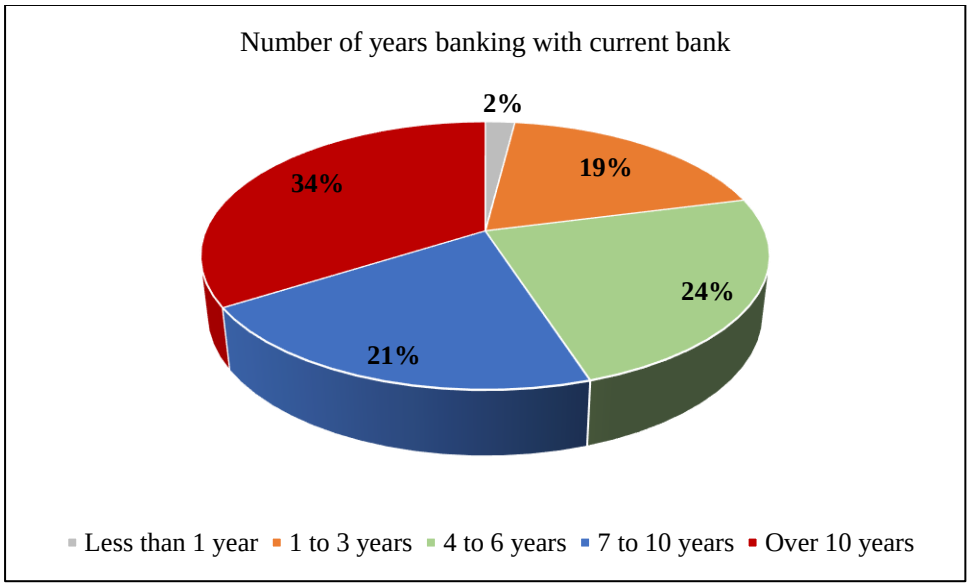
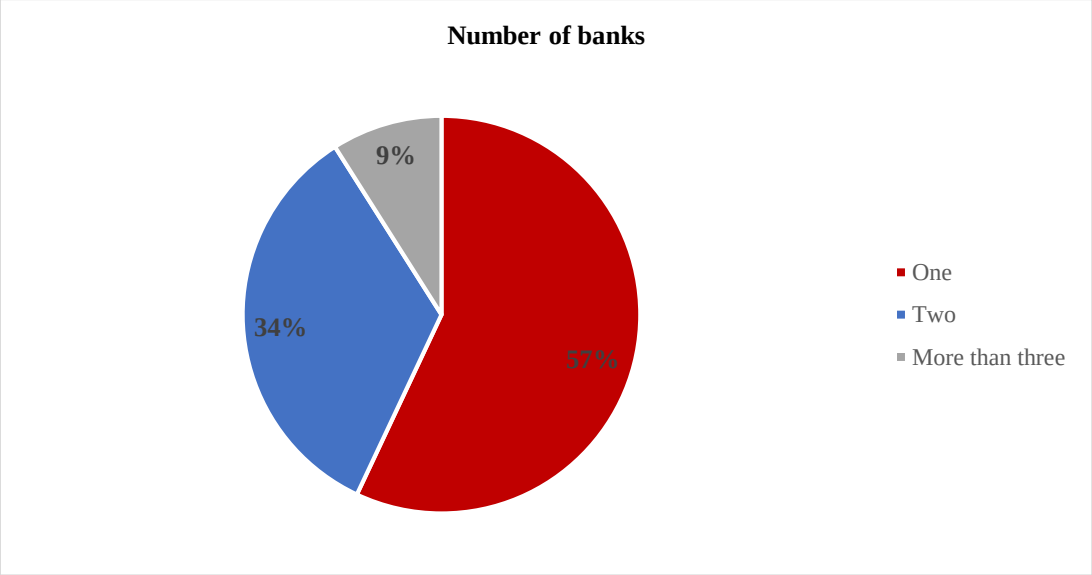


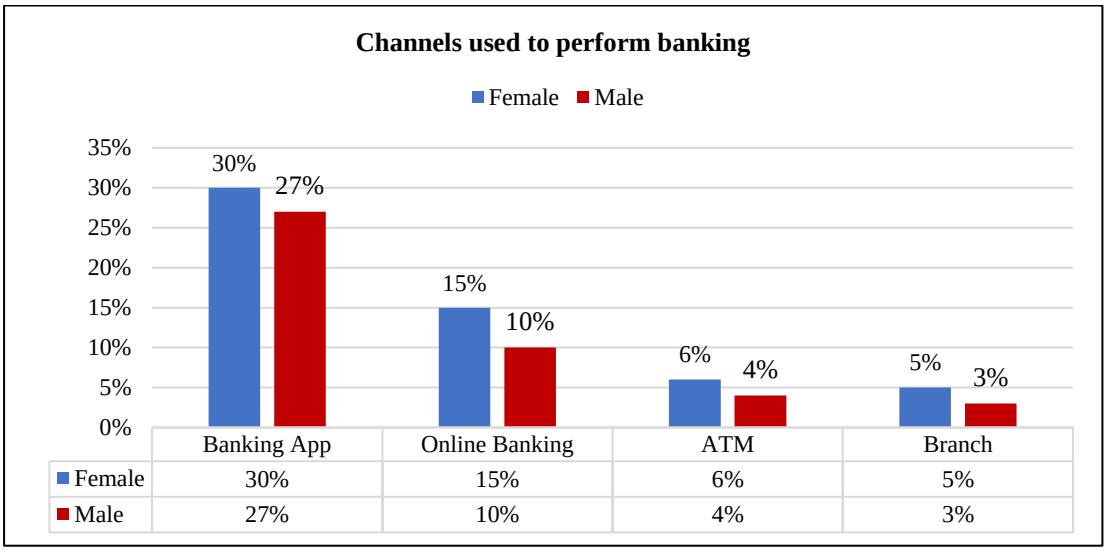
Figure 4.4 indicates an interesting statistical presentation of 34% respondents who have been with their current banks for more over 10 years while 24% participants have been with their banks for 4 to 6 years. Although 2% of the respondents have only banked with their current banks for less than 1 year, 21% participants have been with their banks for 7 to 10 years. A substantial fraction of 19% respondents have been with their banks for 1 to 3 years.

Figure 4. 5: Number of banks you have accounts with



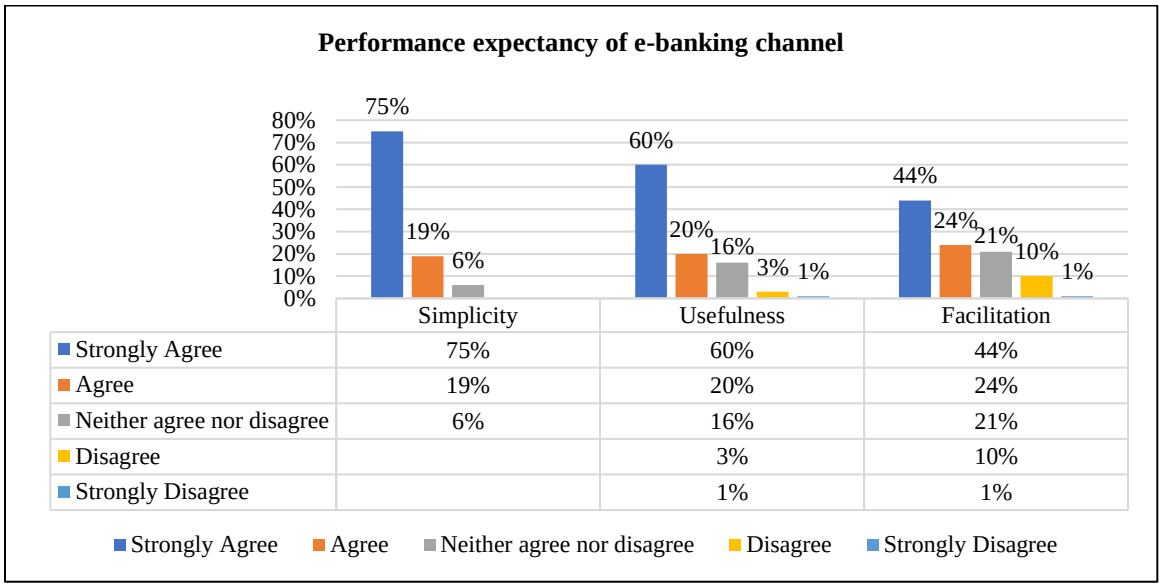
Interestingly, figure 4.5 indicates that 57% of the respondents' have accounts with only one bank. A considerable 34% participants have accounts with two banks. This could be attributed to technological banking solutions introduced by other banks. Only 9% respondents' banks with more than three other banks. It is believed that some bank customers prefer to multi-bank to avoid issues associated with lack of banks' footprint in certain location.

Figure 4. 6: Banking Channels



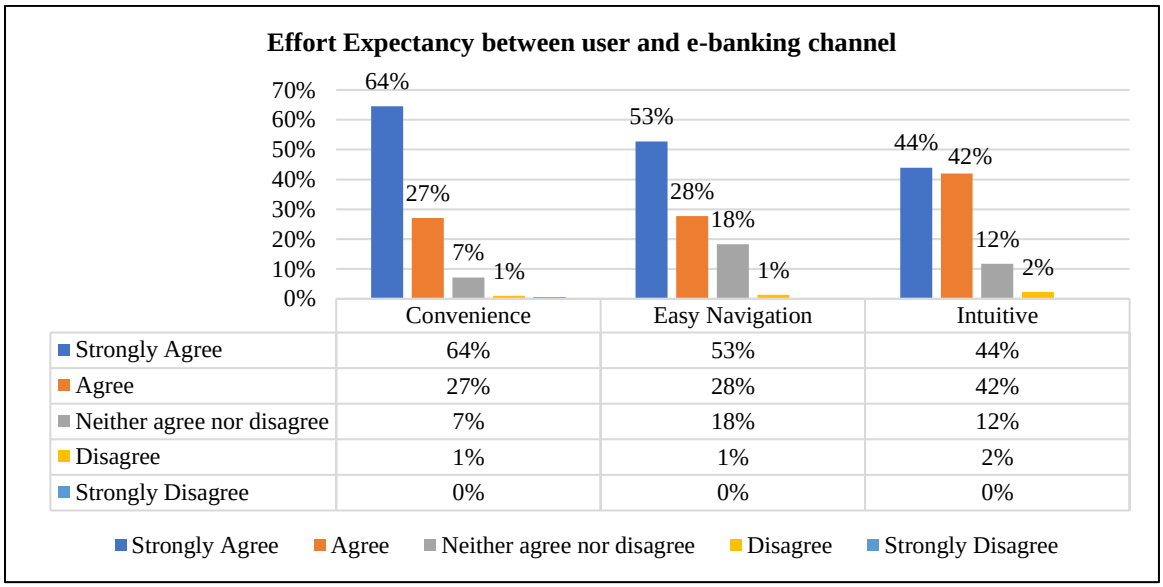
The respondents were requested to choose among the electronic banking channel options the prototypical banking channel they frequently use. In terms of Banking Application, 30% female respondents and 27% male respondents revealed that they regularly use banking app to perform their banking activities, whereas 15% female respondents and 10% male respondents use Online banking for their daily banking activities. Overall, 6% female respondents and 4% male respondents disclosed that they use ATM to perform their banking, whereas 5% female respondents and 3% male respondents revealed that they perform their banking activities through traditional branch channel.

Figure 4. 7: Performance expectancy of e-banking channels



The above figure shows an overwhelming response of 75% respondents strongly agrees that digital channels makes it simpler to perform financial activities, while 19% respondents also agrees that digital channels makes it simpler to perform financial activities. Only 6% respondents neither agree nor disagree that e-banking makes it easier for do banking. When compared with other banking channels, a significant 60% respondents strongly agree that digital channels are more convenient than other banking channels, whereas 20% also confirmed that digital banking is a valuable channel. A considerable 44% respondents strongly agree that e-banking facilitates easier communication with bank and 24% respondents also agree that e-banking facilitates easier communication. A considerable 21% respondents neither agree nor disagree that e-banking facilitates easier communication while 10% disagree with the easier facilitation brought by e-banking channel. Only 1% strongly disagrees with the easier facilitation and usefulness brought by e-banking channel

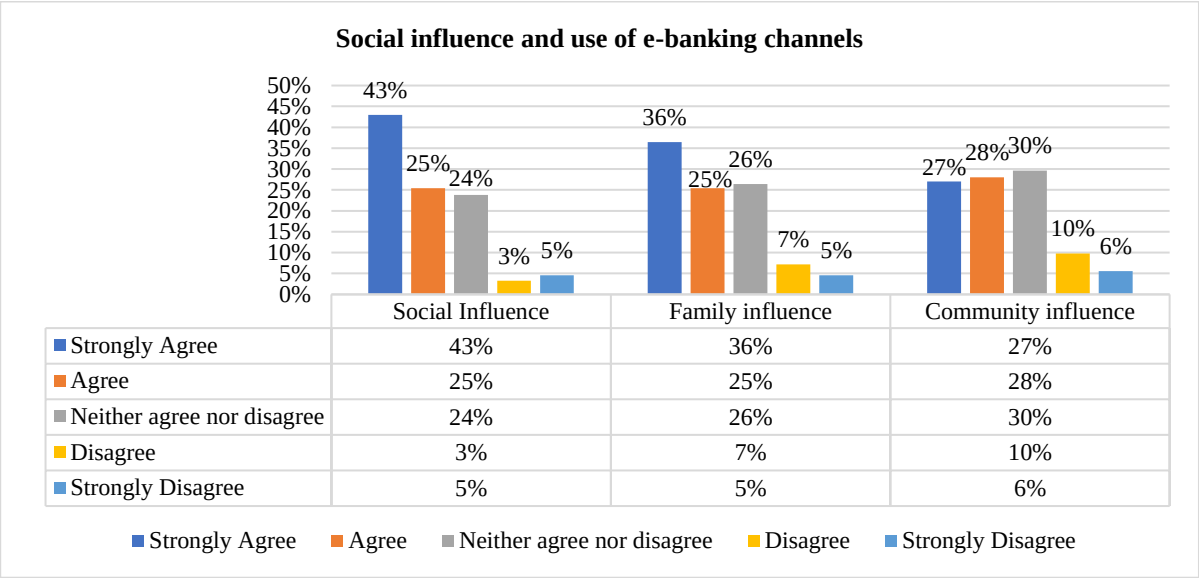
Figure 4. 8: Effort Expectancy between user and e-banking channels



	Convenience	Easy Navigation	Intuitive
Strongly Agree	64%	53%	44%
Agree	27%	28%	42%
Neither agree nor disagree	7%	18%	12%
Disagree	1%	1%	2%
Strongly Disagree	0%	0%	0%

Figure 4.8 assesses the effort expectancy from e-banking channels, where an overwhelming 64% respondents confidently concurred, and 27% also confirmed that electronic channels makes it easier to do banking as it is not dependant on bank's operational hours therefore banking can be done anytime and anywhere. Convincingly, 53% respondents strongly agree while 28% respondents confirmed that it is easy to find and use features on digital banking channel. This easy navigation boost customers confidence as they easily relate with the system. Only 44% respondents and 42% respondents agree that it is simple to understand the steps to operate electronic digital channels. A considerable combined 37% respondent neither agree nor disagree with Convenience (flexibility), easy navigation and intuitiveness of e-banking.

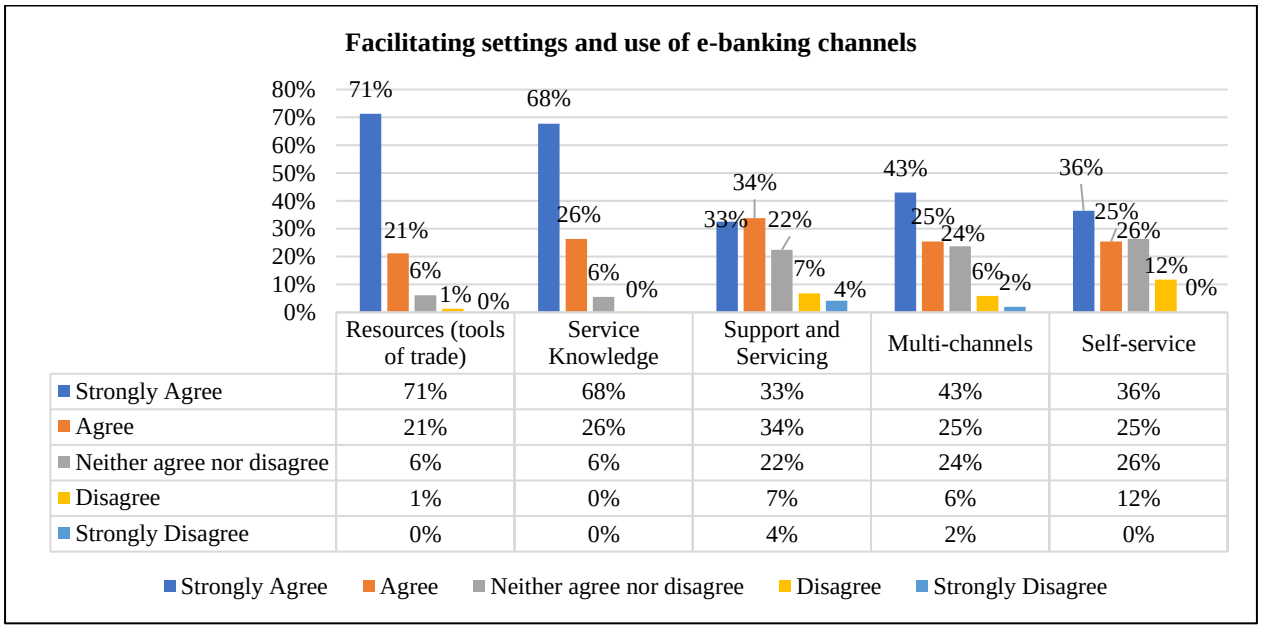
Figure 4. 9: Social influence and use of e-banking



	Social Influence	Family influence	Community influence
Strongly Agree	43%	36%	27%
Agree	25%	25%	28%
Neither agree nor disagree	24%	26%	30%
Disagree	3%	7%	10%
Strongly Disagree	5%	5%	6%

Figure 4.9 tests participants perceptions on the effect of social influence on the use of e-banking. The respondents on different influences strongly agree (43%), agree (25%), disagree (24%) that People who they look up influences them to use electronic banking channels, while combined nearly three-quarters (73%) of the respondents are undecided when it comes to determining how they are affected by social influences. This has a great baring on social media marketing of e-banking. Interestingly, 61% respondents agree that people who are important to me (family) influences them to use electronic banking. Only 55% respondents agree that community influences them to use e-banking, while a remarkable 30% respondents neither agree nor disagree that community influences them to use e-banking channels.

Figure 4. 10: Facilitation settings that affect use of electronic banking



	Resources (tools of trade)	Service Knowledge	Support and Servicing	Multi-channels	Self-service
Strongly Agree	71%	68%	33%	43%	36%
Agree	21%	26%	34%	25%	25%
Neither agree nor disagree	6%	6%	22%	24%	26%
Disagree	1%	0%	7%	6%	12%
Strongly Disagree	0%	0%	4%	2%	0%

The above depiction reveals the importance of Resources (tools of trade) where 71% respondents strongly agree, 21% respondents also agree that having necessary knowledge and resources influences the use of e-banking channels. An overwhelming 68% respondents strongly agree, and 26% respondents agree that having necessary knowledge about electronic banking is vital to use e-banking. Correspondingly, 33% strongly agreed and 34% respondents agree that assistance is not required for them to use digital channels, whereas 22% respondents neither agrss nor disagree that assistance is not required for them to use digital channels.

The general perception of respondents on support and servicing is positive, where 33% respondents confidently concur, and 34% respondents confirmed that support from digital banking channel is available when problems are encountered with e-banking.

Not surprisingly, 43% respondents confidently confirmed, and 25% respondents also concurred that digital banking is not the only channel they use for banking. This could be attributed to the pace at which banks introduces technological solutions, which ultimately reduces costs of banking. Interestingly, 36% respondents strongly agree, and 25% respondents agree that they do not need assistance to use electronic banking channels. Only 26% respondents neither agree nor disagree that they can use the digital channels without any assistance.

Figure 4. 11: Positive determinants that influences the use of digital channels

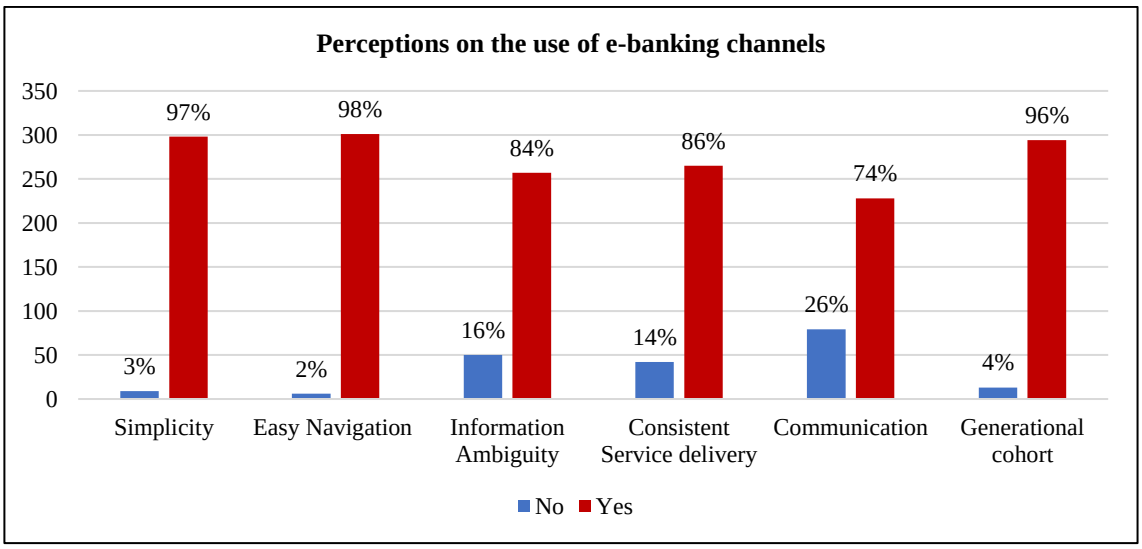


Figure 4.11 indicates general perceptions positive factors influencing use of e-banking where on simplicity an overwhelming 97% of the respondents agrees that e-banking simplicity influences the use of e-banking channels. Simple navigation (98%) and consistent service delivery (86%) are recognised by most of the respondents to endorse and encourages the use of the e-banking channels. A considerable 74% respondents revealed that e-banking facilitates easier communication with their banks, while an overwhelming 96% respondents agrees that young people prefer using e-banking than traditional branch channels. Not surprisingly, 84% respondents agree that, for some people, unclear and confusing information on e-banking channels frustrates customers. This perception is very important as it may explain the reasons why other bank customers still perform their banking through the traditional branch channels.

Figure 4. 12: Hedonic motivation and e-banking

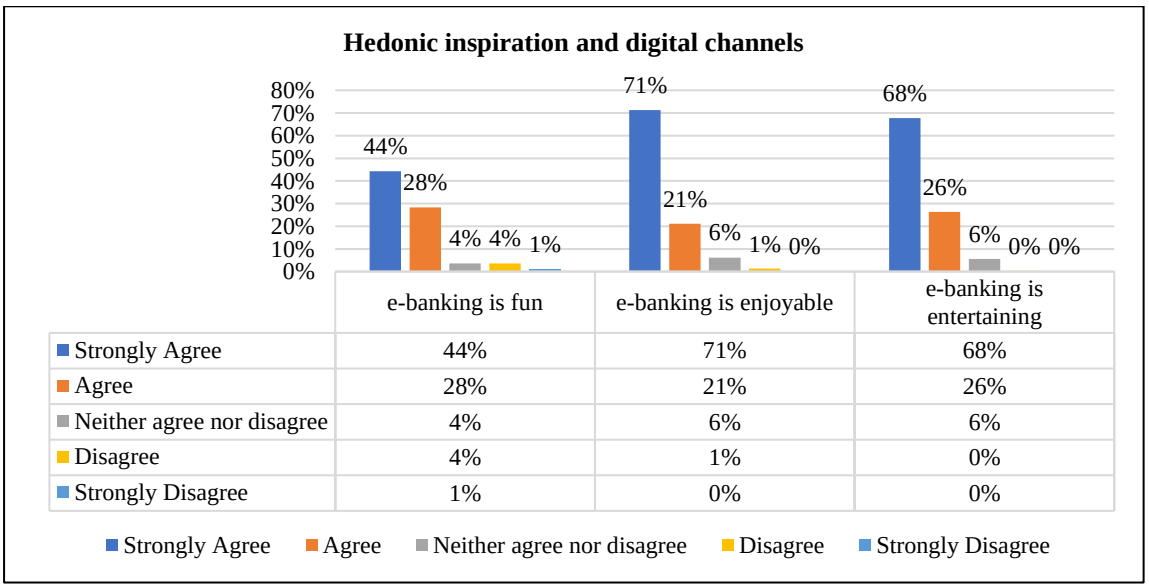
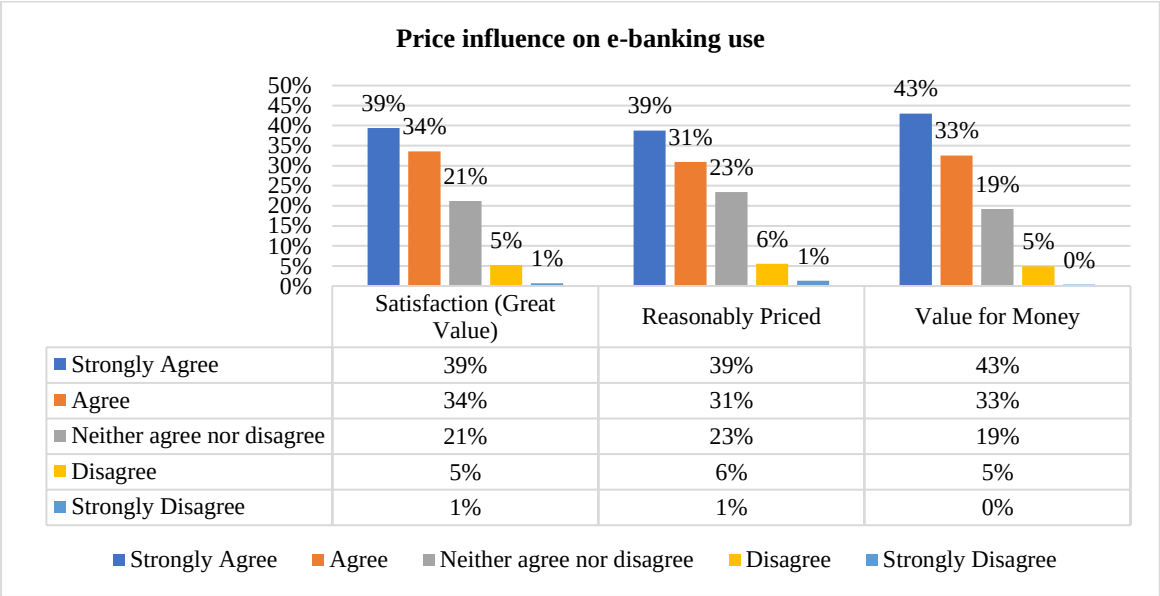


Figure 4.12 discloses the extents of confirmation amid the participants in connection with the hedonic motivation. In terms of joy derived from using e-banking, 44% respondents strongly agree that using e-banking channel is fun, while 28% also agree that using e-banking is fun. A significance 71% respondent also revealed that using e-banking channels is enjoyable, whereas 21% agree that using e-banking channel is enjoyable. Interestingly, combined 68% respondents agrees that e-banking is very entertaining, while 26% agree that using electronic banking is entertaining. Only 6% respondents neither agree nor disagree that e-banking is entertaining.

Figure 4. 13: Perception of participants on e-banking channels pricing



Price is a very contentious variable on buying or using a service. Figure 4.13 indicates that respondents (39%) confidently confirmed while 34% respondents also concurred with the assertion that at the present fees, digital channels delivers great value. A considerable 21% respondents neither agree nor disagree that e-banking provides great value. This perception is also confirmed by 39% of the respondents that strongly agrees while 31% respondents also agree that the e-banking services are reasonably priced. On value for money, 43% of the respondents strongly agree while 33% respondents also agree that e-banking is good value for money. It is worth noting that 19% respondents neither agree nor disagree with pricing of e-banking channels.

Figure 4. 14: Perception of respondents on habit

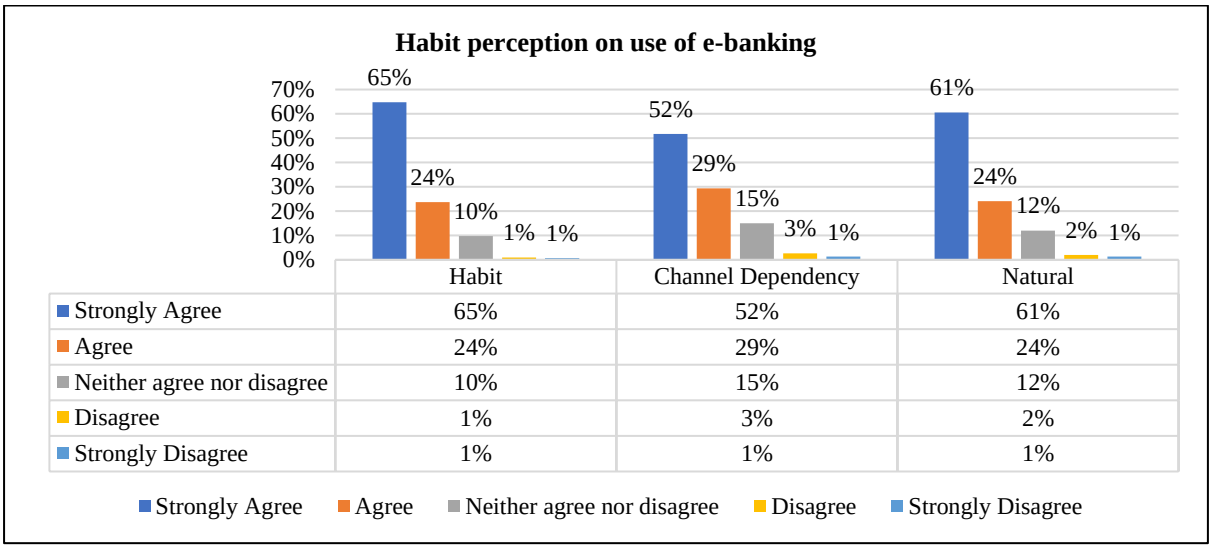
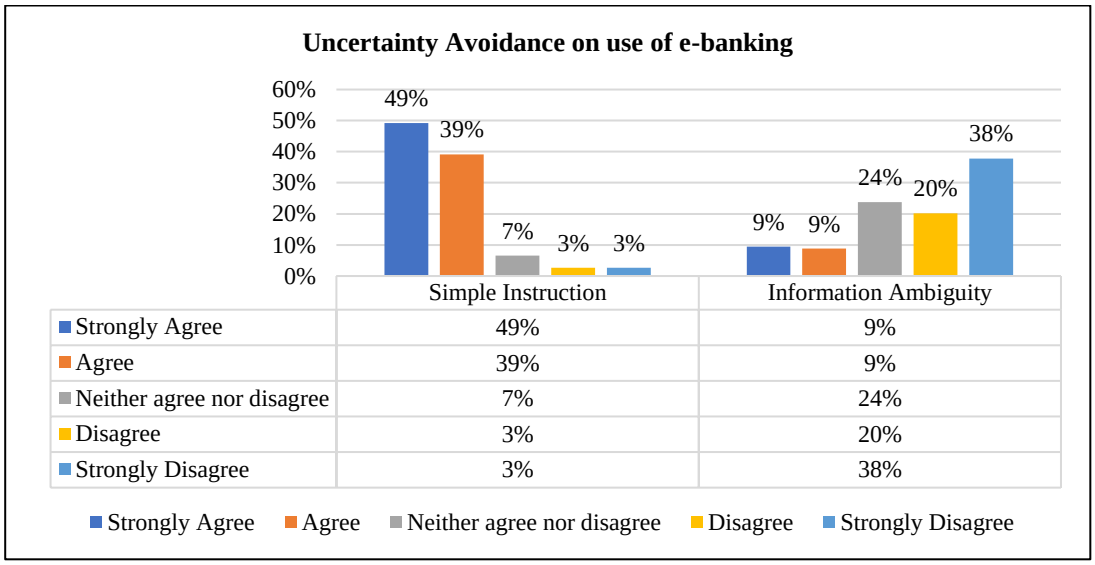


Figure 4.14 presents three critical variables (habit, channel dependency, and natural) on habit perception where 65% respondents strongly agree with the assertion that habit is a critical variable while 24% also agree with the statement that utilising digital channels has become a habit to them. A total of 52% respondents strongly agree and 29% respondents also agree that they are dependent on e-banking to perform any banking activity. Similarly, 61% respondents confidently concurred with the assertion that utilising electronic banking channels has become natural to them, while 24% respondents concurred with the assertion. A considerable 37% respondents, across, neither agree nor disagree that e-banking channels has become a habit, dependency and natural to them.

Figure 4. 15: Uncertainty avoidance influence on the use of electronic channels



A very interesting view displayed Figure 4.15, where 49% respondents strongly agree, and 39% respondents agree with the statement that information on e-banking channels is simple enough to understand. Only 7% respondents neither agree nor disagree with the statement that information on e-banking channels is simple enough to understand This is also attested by 38% respondents who strongly disagree, and 20% respondents who disagree with the statement that they get confused by lot of information presented by e-banking channels. A considerable 24% respondents neither agree nor disagree, while 9% agree that they get confused by lot of information presented by e-banking channels. This perception presents great insight for this study as it confirms that information on e-banking channels is clear and simple enough for customers to understand and follow.

4.2.2 Descriptive statistics

Establishment of distribution and midpoint inclination provides an insightful suggestion of the dispersion of events and standard figure by analysing each attribute inside the preliminary study.

Table 4. 1 Descriptive Statistics

Elements	N	Mode	Min	Max	Mean	Median	Std. Deviation	Variance	Skewness	Kurtosis
Simplicity	307	5	3	5	4,68	4.73	0,584	0,341	-1,691	1,785
Usefulness	307	5	1	5	4,34	4.49	0,930	0,865	-1,263	0,836
Facilitation	307	5	1	5	4,00	4.18	1,065	1,134	-0,693	-0,629
Convenience	307	5	1	5	4,54	4.61	0,701	0,491	-1,622	2,842
Simple Navigation	307	5	2	5	4,32	4.41	0,814	0,662	-0,794	-0,592
Intuitive	307	5	2	5	4,28	4.35	0,757	0,573	-0,828	0,229

Social Influence	307	5	1	5	3,99	4.17	1,101	1,212	-0,956	0,335
Family Influence	307	5	1	5	3,82	3.97	1,139	1,298	-0,685	-0,296
Community Influence	307	3	1	5	3,61	3.69	1,145	1,310	-0,489	-0,472
Resources	307	5	2	5	4,63	4.69	0,662	0,438	-1,799	2,832
Service Knowledge	307	5	2	5	4,62	4.66	0,607	0,368	-1,424	1,368
Self Service	307	5	1	5	4,38	4.51	0,890	0,792	-1,862	3,947
e-banking is Fun	307	5	1	5	4,11	4.23	0,945	0,892	-0,768	-0,126
e-banking is enjoyable	307	5	2	5	4,26	4.35	0,822	0,675	-0,757	-0,406
Entertaining System	307	5	1	5	3,67	3.77	1,196	1,431	-0,507	-0,620
Value for Money	307	5	1	5	4,13	4.25	0,912	0,833	-0,754	-0,257
Great Value	307	5	1	5	4,06	4.17	0,934	0,872	-0,698	-0,231
Reasonably Priced	307	5	1	5	4,00	4.12	0,982	0,964	-0,695	-0,198
Habit	307	5	1	5	4,51	4.60	0,764	0,584	-1,653	2,797
Channel Dependency	307	5	1	5	4,28	4.41	0,903	0,815	-1,219	1,195
Natural	307	5	1	5	4,25	4.37	0,892	0,796	-0,931	-0,005
Simple Instructions	307	5	2	5	4,35	4.42	0,753	0,568	-1,043	0,745
Information Ambiguity	307	1	1	5	2,32	2.10	1,312	1,721	0,643	-0,689
Future Use	307	5	1	5	4,45	4.56	0,836	0,699	-1,704	3,080
Daily Use	307	5	1	5	4,41	4.53	0,871	0,759	-1,550	2,245
Frequently Use	307	5	1	5	4,12	4.24	0,933	0,871	-0,801	-0,099

*maximum and minimum

- **Descriptive statistics on Performance expectancy electronic banking distribution channels adoption**

This section of the study confirms that in this descriptive study, e-banking channel simplicity (M = 4.68) has a relatively higher mean score value. As shown in Table 4.1, simplicity has a standard deviation of 0.584 and a variance of 0.341. This implies that, simplicity departed from both edges of the mean by 0.584, suggesting, the simplicity data values were not too widely dispersed from the mean. The minimum and maximum values of simplicity are 5 as well as 3 respectively. The simplicity of banking channels is asymmetric with a constant of -1.691. This implies that, the simplicity lower tail is relatively lengthier than that of the upper tail. In other words, a large portion

of the simplicity of e-banking channel skewed towards the right end of the bell curve. The kurtosis value of 1.785 implies, the simplicity is not normally distributed.

The mean value for usefulness is 4.34, a standard deviation of 0.930 and a variance of 0.865. This is an indication that, the statistical values of usefulness departed from all ends of the mean by 0.930, implying, the usefulness data values are dispersed from the mean. The highest and lowest figures of usefulness are 5 and 1correspondingly, leading to a median of 4.49. The usefulness is asymmetric biased with a constant of -1.263. This implies that, the left tail of the e-banking channel usefulness was relatively lengthier than the upper tail. Put differently, a bigger portion of the e-banking usefulness fell on the right side of the normal curve. The kurtosis value of 0.836 implies that, the usefulness is not of normal shape.

Facilitation has a mean value of 4.00, a standard deviation of 1.065 and a variance of 1.134. This suggest that, the data figures of usefulness diverged from both sides of the mean by 1.065, meaning, the facilitation numbers are dispersed from the mean. The maximum and minimum values of usefulness are 5 and 1 respectively. The usefulness is negatively skewed with a constant of -0.693. This shows that, the left tail of the e-banking channel usefulness was relatively lengthier than the upper tail. Put differently, a superior portion of the e-banking usefulness lean towards the right end of the bell curve. The kurtosis value of 0.629 implies that, the usefulness is not of normal shape.

- **Descriptive statistics on Effort expectancy electronic banking distribution channels adoption**

The availability of e-banking services 24/7 delivers high level of convenience and flexibility to access banking services. The respondents agree that electronic banking makes it simpler to perform transactions as it is available 24/7 convenience (flexibility) (M = 4,54) and not dependant on bank's operational hours therefore banking can be done anytime and anywhere. Convenience has standard deviation of 0.701 and a variance of 0.491. This suggest that, the statistics sets of convenience departed from both sides of the mean by 0.701, suggesting, the convenience statistical values are dispersed from the mean. The highest and lowest values of usefulness are 5 and 1 accordingly. Convenience is negatively skewed with a coefficient of -1.622. This suggests that, the left tail of the e-banking channel usefulness was relatively lengthier than the upper tail. In other words, a larger portion of the e-banking usefulness lean towards the right side of the normal curve. The curving coefficient of 2.842 suggest that, the convenience is not of normal shape.

Table 4.1 shows simple navigation with a mean value of 4.32, a standard deviation of 0.814 and a variance of 0.662. This signals that, the data values of simple navigation diverged from all ends of the mean by 0.814, suggesting, simple navigation data values are distributed from the mean. The maximum and minimum values of usefulness are 5 and 2 respectively, leading to a median of 4.41. The simple navigation is negatively skewed with a coefficient of -0.794. This means that, the left tail of the simple navigation is relatively lengthier than the upper tail. Put differently, a significant share of simple navigation fell on the right side of the normal curve. The kurtosis coefficient of -0.592 implies that, simple navigation is not normally distributed.

- **Descriptive statistics on Social influence electronic banking distribution channels adoption**

Table 4.1 presents Social Influence with a mean value 3.99, a standard deviation of 1.101 and a deviation of 1.212. This shows that, the statistical values of social influence departed from all ends of the mean by 1.101, suggesting, the social influence statistical values are noticeably broadly disseminated from the mean. The maximum and minimum values of social influence are 5 and 1 respectively. The social influence is negatively skewed with a coefficient of -0.956. This suggests that, the left tail of social influence is lengthier than that of the upper end. In other words, a great portion of social influence lean towards the right end of the bell curve. The curving coefficient of 0.335 suggests, the social influence is of abnormal shape.

Family influence has a mode of 5, mean value of 3.82, standard deviation value of 1.139 and a deviation of 1.298. This implies that, the family influence statistical values diverged from all ends of the mean by 1.139, suggesting, the family influence data values are dispersed from the mean. The maximum and minimum values of social influence are 5 and 1 respectively. The family influence is negatively skewed with a coefficient of -0.685. This implies that, the left tail of family influence is lengthier than the right tail. Put simply, a big portion of family influence lean towards the right end of the bell curve. The kurtosis coefficient of -0.296 suggests, the family influence is not normally distributed.

Finally, community influence has a mean value of 3.61, a standard deviation of 1.145 and a deviation of 1.310. The family influence is negatively skewed with a coefficient of -0.472. This is suggestion that, the community influence is a bit broadly disseminated from the mean.

- **Descriptive Statistics on facilitating conditions of electronic banking distribution channels adoption**

The respondents agreed that resources (tools of trade) (M = 4,63). Resources has a mode of 5, mean value of 4.63, standard deviation value of 0.662 and a deviation of 0.438. This suggests that, the

resources statistical values departed from all ends of the mean by 0.662, meaning, the resources statistical values are dispersed from the mean. The maximum and minimum values of social influence are 5 and 2 respectively. Resources is negatively skewed with a constant of -1.799. This shows that, the left tail of resources is lengthier than the upper tail. In simple terms, a large portion of resources lean towards the upper tail of the bell curve. The kurtosis coefficient of 2.832 implies, the resources is of abnormal shape.

Service knowledge has a mean value of 4.62, a standard deviation of 0.607 and variance value of 0.368. This implies that, the service knowledge statistical values departed from all ends of the mean by 0.607, suggesting, the service knowledge statistical values are dispersed from the mean. The maximum and minimum values of social influence are 5 and 2 respectively. Service knowledge is negatively skewed with a constant of -1.424. This suggest that, the left tail of resources is longer than that of the right tail. In other words, a larger share of service knowledge lean towards the upper tail of the bell curve. The kurtosis coefficient of 1.368 means, the service knowledge is not normally distributed

Table 4.1 shows Self-service with a mean value of 4.38, a standard deviation of 0.890 and a deviation of 0.792. self-service is asymmetrically skewed with a constant of -1.862. This suggest that, the left tail of resources is longer than that of the right tail. In other words, a larger share of service knowledge leaned towards on the right side of the bell curve. The curving coefficient of 3.947, suggests that, the self-service is of abnormal shape.

- **Descriptive Statistics on Hedonic Motivation of electronic banking distribution channels adoption**

This study illustrates the occurrence of the statistics for e-banking fun with the midpoint value of 4.23 median, e-banking enjoyment median of 4.35 and e-banking entertaining with a 3.77 midpoint. Table 4.1 presents the mean being correspondent with the midpoint. The table presents standard deviation values for e-banking fun is (0.945), enjoyable (0.822), entertaining (1.196), with variance values of 0.892, 0.67, and 1.431 respectively. This suggest that, the fun, enjoyment and entertaining data values departed from all ends of the mean by 0.945, 0.822 and 1.196 respectively, implying that, the fun, enjoyment and entertaining data values are dispersed from the mean. The maximum and minimum values of fun and entertaining are 5 and 1 respectively, except for enjoyment which is 5 and 2. Overall, fun, enjoyment and entertaining are all negatively skewed with coefficients of -0.768, -0.757 and -0.507, respectively. This suggest that, the left tail of resources is lengthier than that of the upper end. Put differently, a significant percentage of fun, enjoyment and entertaining

leaned towards the right side of the bell curve. The respective kurtosis coefficients of -0.126, -0.406 and -0.620, implies, the service knowledge is not normally distributed

- **Descriptive Statistics on Price Value of electronic banking distribution channels adoption**

Table 4.1 presents value for money; great value and reasonably prices with corresponding mean value of 4.13, 4.06 and 4.00; respective standard deviation value of 0.912, 0.934, and 0.982. A common mode of 5 with respective variance values of 0.833, 0.872 and 0.964. This implies that, the value for money; great value and reasonably prices data values, respectively, departed from all ends of the mean by 0.912, 0.934, and 0.982, suggesting that, the value for money; great value and reasonably prices data values are dispersed from the mean. The maximum and minimum values of the value for money; great value and reasonably prices are 5 and 1 respectively.

Further, value for money; great value and reasonably prices are asymmetrically skewed with a constant of -0.754, -0.698, and -0.695, respectively. This suggests that, the left tail of resources is lengthier than the right tail. In other words, a larger share of service knowledge leaned towards the upper tail of the bell curve. The kurtosis coefficients of -0.257, -0.231 and -0.198, respectively, suggests that, the value for money; great value and reasonably prices are of abnormal shape.

- **Descriptive Statistics on habit of electronic banking distribution channels adoption**

The symmetrical spread of all items is depicted in the matching central point (4.00), matching mode (5.00). All items have a matching maximum and minimum, 5 and 1 respectively. Habit has standard deviation of 0.764 and a deviation of 0.584. Similarly, channel dependency and Natural has standard deviation of 0.903 and 0.892 with corresponding variance values of 0.815 and 0.795, respectively. This suggest that, the data values of habit, channel dependency and natural departed from all ends of the mean by 0.764, 0.903 and 0.892, respectively. This suggest that, the habit, channel dependency and natural data values are dispersed from the mean. Combined, habit, channel dependency and natural are negatively skewed with coefficients of -1.653, -1.219 and -0.931, respectively. This suggests that, the left tail of the habit, channel dependency and natural was relatively lengthier than the upper tail. Put simply, a greater portion of the habit, channel dependency and natural leaned towards the upper tail of the bell curve. The kurtosis coefficients of 2.797, 1.195 and -0.005 respectively, suggest that, habit, channel dependency and natural are not of normal shape.

- **Descriptive Statistics on uncertainty avoidance of electronic banking distribution channels adoption**

The mean value for simple instruction is 4.35, a standard deviation of 0.753 and a variance of 0.568. This is an indication that, the statistical values of simple instructions departed from all ends of the mean by 0.753, implying that, the simple instructions statistical values are dispersed from the mean. The highest and lowest values of usefulness are 5 and 2 correspondingly. The e-banking simple instructions are negatively skewed with a coefficient of -1.43. This suggests that, the left tail of the e-banking simple instructions is relatively lengthier than the upper tail. In other words, a bigger portion of the simple instructions leaned towards the upper tail of the bell curve. The kurtosis coefficient of 0.745 implies that, the simple instructions is not of normal shape.

Further, information ambiguity has a mean value of 2.32, standard deviation of 1.312 and a variance coefficient of 1.721. This suggests that, the statistical values of information ambiguity departed from the mean by 1.312, meaning that, the information ambiguity data values are distributed from the mean. The highest and lowest 5 and 1 correspondingly. The information ambiguity is symmetrically skewed with a constant of 0.643. This suggests that, the right tail of resources is longer than that of the left tail. In other words, a larger share of service knowledge leaned towards the right tail of the bell curve. The kurtosis coefficients of -0.689, suggests that, the information ambiguity is of abnormal shape.

- **Descriptive Statistics on Behavioural Intention of electronic banking distribution channels adoption**

The symmetrical spread of all items is depicted in the matching central point (4.00), matching mode (5.00). All items have a matching maximum and minimum, 5 and 1 respectively. Future use has standard deviation of 0.836 and a variance of 0.699. Similarly, daily use and frequently use has standard deviation of 0.871 and 0.933 with corresponding deviation values of 0.759 and 0.871, respectively. This suggest that, the future use, daily use, and frequently use data values departed from all ends of the mean by 0.839, 0.871 and 0.933, respectively. This suggest that, the future use, daily use and frequently use data values are dispersed from the mean. Combined, future use, daily use and frequently use are negatively skewed with coefficients of -1.704, -1.550 and -0.801, respectively. This suggests that, the left tail of the future use, daily use and frequently use are relatively lengthier than the right tail. Put simply, a greater portion of the future use, daily use and frequently use leaned towards the upper tail of the bell curve. The kurtosis coefficients of 3.080, 2.245 and -0.099 respectively, suggest that, future use, daily use and frequently use are not of normal shape.

In the same statistical approach, most of the participants agree that e-banking simplicity, Resources (tools of trade), service knowledge (collaboration), Convenience (flexibility), habit, future use, daily use are the important variables to improve acceptance and use of electronic banking channels.

4.3 Bivariate

According to Hair *et al*. (2014:115) "inferential statistics are used to estimate the generalisability of findings arrived at through the analysis of a sample to the larger population from which the sample has been selected". This section concentrates on chi-square (χ^2) and cross tabulation to evaluate features and associations among the factors. Cross-tabulation associates the occurrence of one feature against alternate, and these possibility comparisons offer great insights about the association among the factors. The chi-square (χ^2) statistic is applied to ascertain whether the association is statistically significant. This study uses strict measure (0.05) for affirming significance level. Post presenting the results for respective clusters and their associations, the chi-square (χ^2) test observes if somewhat statistical significance amongst the clusters is present.

4.3.1 Cross tabulation gender and generational cohort

Table 4.2: Gender and Young people banking preference

			Generational cohort		Total
Young people prefer e-banking than traditional branch channel			No	Yes	
Your Gender	Female	Count	11	161	172
		% of Total	3,60%	52,40%	56,00%
	Male	Count	2	133	135
		% of Total	0,70%	43,30%	44,00%
Total		Count	13	294	307
		% of Total	4,20%	95,80%	100,00%

Chi-Square Tests			
	Value	**Df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	69.357[a]	46	.034
Likelihood Ratio	78.183	46	.024
N of Valid Cases	307		

Table 4.2 reveals that an overwhelmingly 95.8% of the respondents (294 of 307 sample participants) associate the use of e-banking channels and young people. The banks still service some young people through the traditional branch channels, 4,20 respondents believe that young people still prefer traditional branches than e-banking channels. The fundamental data show the figure of chi-square (69.375) with a degree of freedom (46), $p = 0.203$, since $p > 0.05$ this imply

that the test is statistically significant, therefore the study reject the null hypothesis. Therefore, the test confirms that young people prefer e-banking than traditional branch channel.

Table 4.3: Years of banking and influencing factors to use e-banking channels

			Influencing factors to use digital banking channels					
Which of the following critical factors influence decision to use your electronic banking?			Price (Cheaper)	Convenience (available 24/7),	Flexibility	Safety	Simplicity	Total
Years banking with this bank	Less than 1 year	Count	0	4	1	0	0	5
		% of Total	0,0%	1,3%	0,3%	0,0%	0,0%	1,6%
	1 to 3 years	Count	1	41	0	4	12	58
		% of Total	0,3%	13,4%	0,0%	1,3%	3,9%	18,9%
	4 to 6 years	Count	2	57	0	3	12	74
		% of Total	0,7%	18,6%	0,0%	1,0%	3,9%	24,1%
	7 to 10 years	Count	4	43	0	7	11	65
		% of Total	1,3%	14,0%	0,0%	2,3%	3,6%	21,2%
	Over 10 years	Count	8	55	1	0	41	105
		% of Total	0,3%	17.9%	0,3%	0.00%	13.4%	34,2%
Total		Count	15	193	2	21	76	307
		% of Total	2.9%	53,7%	0,7%	6.8%	35.8%	100,0%

Table 4.3 reveals the groups of respondents that indicate the length of service with their respective banks coupled with the influencing factors to use electronic banking. An overwhelming response of 72% respondents across all groups reveal that Convenience is a key critical factor that influences their use of electronic channels. It is worth noting that Convenience (flexibility) is associated with 24/7 availability of digital banking which makes it simpler to perform financial transactions. The respondents who have been with their banks for over 10 years reveal that Convenience (flexibility) (24,4%), simplicity (6,8%) and safety (2,3) are the key critical determinants that influences decision to use electronic channels.

The respondents with between 7 to 10 years length of service with their banks reveals the key critical factors that as Convenience (flexibility) (14%), simplicity (4%), safety (2,3%) and price (0.3%). Similarly, respondents with between 4 to 6 years length of service with their banks also revealed Convenience (flexibility), simplicity, safety and price as critical determinants that affect their decision to use digital channels.

The study concludes that the convenience (flexibility), simplicity and safety are the key critical factors that influences their decision to use electronic banking.

Table 4.4: Education Level and Simplicity of e-Banking Channels

I think electronic channels makes it simpler for me to perform banking activities.			Simplicity		Total
			No	Yes	
Education Level	Honours	Count	5	79	84
		% of Total	1.6%	25.7%	27.4%
	Masters	Count	0	44	44
		% of Total	0.0%	14.3%	14.3%
	Post-graduate diplomas	Count	4	175	179
		% of Total	1.3%	57%	58.3%
Total		Count	9	298	307
		% of Total	2.9%	97.1%	100.0%

Table 4.4 portrays differences in views by senior students the influence of simplicity on the use of digital channels. The table depicts combined 97% of the sample respondents and this overwhelming response proclaims that the across different groups, electronic banking simplicity positively affect the use of the electronic channels. Although the post-grad students underpin the highest assertion with 108 counts, the master's level (44) honours level (84) and Post-graduate level (179) also confirmed that electronic channels makes it simpler for them to perform financial activities. In the phrasing of theoretical valuation as the essential reflection on these counts, there is an association amongst the levels of senior student's views and simplicity of electronic banking. Therefore, it is surmised that a significant association between the level of education and simplicity of electronic channels exists.

Table 4.5: Gender and resources (tools of trade) to use electronic banking channels

I possess necessary tools to use electronic banking			Resources (tools of trade)					Total
			Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	
	Female	Count	0	3	7	45	117	172
		% of Total	0,00%	1,0%	2,3%	14,7%	38,1%	56,0%
	Male	Count	0	1	12	20	102	135
		% of Total	0,00%	0,30%	3,9%	6,5%	33,2%	44,0%
Total		Count	0	4	19	65	219	307
		% of Total	0,00%	1,30%	6,20%	21,2%	71,3%	100,00%

Chi-Square Tests

	Value	Df	Asymp. Si. (2-sided)
Pearson Chi-Square	8.625	3	**0.035**
Likelihood Ratio	8.804	3	**0.032**
N of Valid Cases	307		

Table 4.5 indicates 56% of the female respondents confirm that they possess necessary tools to use digital channels. The table also shows 44% of the male respondents that also confirms that they possess necessary tools to use digital channels with a count of (Strongly Agree and agree = 122 and Neutral = 12, out of 135). Furthermore, the table illustrate the maximum tally (219 of 307) that having necessary resources (smartphone, internet) is extremely important to be able to use electronic banking channels. The study rejects the null hypothesis. Thus, it is tentatively deduced that there is a statistically relevant association amongst the necessary resources (smartphone, internet, computer) to perform banking electronically and the use of digital channels. The primary data show the chi-square figure of (8.625) with a df (3), $p = 0.035$ which is below 0.05, therefore the test is statistically significant. Therefore, the study accepts the hypothesis. Thus, the study tentatively deduces that there is a relevant association between e-banking users and resources (have necessary resources to use electronic banking).

4.3.2 Nonparametric Tests

When the data is categorised, 3 or beyond clusters are associated through application of nonparametric tests. This implies that inconsistency amongst the scores can be segregated into erraticism among and within cluster means (Aaker *et al*., 2017; Pallant, 2005). These inferential data assessments enable the application of assessments if associations amongst numerous items are significant. "The variability within is measured as the summation of squares of the differences between value and its group mean" (Aaker *et al*., 2017:24). The nonparametric test used the Friedman test on mean categorising adoption factors.

Table 4.6: Friedman Test on mean grading performance expectancy

What is the variation in e-banking channel usage scores across four dimensions of e-banking adoption factors?					
Four-dimensional adoption factors of e-banking channels usage	**Total**	**Mean Rank**	**Chi-square**	**Df**	**Significance**
Simplicity	307	2.85	136.672	3	0.000
Usefulness	307	2.43			
Facilitation	307	2.07			
Convenience (flexibility)	307	2,66			
What is the variation in e-banking usage values throughout e-banking adoption tactics					
Online service adoption strategies	**N**	**Mean Rank**	**Chi-square**	**Df**	**Sig**
Self-service model	307	3,07			
Simple Instructions (accessibility)	307	2,99	381,996	3	0.000
Support and servicing strategy	307	2,44			
Information ambiguity	307	1,51			

Table 4.6 illustrates that there are significant variances in the e-banking channel usage scores across the four e-banking adoption determinants with Chi-square score (136,672), df (3) at $p > 0.05$. The table also propose that the relent variances exist in the electronic banking usage counts throughout the four e-banking digital service adoption tactics ($\chi^2 = 381,996$, $p = 0.000$ and df = 3). The mean rank presents self-service (3,07) as the highest followed by simple instructions (2,99), support and servicing strategy (2,44), and information ambiguity (1,51).

4.4 Multivariate Analysis

4.4.1 Factor Analysis

According to Toshigami and Rosset, (2017:6-13) "a variance is the distribution of a data set around its mean value, whereas a covariance is the used to measure the directional relationship between two random variables". Factor analysis focuses on evaluation of a model which elucidates variance or covariance among a group of distinguished determinants (in a population) by a group of typically fewer undetected determinants and weightings (Beaumont, 2012). Put differently, factor analysis aims to identify distinct proportions in the design of associations amongst the determinants in the questionnaire. This study presents eight adjusted count of discrete determinants that provide insights on the trend of associations amid the variables. "The nature of the factors, the relationships between the fit of the factors to the observed data, and the amount of random or unique variance of each observed variable" (Helizer *et al.*, 2010:224). Treiblmaier and Filzmoser, (2010:198) further stress that factor analysis fundamental objective is to reduce a number of observed variables into small number of underlying grouped factors to augment interpretability and detect hidden structures in the data. The factor analysis must disclose all hidden determinants that influence the apparent factors to fluctuate together with original design on collective variance in the outcome (William, Brown and Onsman, 2012).

In attempting to identify the essence of the factors manipulating a group of replies based on a shared influence model, this study applies exploratory factor analysis. The suggestion for this model is that respective detected feedback is partly prejudiced through fundamental shared variables and partly by fundamentally exclusive determinants. In this context, this research aims to explore constructs with comparable features combined into a reduced count of determinants that can elucidate the detected variance in the greater count of constructs without loss of information. According to Beaumont, (2012:20) factor analysis is "a collection of methods used to examine how underlying constructs influence the responses on a number of measured variables". This model suggests that individual detected feedback is partly affected by both basic shared and distinctive determinants, respectively. This examination, with no prior theory, incorporates factor loadings to discern the factor design of the data (Garson, 2012). According

to Beaumont (2012), the principal component analysis (PCA) outcome presents information that could be used to articulate the components (smaller number) that explains the variability in larger number of measures. In an attempt to resolve on every determinant with eigenvalues larger than 1 to be reserved for alternation, this study applies Kaiser criterion and primary elements examination with varimax alternation as the technique for statistical analysis.

Table 4.7: Factor analysis on KMO and Bartlett's test, rotated components and Alpha

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.833
Bartlett's Test of Sphericity	Approx. Chi-Square	5377.693
	Degree of freedom	378
	Significance	.000

Rotated Component Matrix

	Factor Loading	**Eigenvalue**	**Percentage of Variance**	**Cumulative %**	**Communalities Extraction**
Factor 1: Performance Expectancy					
Simplicity	.615	9.692	34.613	34.613	.618
Usefulness	.424				.673
Facilitation	.512				.525
Factor 2: Effort Expectancy					
Convenience (flexibility)	.520	2.364	8.443	43.056	.419
Easy Navigation	.667				.704
Intuitive (Accessibility)	.657				.661
Factor 3: Social Influence					
External social influence	.482	1,798	6.421	49,476	.652
Family influence	.459				.766
Society influence	.481				.699
Factor 4: Facilitating Conditions					
Resources (tools of trade)	.465	1.691	6,040	55,517	.625
Product Knowledge	.545				.689
Collaboration	.604				.633
Multi-systems	-.002				698
Self-service					456
Factor 5: Hedonic Motivation					
Enjoyable system	.318	1.391	4.968	60.485	.726
Fun system	.646				.747
Entertaining System	.729				.667
Factor 6: Price Value					
Affordability	.578	1.236	4.414	64.899	.751
Value for money	.690				.861
Right Price	.750				.834
Factor 7: Habit					
Habit	.748	1.172	4.187	69.086	.818
System dependency	.665				.679

Natural	.547				.764	
Factor 8: Uncertainty Avoidance						
Clear and simple instructions	.705	.958	3.423	72.509	.688	
Information ambiguity	-.207				.622	
Extraction Method: Principal Component Analysis., Rotation Method: Varimax with Kaiser Normalization., a. Rotation converged in 16 iterations. Reliability Statistics: Overall Cronbach's Alpha = .843, and Number of items = 32.						

Source: Compiled by the researcher from the SPSS statistical results.

According to William, Brown and Onsman (2012:28), "to test suitability of factor analysis for the factor extraction requires inclusion of the 'Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity' for the extraction factors". This study's KMO value is 0.833, this reveals a commendable extent of shared variance which is beyond the generally tolerable level of 0.50 that is acceptable factor analysis to continue with the study. The sample is deemed satisfactory when overall sloping of the matrix is greater than 0.50 for all elements (Beaumont, 2012). In analysing KMO statistic ranges, values closer to one show that trends of associations are comparatively compressed, and factor analysis would produce credible individual factors. On the contrary, values from 0 and 1, value 0 infers that partial correlation entirety is relatively larger than the sum of associations representing dispersion in the correlations trend (Hair *et al*., 2014). In this study, $p < 0.05$ and the related assessment of measurement value for Barlett's sphericity is great (5377.693), signifying that the data matrix has adequate association to factor analysis.

In order to promote recognition of factors that relates to other limited variables whereas disapproving the recognition of factors affecting all variables, this study applied the varimax method. A varimax solution produces results that simplifies recognition of respective factors with a solitary variable as an immaterial alternation of the factor lines. Table 4.8 depicts the highest eigenvalue loading as 9.692 and relate to 34.613% as while the lowest (eight) eigenvalue is .958 which is linked to 3.423% of the variance in the primary statistics. Eigenvalues quantifies the degree of disparity in the overall illustrative interpreted by respective determinant. It is recommended to exclude components with eigenvalues below 1.0 (Garson, 2012).

4.4.1.1 Rotated Component Matrix

The fundamental objective of factor diagnostic practice is to reduce the entanglement of variables through simplification, clarification and interpretation of the factor loadings. The loadings of Likert scales with 0.60 may be considered high (Garson, 2012:21). Every item captured => 0.55 were included to factor loadings as, when rounded off, these values become closer to 0.60. Several

scholars advocate for different values to be considered high, for example, Toshigami and Rosset, (2017:6-13); Garson, (2012) considers items beyond 0.6 high and all those lower than 0.4 low, while Garson, (2012) also proposes 0.7 or above as high.

4.4.1.2 Interpretation and labelling of factors

This study makes use of factor loadings to find relationship between some variable and different factors. Factor loading attributes a variable to different factors to allow the researcher to scrutinise the extremely loaded barometers in respective columns then allocates a factor designation. To further test the degree of correlation or uncorrelation, factor rotation is applied in this study.

Factor 1: Electronic banking performance expectancy

Factor 1 clearly presented the highest variable groupings of the eight selected constructs. As a result, the groupings of 3 from 23 variables presents a relatively higher variance percentage of 34.613%. This determinant was examined by questioning respondents if electronic channel makes it simpler for them to perform daily financial activities; if electronic channel is beneficial compared to other banking platforms; if electronic banking facilitates easier communication with their banks. This important factor encompasses simplicity; usefulness and facilitation. This factor explains the performance expectation over effort expectancy in the use of electronic banking.

Factor 2: Electronic banking effort expectancy

This factor includes convenience (flexibility); easy navigation; and intuitive (accessibility) of electronic banking. Effort expectancy has been validated as one of the critical factors in predicting user's intention to use electronic channels. The respondents were asked if they find electronic banking easy to use and flexible; if using electronic banking features is easy; and if learning to operate electronic banking channels is easy.

Factor 3: Social influence on the use of electronic channels

Factor 3 was examined by variables that included external social influence; family influence; and society influence. The guidance and inspiration drawn from important people by people influences the users' willingness and eagerness to use technological solutions.

Factor 4: Electronic Banking facilitation conditions

In accessing technological solution, the aesthetic design could facilitate the behavioural intentions to use electronic-based tools. This factor was examined by asking respondents if they possess necessary tools to use digital channels (smartphones, internet); if they possess relevant knowledge to use digital channels; if support from the service is available when problems are encountered; if assistance is not required in order to use electronic banking.

Factor 5: Electronic banking hedonic motivation

This factor describes the pleasure derived from using a technological tool. Factor 5 includes enjoyable system; fun system; and entertaining system. The hedonic motivation influences the users' choice to use electronic channels.

Factor 6: Electronic banking price value

The bank customers cognitively associate the functionalities contained in utilising electronic channel with the monetary costs associated with utilising the digital channel. This determinant was examined by enquiring participants if electronic banking channels are reasonably priced; if the electronic channels is good value for money; if at the present fees charged for the electronic channels delivers great value.

Factor 7: Electronic banking habit

This factor explains the degree to which users incline to behave inevitably due to experience and knowledge. This factor was examined by questioning respondents if they are dependent on electronic banking to perform any banking activity; if using electronic banking channels has become natural to them.

Factor 8: Electronic banking uncertainty avoidance

Uncertainty avoidance – refers to the extent to which individuals feel threatened by ambiguities and uncertainties and try to avoid it. Individuals with moderate uncertainty avoidance tends to be risk-loving. This factor was examined by questioning respondents if the information on electronic banking channels is simple enough to understand; if they get confused by lot of information presented by electronic banking.

4.4.1.3 Communalities values

Figure 4.16 presents communalities extraction counts with the percentage of respective factor's variance that could be described by the selected constructs. Communality examines the portion of variance in a specific variance and specific variable interpreted by combined factors may be explained as the reliability of the indicator. Communality is "the sum of the square factor loadings for all factors for a given variable (row) as the variance in that variable accounted for by all the factors" (Hair, Ringle, and Sarstedt, 2011:30). In this study, the communalities varied between 0.419 and 0.861 implying that the variance of the primary counts was equitably elucidated by the shared factors.

"The original values on the sloping of the correlation matrix are established by the squared various correlation of variable with another variables" (Hair, Ringle, and Sarstedt, 2011:28-31). The figure 4.16 in the below section presents numbers as well as quantity of respective factor's variance that could be expressed through reserved factors. Table 5416 shows that 61.8% of the variance in simplicity is justified by aggregate of a^2, the variance with maximum figure 86.1% of variance in value for money is justified by the total $(a)^2$, and smallest figure 41.9% of variance in convenience (flexibility) is explained by the aggregate of a^2 or (Total (factor loadings)^2, (that is, a models 8 factor loadings across). According to this, factors with excessive figures (0.861) are expressed in the shared variable section with excessive loading on respective factor between 0.8 and 0.9, whereas variables with minimum values (0.4) are not well expressed in the common factor section by the factor model (future use, and reuse were removed with lower than 0.55 threshold factor loadings.

Communality is "the sum of the square factor loadings for all factors for a given variable (row) as the variance in that variable accounted for by all the factors" (Hair, Ringle, and Sarstedt, 2011:30). The purpose of communality is to express the portion of variance in an expressed variable by combined factors could be explained as the consistency of the indicators. In this study, the communalities ranged between 0.419 to 0.861 implying that the variance of the initial values were impartially expressed by the common aspects. Consequently, the varimax alternation presented the outcomes of the factor analysis proposed eight item mixture, also expressed beyond 62% of the variance accompanied by the eigenvalues of greater than 1. In a nutshell, this section of the study presented the numbers that explains from varimax respective factors split amongst other factors.

For the purpose of examining the cohesion of respective variables, the study applied the reliability analysis Cronbach's Alpha. In research, 0.50 is the satisfactory level of reliability (Nunnally, 1967). The outcomes revealed 0.833 as an inclusive alpha value of the eight factors was 0.833, which exceeds the tolerable level. The study applied Factor analysis to express relationships between groups of various organised variables, and the inclusive alpha value in this study (0.703) shows acceptable internal reliability with regards to associations between the eight factors and the implemented measurement rule. Consequent to the variance of primary counts, the varimax alternation presented the eigenvalues greater than one coupled with eight factor solutions that clarified beyond 60% of the variance in statistics. Fundamentally, this study discloses the values that explains from varimax perspective how respective factors related with the rest of factors.

Figure 4. 16: Scree Plot for factor analysis

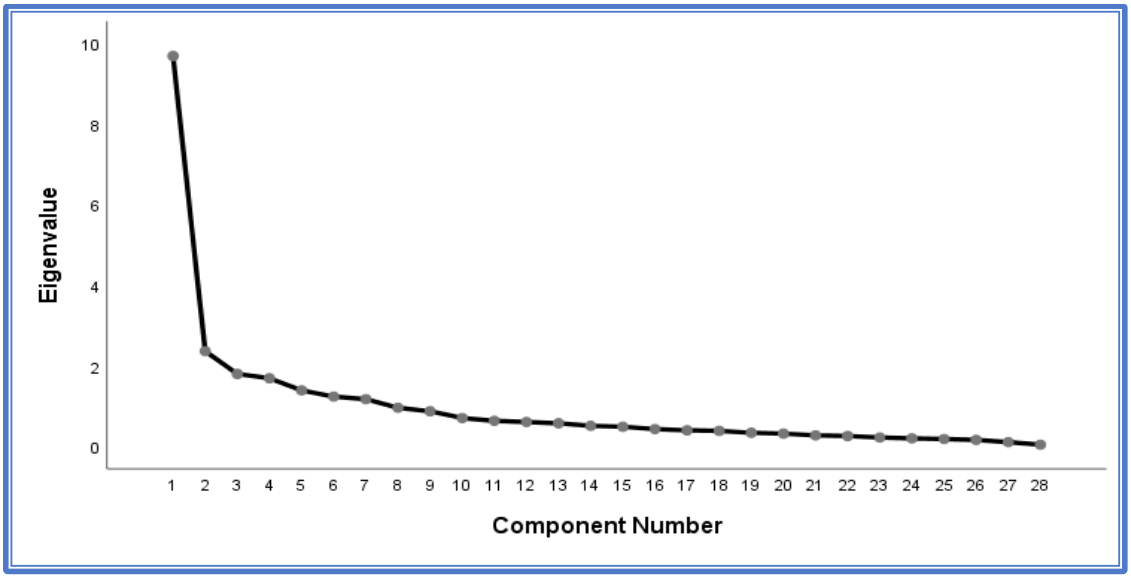


Figure 4.16 presents scree plot to aid ascertain the number of components that should be retained to express the highest variation percentage in the data, Table 4.7 revealed that the eight factors combined explain 34.613% of the variance in the data. The scree line is nearly horizontal, which signifies that respective consecutive factor represents slightly lower values of the overall variance, while eigenvalue is graphed between highest and lowest. This downward slopping (scree plot) attests, eight-factor model is adequate for this study.

4.4.1.4 Assumptions in Factor Analysis

Factor analysis is purposely used to reduce the total of items to controllable factors. In order to ascertain the factorability of the data and sampling adequacy, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity (Hair *et al*., 2014:613) are the mostly applied statistical measures. The fundamental purpose of the Bartlett's test of Sphericity is to confirm variance homogeneity assumption. As a rule of thumb, "the moderate to moderate-high intercorrelations without multicollinearity as KMO of 0.60 or higher implies that data will factor well" (Garson, 2012:44-46). Therefore, in this study there were no violations of KMO assumption, as the study KMO value 0.833 is good factorability. The study also conformed to the expectations of sphericity and acceptable selected scope with Barlett's test of sphericity tolerance at *0.000*.

It has been suggested that as a base, "sample sizes of 50 is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good, and 1000 is excellent" (Black and Babin, 2019:42-46). "There is near universal agreement that factor analysis is inappropriate when the sample size is below 50" (Garson (2012:55). Hair *et al*. (2014:613) suggested rule of thumb that endorses at least 300 cases for factor analysis, whereas Black and Babin (2019) suggest cases of 100 or even 50 under

some circumstances. According to Garson, (2012:59), normality assumption relates to the coefficients testing, and correlation detection (factor analysis), aiming to gather variables along proportions. In this regard, this study is not subjected to normality assumption as a critical assumption of factor analysis due to lack of applicability of significance testing and unavailability of distributional assumption.

4.4.2 Multiple Regression Analysis

The multiple regression is defined as "a statistical tool to project a variable's value on bases of other variables' values (Black and Babin, 2019; Cooper and Schindler, 2008:46). It is an augmentation of bivariate linear regression model; the only distinction is that multiple regression applies three or more variables".

This analysis demonstrates the precision of regression coefficients assessments, and effectiveness of sorting out uncommunicative predictors, with an aim to establish a satisfactorily reduced model. "Multicollinearity exists when two independent variables are highly correlated, and these variables have a negative impact on the model" (Aaker *et al*., 2017:115). Multicollinearity is "a statistical phenomenon in which two or more predictor variables in the multiple regression model are highly correlated and provide redundant information about the response, and as a result the standard errors of estimates of the β's increased and simultaneously indicates decreased reliability" (Black and Babin, 2019:56).

4.4.2.1 Multiple regression on Simplicity

The variables from the survey instruments have been processed in this study to generate a regression analysis with simplicity as dependent variable and other four subjective 5-point Likert type scales items (usefulness; flexibility; social influence; and pricing) as independent variables. Participants were asked to share their confirmation on respective statements, on the following options: 1= strongly disagree and 5 = strongly agree. It implies that the role of simplicity to encourage e-banking channel adoption is presumed to be dependent on the usefulness; flexibility; social influence; and pricing.

On Table 4.9, the Pearson correlation analysis presented an important relationship among factors, and multiple regression method was used to scrutinise the variation in the criterion (simplicity) which is represented by respective explanatory variables. To further observe the association between simplicity and several potential predictors, relationship and multiple regression evaluation was performed. In summary, respective predictors' scores is expressively correlated with the dependent variable, while model 2 on Table 4.10 with two predictors (usefulness and flexibility) produced $R^2 = 0.157$, $F = 66{,}217$, $p < 0.05$. These outcomes suggest the presence of a

direct correlation among simplicity and the other independent variables (usefulness and Convenience (flexibility)).

Table 4.8: Descriptive Statistics and Correlations

Items	Mean	Standard deviation	N
Simplicity (Easy to use)	4,684	0,584	307
Usefulness	4,339	0,930	307
Convenience (Flexibility)	4,544	0,701	307
Social Influence	3,990	1,101	307
Pricing	4,003	0,982	307

Correlations

	Items	Simplicity (Easy to use)	Usefulness	Convenience (Flexibility)	Social Influence	Pricing
Pearson Correlation	Simplicity (Easy to use)	1,000	0,396	0,453	0,270	0,389
	Usefulness	0,396	1,000	0,198	0,265	0,260
	Convenience (Flexibility)	0,453	0,198	1,000	0,231	0,273
	Social Influence	0,270	0,265	0,231	1,000	0,245
	Pricing	0,389	0,260	0,273	0,245	1,000
Sig.(1-tailed)	Simplicity (Easy to use)		0,000	0,000	0,000	0,000
	Usefulness	0,000		0,000	0,000	0,000
	Convenience (Flexibility)	0,000	0,000		0,000	0,000
	Social Influence	0,000	0,000	0,000		0,000
	Pricing	0,000	0,000	0,000	0,000	

This study applied the Pearson correlation test to explain the extent of linear correlation between the variables. To evaluate the association amongst every relevant set of variables with reference to tolerable $p < 0.05$, this study demonstrates a correlation matrix. A correlation matrix provides details of satisfactory positive association values between respective set of variables with significance < 0.05, and the range between 0.3 to 0.5 signals that there are no strong correlations between the dependant and the predictor variables (Black and Babin, 2019:16). The significance

level shows the possibility of correlations pronounced as a result of coincident presented as random sampling error. According to Black and Babin, (2019:16-24), statistically, the range of the correlation coefficient fluctuates between +1 and -1 with a perfect degree of correlation between the variables (± 1), and value closer to 0 indicating insignificant or no associations.

Table 4.9: Statistics on Mode, ANOVA, Coefficients, diagnostics and Residuals

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Approximate	Change Statistics					Durbin-Watson
					R Square Change	F Change	Degree of freedom 1	Degree of freedom 2	Sig. F change	
1	.396a	0,157	0,154	0,537	0,157	56,799	1	305	0,000	
2	.551b	0,303	0,299	0,489	0,146	63,918	1	304	0,000	1,887

a. Predictors: (Constant), Usefulness;
b. b. Predictors: (Constant) Usefulness; Convenience (Flexibility)
Criterion: Simplicity

ANOVA[c]

Model		Sum of Squares	Degree of freedom	Mean Square	F	Significance.
1	Regression	16,382	1	16,382	56,799	.000b
	Residual	87,969	305	0,288		
	Total	104,352	306			
2	Regression	31,665	2	15,833	66,217	.000c
	Residual	72,687	304	0,239		
	Total	104,352	306			

Coefficients

Model	Unstandardized d Coefficients		Standardised d Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zeroorder	Partial	Part	Tolerance	VIF
(Coefficient)	3,605	0,146		24,615	0,000	3,317	3,893					
Usefulness	0,249	0,033	0,396	7,537	0,000	0,184	0,314	0,396	0,396	0,396	1,000	1,000
(Constant)	2,336	0,207		11,272	0,000	1,928	2,744					
Usefulness	0,200	0,031	0,319	6,533	0,000	0,140	0,261	0,396	0,351	0,313	0,961	1,041
Convenience (Flexible)	0,325	0,041	0,390	7,995	0,000	0,245	0,406	0,453	0,417	0,383	0,961	1,041

Residuals Statistics	Lowest	Highest	Mean	Standard deviation	N

Predicted Value	3,66	4,96	4,68	.322	307
Std. Predicted Value	-3,174	0,873	0,000	1,000	307
Standard Error of Predicted Value	.036	.152	0,046	.016	307
Adjusted Predicted Value	3,52	4,97	4,68	.324	307
Residual	-1,639	1,337	0,000	.487	307
Std. Residual	-3,353	2,734	0,000	0.997	307
Stud. Residual	-3,366	2,877	0,001	1,005	307
Mahal. Distance	0,649	28,643	1,993	2,859	307
Cook's Distance	0,000	0,296	.006	.020	307
Cantered Leverage Value	0,002	0,094	.007	.009	307
Predicted Value	3,62	5,01	4,68	0,342	307

Table 4.9 presents the model that comprises of only usefulness explains 30% of the variance (adjusted $R^2 = 0.299$) whereas the subsequent model included convenience (flexibility) with additional 4% of the variation clarified and considered 33% of the variation (adjusted $R^2 = 0.337$). Concerning the calculation: R^2 = 1-SS (Error)/SS (Total); and R^2_{adj} = 1-MSE/MST or $R^2_{adj} = R^2-(1-R^2)p/(n-p-1)$. This research presents, R square = 0.343, adjusted $R^2 = 0.337$, $F = 52{,}790$ as well as df (2; 30) with $p < 0.05$. Every t-statistics constant are significant at $p < 0.05$. The concluding model emanated from the stepwise analysis with 2 explanatory variables presenting significance in this model. The connection between dependant and explanatory variables is clarified by 16.9% of the variation in simplicity and the 2 dimensions, usefulness (βeta = 0.303, *p* value below 0.05) as well as flexibility (βeta = 0.314, *p* value below 0.05) are revealed to have association with simplicity. To detect and test autoconnection with the figure of DW, (Garson, 2012) states that ranges from 0 to 4, values close to 0 implies significantly positive autocorrelation; whereas the values close to 4 imply statistically negative autocorrelation; and values closer to 2 show no serial autocorrelation. This study presented Durbin-Watson value of 1.887, which signals no serial autocorrelation.

The study scrutinised the data on all the above-mentioned factors so that the issues associated with multicollinearity could be detected. Correspondingly, the application of D-W statistics is aim at evaluating the extent of multicollinearity, and the values should be within 1.5 and 2.5 tolerable to disclose individuality of observations (Rahlin *et al.*, 2019:351-370). This study shows the Durbin-Watson statistic value within 0 and 4. Therefore, amid factors, no issues associated with multicollinearity were found.

H_1: Performance expectancy positively influence the use of e-banking channels.

H_{01}: Performance expectancy negatively influence the use of e-banking channels.

Convenience (flexibility) and usefulness is positively associated with the use of digital channels (Sig. = 0.000 <0.005), suggesting that performance influence on the use of e digital channels, therefore the study rejects the null hypothesis.

Residuals Statistics

The studentised residual is like the standardised residual in determining anomalies and dominant observations. "The residual analysis is applied for three key purposes: i) to identify exponential error as the practical Y value increases); ii) to detect outliers; and iii) to recognise other patterns of error associated with X values" (Garson, 2012:18). In this research, lowest = -3.424 and highest = 2.181) were found to be in line with anticipated range (-3.3 or ±3) and studentised residual (min = -3.448 and max = 2.323) within 0 and ±3. The standardised residuals for this study show that the model's normal distribution contains a mean of zero and standard deviation adjacent to one (0.995) (Nusair and Hau (2010:315; Tabachnick and Fidell, 2007). Accordingly, Cook's D determines the extent a variable impacts the entire model based on lower and higher residuals. When distance is greater than 1, it implies a significant outlier problem (Aaker *et al*., 2017; Garson, 2012).

The principle is that "leverage ranges between 0 and 1 whereas a value tangent to 1 or 0.5 implies outlier issues" (Baum, 2006:86). This study, based on Table 5.10, revealed Cook's Distance for annotations with no anomalies (low = 0.000 as well as high = 0.181), given the fact that D count is below one, it can be deduced that no significant influence on regression analysis is detected. Aaker *et al*. (2017:70-85) noted that, "Mahalanobis distance is the distance measured by P.C. Mahalanobis as an underlying correlation between variables by which different patterns can be identified and analysed". When the Mahalanobis distance (D) is higher for a case, the stronger that case's values on independent variables deviate from typical values (Rahlin *et al.,* 2019:351-370; Baum, 2006; Hamilton, 2006).

Figure 4. 17: Normal probability plot of Residuals on Simplicity and predictor variables

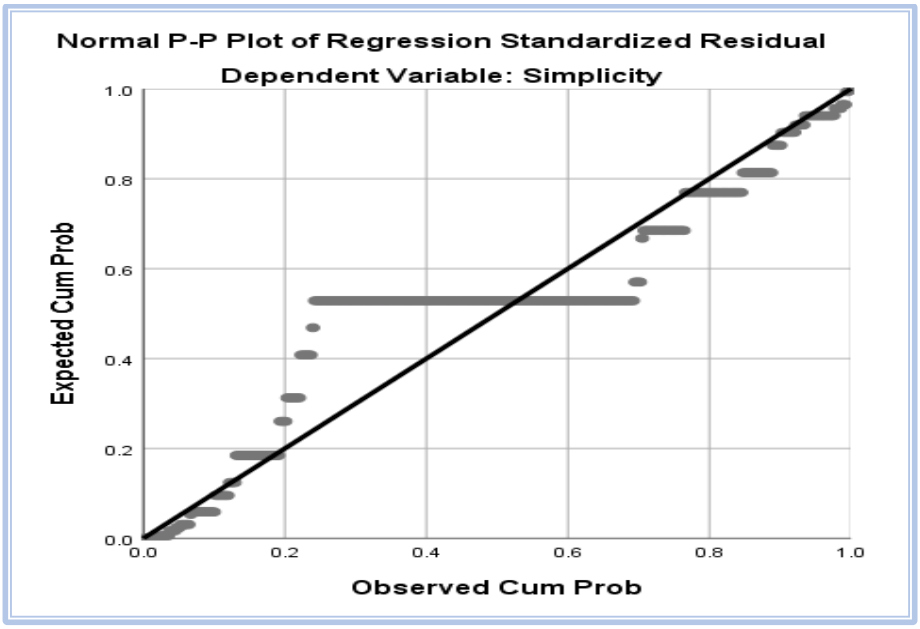


Illustration 4.17 presents the graph of the residuals with plots tangent to an upward gradient; therefore, the multiple regression analysis statement is satisfied by constructs.

4.4.2.2 Multiple regression analysis on digital banking channels price value and usefulness

This research attempts to analyse the association amongst variables that explains factors1 of e-Banking channels usefulness with the aim to establish the degree of association between the variable. The observations for the factors of e-banking channels usefulness were examined through the five-point Likert-type scales. The usefulness of electronic banking channels might be dependent on the pricing of the e-banking service (reasonably priced); value for money; good value; product/service knowledge. The stepwise procedure produced four predictor variables (reasonably priced, value for money, good value and product/service knowledge) on model 2 (table 4.12) and good value is negatively correlated to electronic banking channel usefulness.

Table 4.10: Correlation Matrix

Correlations

		e-Banking usefulness	Reasonably Priced	Value for Money	Good Value	Product/Service Knowledge
Pearson Correlation	e-Banking usefulness	1.000	.260	.279	.237	.145
	Reasonably Priced	.260	1.000	.769	.745	.408
	Value for Money	.279	.769	1.000	.808	.404
		.237	.745	.808	1.000	.369

	Good Value	.145	.408	.404	.369	1.000
	Product/Service Knowledge					
Sig. (1-tailed)	e-Banking usefulness	.	.000	.000	.000	.006
	Reasonably Priced	.000	.	.000	.000	.000
	Value for Money	.000	.000	.000	.000	.000
	Good Value	.000	.000	.000		.000
	Product/Service Knowledge	.000	.000	.000	.000	
N	e-Banking usefulness	307	307	307	307	307

Table 4.10 presents the correlation matrix with all probable explanatory and the criterion, the e-banking usefulness. The four data items s show the association among every probable set of variables through $p < 0.05$. The explanatory variable is positively associated to reasonably priced; value for money; good value; and product/service knowledge with $p < 0.05$, similarly every probable explanatory variable is positively associate with significance level below 0.05. This imply that the outcome of the test is statistically significant and there is a significant association between e-banking usefulness and reasonably priced; value for money; good value; and product/service knowledge. Since to reasonably priced; value for money; good value; are components of price value, this suggest that price value influences the use of digital channels, therefore the study rejects the null hypothesis.

H_6: Price value positively influence the use of e-banking channels.

H_{06}: Price value has no influence the use of e-banking channels.

Table 4.11: Multiple regression statistics on e-banking usefulness and predictor variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	Degree of freedom 1	Degree of freedom2	Sig. F Change	
1	.260a	0,068	0,065	0,900	0,068	22,111	1	305	0,000	
2	.289 b	0,083	0,071	0,896	0,016	1,740	3	302	0,159	1,849

a. Predictors: (Constant), Reasonably Priced;
b. Predictors: (Constant), Reasonably Priced, Value for Money; Good Value; Product/Service Knowledge
c. Dependent Variable: e-Banking usefulness

ANOVA[c]

Model		Sum of Squares	Degree of freedom	Mean Square	F	Significance
1	Regression	17,897	1	17,897	22,111	.000b
	Residual	246,871	305	0,809		
	Total	264,769	306			
2	Regression	22,092	4	5,523	6,873	.000c

Residual	242,676	302	0,804	
Total	264,769	306		

Coefficients

Model	Unstandardised d Coefficients		Standa rd ised Coeffic ients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zeroo rder	Partial	Part	Tole ranc e	VIF
1 (Coefficient)	3,353	0,216		15,530	0,000	2,928	3,778					
Reasonably Priced	0,246	0,052	0,260	4,702	0,000	0,143	0,349	0,260	0,260	0,260	1,000	1,000
2 (Constant)	2,970	0,403		7,361	0,000	2,176	3,764					
Reasonably Priced	0,102	0,087	0,108	1,167	0,244	-0,070	0,274	0,260	0,067	0,064	0,356	2,805
Product/Servic e Knowledge	0,040	0,094	0,026	0,428	0,669	-0,144	0,224	0,145	0,025	0,024	0,813	1,230
Value for money	0,196	0,106	0,193	1,854	0,065	-0,012	0,405	0,279	0,106	0,102	0,281	3,563
Good value	-,009	0,099	-0,009	-0,090	0,928	-0,203	0,185	0,237	-0,005	-0,005	0,310	3,224

Residuals Statistics	Min	Max	Mean	Standard deviation	N
Projected Value	3,56	4,64	4,34	0,269	307
Std. Predicted Value	-2,904	1,107	0,000	1,000	307
Standard Error of Predicted Value	0,065	0,304	0,106	0,043	307
Adjusted Predicted Value	3,55	4,65	4,34	0,269	307
Residual	-3,618	1,384	0,000	0,891	307
Std. Residual	-4,037	1,544	0,000	0,993	307
Stud. Residual	-4,051	1,579	0,000	1,001	307
Mahal. Distance	0,593	34,093	3,987	4,767	307
Cook's Distance	0,000	0,045	0,003	0,006	307
Cantered Leverage Value	0,002	0,111	0,013	0,016	307

a. Dependent Variable: e-Banking channels usefulness

Table 4.11 presents the constant of multiple determination is 0.083, and approximately 8.3% of variance in e-banking channels usefulness is clarified by reasonably priced; value for money; good value; and product /service knowledge. The regression equation seems to be reasonable to make estimates based on the R^2 value was not adjacent to one. The table also presents *F* value of 6.873 and *p* less than 0.05. This indicates the existence of a direct association among the criterion and four explanatory variables (reasonably priced; value for money; good value; and product /service knowledge). All four dimensions, reasonably priced ($\beta = 0.108$, $p < 0.05$) and product/service knowledge ($\beta = 0.026$, $p = 0.05$); Value for money (βeta = 0.193, *p* less than 0.05); as well as Good value ($\beta = -0.009$, p value less than 0.05) were substantially associated to the electronic banking channels usefulness. The acceptance value is beyond 0.10 while the VIF was less than ten, which implies that issues associated with multicollinearity were not identified

amongst the independence variables. The highest value of Mahal's D is 1.58 indicates that there are no major problem D < 1.

Figure 4. 18: Normal probability graph for e-banking usefulness

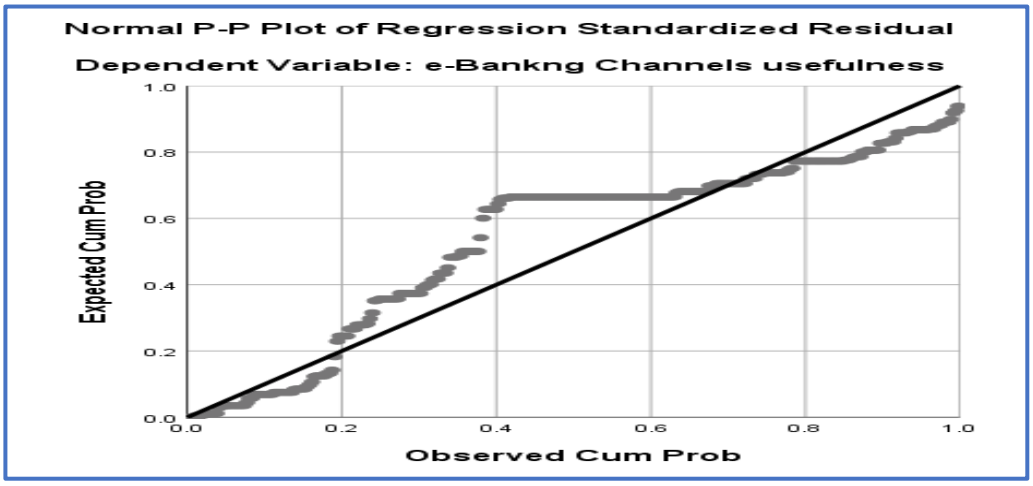


Diagram 4.18 shows the normal probability plot, where the items are grouped around the upward sloping curve with no nonconformance from normality.

4.4.2.3 Multiple Regression on e-Banking facilitation

This study has chosen e-banking facilitation as dependent variable and independent variables are the Resources (tools of trade), product/service knowledge, e-banking is fun. To examine the level of agreement on both dependent and independent variables, the 5-point Likert scale was used. Stepwise procedure was applied to produce statistical results on multiple regression, where all variables were positively associated. Two independent variables were generated on Module 2 (appendix 6) and the analysis reveals that the availability of resources to use e-banking coupled with service knowledge results in delightful client experience therefore customers have fun when using electronic banking channels.

Table 4.12: Descriptive statistics and correlation matrix on e-Banking facilitation

Descriptive Statistics

	Mean	Standard deviation	Total
Facilitation	4.68	.584	307
Resources (tools of trade)	4.63	.662	307
Product/Service Knowledge	4.62	.607	307
e-banking is fun	4.11	.945	307

	Correlations	Facilitation	Resources (tools of trade)	Product/Service Knowledge	e-banking is fun
Pearson Correlation	Facilitation	1.000	.445	.376	.338
	Resources (tools	.445	1.000	.593	.194
	of trade)	.376	.593	1.000	.242
	Service	.338	.194	.242	1.000
	Knowledge				
	e-banking is fun				
Sig. (1-tailed)	Facilitation	.	.000	.000	.000
	Resources (tools of trade)	.000	.	.000	.000
	Service Knowledge	.000	.000	.	.000
	e-banking is fun	.000	.000	.000	.

The above table shows 4 independent variables and the criterion ration, facilitation. The four selected data items show the association among the probable set of data items by means of significance level= 0.05. The direct correlation among facilitation and Resources (tools of trade), service knowledge, e-banking is fun was found and $p < 0.05$. Subsequent to stepwise method with R of 0.455, resources (tools of trade) and service knowledge are expressively within the regression equation and both have $p < 0.05$, two specific explanatory data items were loaded into the model.

Table 4.13: Regression statistics on e-Banking facilitation conditions

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	Df1	Df2	F Change	
1	.436a	0,190	0,187	0,960	0,190	71,564	1	305	0,000	
2	.455b	0,207	0,199	0,953	0,017	3,282	2	303	0,039	1,967

a Predictors: (Constant), e-banking is fun,
b Predictor: (Constant), Resources (tools of trade), Service Knowledge
b Dependent Variable: e-Banking facilitation.

ANOVA

Model		Sum of Squares	Degree of freedom	Mean Square	F	Significance.
1	Regression	65,945	1	65,945	71,564	.000b
	Residual	281,052	305	0,921		
	Total	346,997	306			
2	Regression	71,904	3	23,968	26,399	.000c
	Residual	275,093	303	0,908		
	Total	346,997	306			

Coefficients

Model	Unstandardised Coefficients	Standardised		Si	95.0% Confidence Interval for B	Correlations	Collinearity Statistics

			Coefficients		g.								
	B	Std. Error	Beta	t		Lower Bound	Upper Bound	Zeroorder	Partial	Part	Tol	VIF
1 (Constant)	1,598	0,290		5,521	0,000	1,029	2,168					
e-banking is fun	0,565	0,067	0,436	8,460	0,000	0,433	0,696	0,436	0,436	0,436	1,000	1,000
2 (Constant)	0,686	0,483		1,419	0,157	-0,266	1,637					
e-banking is fun	0,525	0,068	0,405	7,662	0,000	0,390	0,659	0,436	0,403	0,392	0,937	1,067
Resources (tools of trade)	0,190	0,103	0,118	1,853	0,065	-0,012	0,392	0,220	0,106	0,095	0,643	1,556
Product/Service knowledge	0,044	0,112	0,025	0,393	0,695	-0,177	0,266	0,189	0,023	0,020	0,637	1,569

Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	e-banking is fun	Resources (tools of trade)
1	1	1,982	1,000	0,01	0,01	
	2	0,018	10,473	0,99	0,99	
2	1	3,956	1,000	0,00	0,00	0,00
	2	0,027	12,192	0,01	0,92	0,07
	3	0,010	20,241	0,85	0,08	0,43
	4	0,007	23,370	0,14	0,00	0,50

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,67	4,48	4,00	0,485	307
Std. Predicted Value	-2,744	0,986	0,000	1,000	307
Standard Error of Predicted Value	0,071	0,301	0,101	0,041	307
Adjusted Predicted Value	2,69	4,50	4,00	0,487	307
Residual	-3,481	2,093	0,000	0,948	307
Std. Residual	-3,653	2,196	0,000	0,995	307
Stud. Residual	-3,666	2,235	0,000	1,001	307
Mahal. Distance	0,706	29,494	2,990	4,053	307
Cook's Distance	0,000	0,066	0,003	0,007	307
Cantered Leverage Value	0,002	0,096	0,010	0,013	307

a. Dependent Variable: e-Banking facilitation

Table 4.13 presents the constant of several determination is 0.207, with approximately 20% of the variance in the e-banking facilitation conditions clarified by Resources (tools of trade); service knowledge and fun. It is also evident that the regression analysis is reasonable for prediction purposes given the R^2 figure that is far from one. The value of *F* is 26.399 and *p* value less than 0.05. This study indicates the presence of a direct association among e-banking facilitation conditions and the three explanatory variables (Resources (tools of trade), service knowledge, and fun). Looking at all the dimensions, Resources (tools of trade) ($\beta = 0.118$, $p = 0.05$), service knowledge ($\beta = 0.025$, $p = 0.05$) and fun (0.405, significance level below 0.05) were identified to be noticeably associated with e-banking facilitation. Therefore, this study rejects the null hypothesis:

H_4: Facilitating condition positively influence the use of e-banking channels.
H_{04}: Facilitating condition has no influence the use of e-banking channels.

There was no multicollinearity detected amongst the factors the explanatory variables given the *t-count* which exceeds 0.10 as well as the VIF of lower than ten. The residual statistics section presents the highest count of Cook's D of 0.066, implying no major problem distance is below 1 ($D < 1$). Furthermore, the study presents Leverage satisfactory value that is within 0 and 1 (min = 0.002 and max = 0.096).

Figure 4. 19: Normal probability plot on facilitation

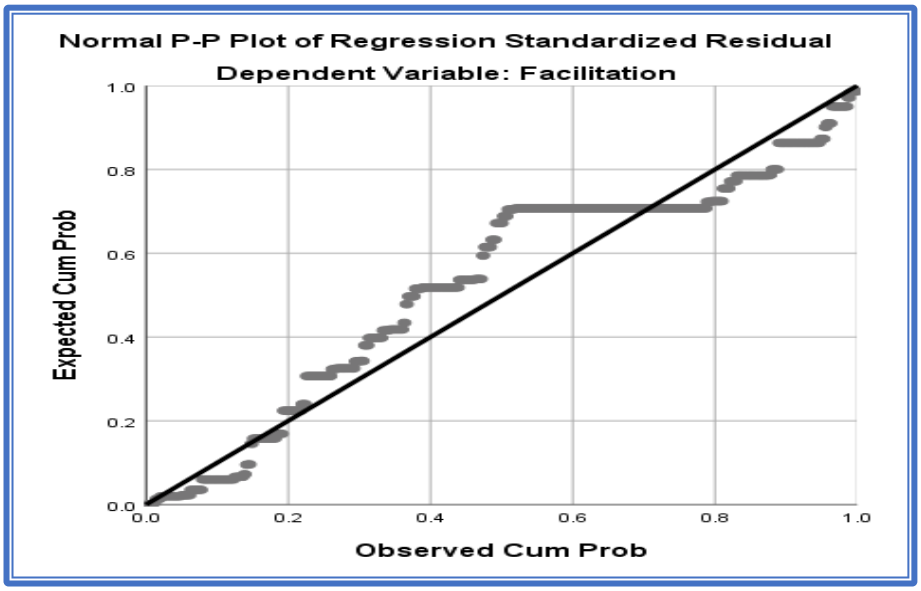


Figure 4.19 presents that the points are lying in a sensibly straight diagonal upward loping line with no nonconformance from normality.

4.4.2.4 Multiple Regression analysis on e-banking channel dependency and all possible influences (social, family, and community)

This study performed statistical analysis aiming to ascertain the contribution of respective explanatory variable in explaining the criterion variance. This final table incorporated three interval-level variables (table 4.15) to evaluate the association among the criterion e-banking (channel dependency), and each explanatory variable from different influences (social influence; family influence and community influence). The approach determination is to disclose and comprehend the probable explanatory variables with probable influence on the criterion (channel dependency) in the study. The model has no problems associated with multicollinearity (Tolerance > 10 and VIF values > 0.10).

Aaker *et al*. (2017:57) states that, "the values of R^2 or adjusted R^2 indicate the amount of variance in the outcome explained by all predictors taken together". An empirical indication of this study generated four explanatory variables social influence; family influence and community influence from section with R^2 (0.067), adjusted R^2 (0.064), *F*-value (21.955), degree of freedom (1;305) as well as p <0.05, which is less than 0.05. This imply that the association is statistically significant, meaning social influence positively drives the use of digital channels. Therefore, the study rejects the null hypothesis:

H_3: Social influence positively drives the use of e-banking channels.

H_{03}: Social influence has no influence on the use of e-banking channels.

Table 4.14: Model Summary and ANOVA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	R	df2	
1	.259a	0,067	0,064	0,873	0,067	21,955	1	305	0,000	
2	.296b	0,087	0,078	0,867	0,020	3,377	2	303	0,035	2,020

a Predictors: (Constant), social influence,
b Predictors: (Constant), social influence, Community influence
b Dependent Variable: e-Banking channel dependency.

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	16,751	1	16,751	21,955	.000b
	Residual	232,714	305	0,763		
	Total	249,466	306			
	Regression	21,825	3	7,275	9,683	.000c
	Residual	227,640	303	0,751		
	Total	249,466	306			

Coefficients

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zeroorder	B	Std. Error	Beta	VIF
1 (Constant)	3,429	0,188		18,268	0,000	3,060	3,798					
Social influence	0,212	0,045	0,259	4,686	0,000	0,123	0,302	0,259	0,259	0,259	1,000	1,000
2 (Constant)	3,231	0,207		15,580	0,000	2,823	3,639					
Social influence	0,127	0,057	0,155	2,235	0,026	0,015	0,239	0,259	0,127	0,123	0,628	1,591
Family influence	0,138	0,060	0,174	2,298	0,022	0,020	0,256	0,268	0,131	0,126	0,526	1,902
Community influence	0,004	0,055	0,005	0,066	0,947	-0,105	0,112	0,183	0,004	0,004	0,616	1,623

Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Social Influence	Family Influence
1	1	1,964	1,000	0,02	0,02	
	2	0,036	7,395	0,98	0,98	
2		3,884	1,000	0,00	0,00	0,00
	1					
	2	0,049	8,901	0,51	0,06	0,05

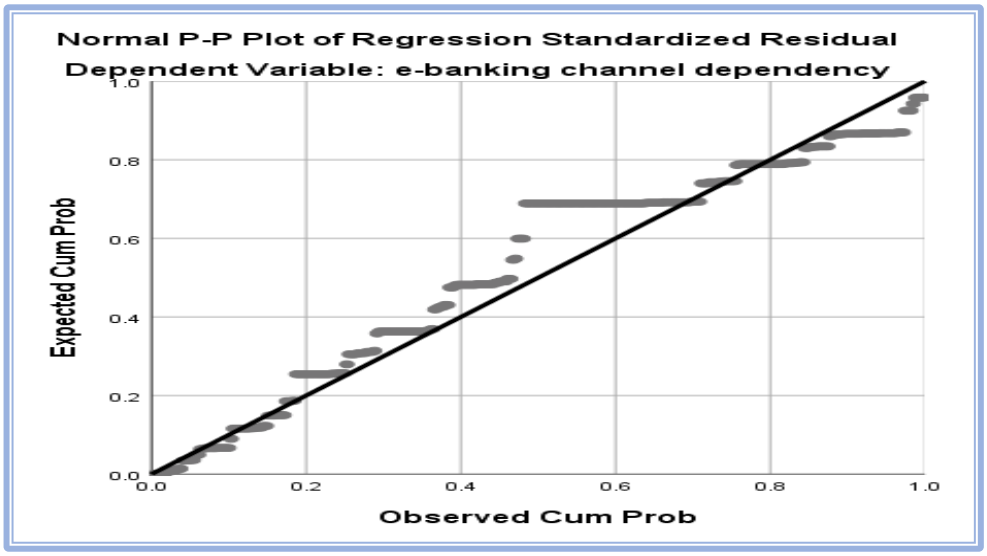
3	0,038	10,081	0,40	0,34		0,23
4	0,029	11,579	0,09	0,60		0,72

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3,50	4,57	4,28	0,267	307
Std. Predicted Value	-2,912	1,107	0,000	1,000	307
Standard Error of Predicted Value	0,053	0,230	0,093	0,035	307
Adjusted Predicted Value	3,45	4,61	4,28	0,268	307
Residual	-3,573	1,501	0,000	0,863	307
Std. Residual	-4,122	1,732	0,000	0,995	307
Stud. Residual	-4,140	1,761	0,000	1,002	307
Mahal. Distance	0,146	20,497	2,990	3,415	307
Cook's Distance	0,000	0,088	0,004	0,008	307
Centered Leverage Value	0,000	0,067	0,010	0,011	307
Predicted Value	3,50	4,57	4,28	0,267	307
Std. Predicted Value	-2,912	1,107	0,000	1,000	307

All the tests (*t*-test, *F*-ratio and Durbin-Watson test) provides for the establishment of the statistical significance of the results, with respect to the model and the respective independent variables (Aaker *et al*., 2017).

Figure 4. 20: Normal probability plot on e-banking channel dependency



The plot above shows that the dots are lying in a sensibly straight diagonal upward loping line with no nonconformance on normality.

4.4.2.5 Multiple Regression analysis on e-banking channel uncertainty avoidance

One of the objectives of this research is to analyse the association among data items that explains the factors of e-Banking channels uncertainty avoidance with the aim to establish the degree of association between the variable. The observations for the factors of e-banking channels uncertainty avoidance were examined through the five-point Likert-type scales. The uncertainty avoidance of electronic banking channels might be dependent on the simple instructions presented by the e-

banking service; and information ambiguity. The stepwise procedure produced two predictor variables (simple instructions, information ambiguity) on model 2 (table 4.15).

Table 4.15: Model Summary and ANOVA

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	Degree of freedom1	Degree of freedom2	Sig. F Change	
1	.303a	0,092	0,089	0,850	0,092	30,882	1	305	0,000	
2	.303b	0,092	0,086	0,851	0,000	0,014	1	304	0,907	2,176

a Predictors: (Constant), simple instructions,
b Predictors: (Constant), simple instructions, information ambiguity
b Dependent Variable: e-Banking channel uncertainty avoidance.

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	22,288	1	22,288	30,882	.000b
	Residual	220,123	305	0,722		
	Total	242,410	306			
	Regression	22,298	2	11,149	15,398	.000c
	Residual	220,113	304	0,724		
	Total	242,410	306			

Coefficients

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zeroorder	B	Std. Error	Beta	VIF
1 (Constant)	2,823	0,284		9,926	0,000	2,264	3,383					
Simple Instructions	0,358	0,064	0,303	5,557	0,000	0,231	0,485	0,303	0,303	0,303	1,000	1,000
2 (Constant)	2,805	0,327		8,587	0,000	2,162	3,448					
Simple Instructions	0,360	0,067	0,305	5,407	0,000	0,229	0,491	0,303	0,296	0,296	0,940	1,064
Information ambiguity	0,004	0,038	0,007	0,117	0,907	-0,071	0,080	-0,068	0,007	0,006	0,940	1,064

Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Simple instructions	Information ambiguity
1	1	1,985	1,000	0,01	0,01	
	2	0,015	11,648	0,99	0,99	
2	1	2,797	1,000	0,00	0,00	0,03
	2	0,190	3,833	0,01	0,03	0,81
	3	0,012	15,019	0,99	0,96	0,16

Residuals Statistics					
	Minimum	Maximum	Mean	Std. Deviation	Total
Predicted Value	3,54	4,63	4,38	0,270	307
Std. Predicted Value	-3,122	0,913	0,000	1,000	307
Standard Error of Predicted Value	0,056	0,161	0,080	0,025	307
Adjusted Predicted Value	3,49	4,67	4,38	0,270	307
Residual	-3,610	1,462	0,000	0,848	307
Std. Residual	-4,242	1,718	0,000	0,997	307
Stud. Residual	-4,259	1,749	0,000	1,002	307
Mahal. Distance	0,349	10,001	1,993	2,094	307
Cook's Distance	0,000	0,112	0,003	0,011	307
Centered Leverage Value	0,001	0,033	0,007	0,007	307
Predicted Value	3,54	4,63	4,38	0,270	307
Std. Predicted Value	-3,122	0,913	0,000	1,000	307

The values of R^2 or adjusted R^2 indicate the amount of variance in the outcome explained by all predictors taken together (Aaker *et al*., 2017; Nusair and Hau, 2010:311-316). An empirical indication of this study generated two explanatory variables simple instructions; information ambiguity) from section with R^2 (0.092), adapted R^2 (0.086), *F*-value (30,882), degree of freedom (1;305) as well as $p < 0.05$. All the assessments *t*-test, *F*-ratio and Durbin-Watson test provides for the establishment of the relevance of the results, with respect to the model and the respective independent variables.

4.5 Conclusion

This section detailed the evaluation and interpretation of the solicited data within univariate (descriptive statistics, frequency distribution, and pie and bar charts), bivariate (inferential statistics with hypotheses testing) and multivariate analysis (factor analysis, and multiple regression analysis by using the Statistical Package of Social Science (SPSS) software for quantitative approach. All the associations tested were statistically significant as they were all less than significance level 0.05. The study made inferences on tested hypothesis, where all null hypothesis was rejected. All study variables were found to have statistically significant association, therefore have influence on the use of e-banking channels. In all the tests that were performed by this study, there was no multicollinearity detected amongst the elements in the explanatory variables given the t-count that exceeds 0.10 as well as the VIF of lower than ten. The residual statistics section presented the maximum value of Cook's distance of less than 1, implying no major distance problem distance ($D < 1$). Furthermore, in all items, the study presents Leverage satisfactory value that is within 0 and 1.

Chapter Five: Discussion of the Results

5.1 Introduction

This discussion of the results chapter is categorised into four sections. The first section discusses the demographics, the second section concentrates on the descriptive statistics, the third section assesses the bivariate analysis of the study findings that focuses on related associations and variances among pairs of variables, then the fourth and final section examines the intercorrelations between the dependent and independent variables. This study employed the positivist philosophy because this deals with the association between the explanatory and criterion variables, for example, the study tried to understand determinants that affect people to accept and use digital financial channels. This was obtained through collection of primary data from the substantial sample size supported by the positivist philosophy. The fundamental objective of this research was to examine the determinants that influence the use of digital financial channels in the South African financial industry. The study made use of Statistical Package for Social Scientists (SPSS) to analyse the collected data, where descriptive and inferential statistics were applied to analyse the data. The Descriptive statistics include mode; minimum; maximum; mean; median; sigma; variance; skewness; and kurtosis in appropriate cases. The test of associations was applied in cross-tabulations to ascertain if a significant association is present among pairs of data items presented in a cross-tabulation.

The examination and unpacking of the study findings have been confined to the outlined study purposes whereby the research questions were guided by the literature survey. In the previous chapter, it was mentioned that this study had used existing research studies to derive reliable scientific results and establish perceptive literature abstracts to provide clarity on important study findings. All the sections outlined above will be presented through univariate approaches, bivariate and multivariate methods, guided by the study purposes.

5.2 Demographic factors

The questionnaire's first section was purposely created to gather the characteristics of the study participants as well as to assess the degree to which the respondents accept the electronic banking channels based on their experience. A total of 307 respondents which comprised 56% females and 44% males participated in the study. The respondents were at different levels of education, where the Masters level represents 15% of the participants in this study whereas the other Post-graduate (including diplomas) indicate most representation of 58% among the listed education levels. The Honours level represents 27% participants in this research.

Furthermore, all the respondents (307) confirmed that they were active bank customers where thirty nine percent bank with Absa, while twenty four percent bank with Standard bank; fourteen percent banks with Nedbank, eleven percent banks with FNB, and eleven percent banks with the other banks. Respondents also disclosed the number of years they have banked with their respective banks. Thirty four percent (34%) respondents have been with their current banks for more than 10 years; while twenty four percent (24%) have been with their banks for about 4 to 6 years, twenty one percent (21%) have been with their banks for 7 to 10 years; while a considerable nineteen percent (19%) have been with their banks for 1 to 3 years, and two percent have only been with their banks for less than a year.

This concentration of this research was on digital banking channels which customers utilise to perform their banking activities. The respondents were requested to choose from among the electronic banking channel options the banking channel they frequently use. In terms of Banking App, 30% female respondents and 27% male respondents confirmed that they regularly use banking app to perform their banking activities, whereas 15% female respondents and 10% male respondents use online banking for their daily banking activities (figure 4.6). Surprisingly, 65 female respondents and 4% male respondents disclosed that they use ATMs to perform their banking, whereas 5% female respondents and 3% male respondents confirmed that they perform their banking activities through the traditional branch channel. These findings conform to Nkoyi, Tait, and Van der Walt (2019:1-8); Ramavhona and Mokwena (2016); Mlitwa and Tshetsha (2012: 362–370)) who found that despite the penetration of e-banking in South Africa, a trend which has also been noted globally, a sizable number of customers still rely on traditional branch-based banking.

The findings of this study contradict the literature which stated that today more than two-thirds of Africa's banking customers say they prefer to use the branch to conduct funds transfers; around half say they use the branch to conduct balance enquiries and bill payments, all of which could be conducted more efficiently and at lower cost through digital and alternate channels (KPMG, 2018:26). It should be noted that the KPMG survey covered a population of all ages and of different income levels, which is different from this study. This study population was mainly students who are young and characterised by limited sources of income and limited time to do banking, as a result, the study findings revealed simplicity, service knowledge and resources (tools of the trade) as key influential factors for this study population to use e-banking channels. As expected, given the differences in population between the KPMG survey and this study population in terms of ages, income, etc. the difference in results is inevitable.

5.1 Descriptive Statistical Analysis

The results of the expressive statistical examination revealed that a significant proportion of respondents perceive that simplicity (M equals 4.68) was the most significant component for them to use electronic banking channels. The respondents ranked simplicity highly and the authorised midpoint with centre (4.73) and common number (5.00) adjacent to the mean (4.45) confirmed an integration of electronic banking channels with customers, and customers with the actual banking platforms. The fundamental objective of this study concentrated on the factors that influence customers' decisions to use electronic banking channels.

The inclination in the banking industry has been progressively to substitute traditional channels with the new electronic distribution channels (Yu and Guo, 2008). Predominantly in the beginning of 1990s, several banks began to implement digital technology, with the view to simplifying financial activities for users (Maduku 2013). The respondents were further asked if they have the necessary resources to use e-banking channels. Resources (tools of the trade) (M = 5.00) were linked to a high convenience levels and to the quicker delivery of services to enhance banking distribution channels performance in the banking industry. Contrary to the treasured simpler electronic solution benefits on information presentation, the information ambiguity (M = 2.32) creates confusion and reluctance to use the electronic banking service.

Nonetheless, the electronic banking channels were preferable in the context of understanding the channels, service knowledge (M = 4.62); and convenience (flexibility) (M = 4.54). These findings reflect superior power relative to service delivery, less delays, flexibility, and ease associated with 24/7 service availability (Montazemi and Qahri-Saremi, 2015; Lee, 2009). In their study, Ramavhona and Mokwena (2016) found that lack of customer education on electronic banking services and its benefits such as convenience and flexibility are some of the causes for low use of electronic banking. The respondents confirmed that habit (M = 4.51), future use (M = 4.45); and daily use (M = 4.41) electronic banking channels remains their preferred channel to use for their banking.

In connection with supply chain self-service models, the respondents confirmed that the self-service (M = 4.38) channel provided simple instructions to follow (M = 4.35) to perform all their banking activities, usefulness (M = 4.34) through simple navigation (4.32) and intuitive (M=4.28) system instructions. The respondents further confirmed that they are dependent on e-banking channels (M =4.28) due to the pleasure they derive from using such channels (M =4.26) and they will continue to use) as they are fun to use. Alalwan, Dwivedi, and Rana, (2017; 99-110)) claim that price may also be expressed as the time lost while waiting to acquire goods and services.

From the retail banking perspective, for clients who prefer the use of traditional bank branches to e-banking, the price may be expressed as the waiting time wasted by clients in long queues. The respondents confirmed that e-banking channels delivers value for money (M=4.13) hence they frequently use the electronic channels (M = 4.12). This study findings cautiously confirm that simplicity, resources (tools of the trade), service knowledge, convenience (flexibility), habit, future use, daily use, and self-service are crucial and statistically influential variables that encourage the use of electronic banking channels.

5.2 Inferential Statistical Analysis

The cross-tabulation tables provided important insights into the relationship between the data items whereas the chi-square statistic tests established whether or not the distribution of categorical variables varies from one to another. The Friedman Test was used to concentrate on significant alterations to adoption attitudes. All bivariate tests were conducted applying supposed statements as well as examining distinguished study questions to observe the key study purpose.

5.3 Objective One of the study:

To ascertain the extent of acceptance and use of downstream digital banking channels by generation-based clients.

Performance expectancy focuses on individual's perceptions of the practicality of the online service to conduct financial activities (Ain, Kaur and Waheed, 2016; Venkatesh, Thong, and Xu, 2012). The researcher developed several questions to understand the impact of performance expectancy on the use of electronic banking channels through suitable research tools to obtain empirical answers.

Question One: What is the extent of acceptance and use of downstream electronic banking distribution channels by generation-based clients?

The respondents were expected to reveal their perceptions on performance expectations when using the e-banking electronic channels. The respondents confirmed that the digital channels make it simpler to perform daily banking activities. An overwhelming percentage (97%) revealed that respondents agreed that electronic channels make it simpler to perform daily banking activities.

The Pearson correlation analysis (Table 5.17) showed a meaningful relationship amongst variables, and the multiple regression method was used to ascertain the relationship between the criteria and the independent variables. To further observe the association between simplicity and

several potential predictors, relationship as well as multiple regression analyses were performed. In summary, respective dependent variable value is expressively correlated with the independent variable, whereas the multiple regression model (model 2 on Table 5.18) with two predictors (usefulness and flexibility) produced $R^2 = 0.157$, F (3; 303) 18.974, $p < 0.05$. These outcomes suggest the presence of a direct correlation between the simplicity and the usefulness and flexibility. Sumak, Polancic, and Hericko, (2010) found a significant influence of performance expectancy (online channel simplicity) to use online services. It is important to deduce that there is a statistical relationship among simplicity and electronic channels.

Question Two: Is electronic banking more convenient than other banking channels?

This study recognised the important determinants from preceding studies and noted the positive and negative effects on electronic banking channels. The study found a significant association between the usefulness and the use of electronic channels users. When compared with other banking channels, a significant 79% of the respondents agreed that e-banking is more convenient than other banking channels.

Table 5.19 presented a matrix with every probable independent variable as well as the criteria and the digital banking usefulness. The four constructs show the association between every probable set of data item through alpha of 0.05. The study found the dependent variable to be positively related to reasonable price; value for money; good value; and product/service knowledge with a significance level = *0.00*, similarly every probable explanatory variable is positively related with *p* value less than 0.05.

The constant of multiple assessments (Table 5.20) was found to be 0.083, with approximately 8.3% of the variance in the e-banking channels usefulness clarified by reasonable price value for money; good value; and product /service knowledge. The regression analysis seems to be reasonable to make estimates based on the R^2 value was far from one. The value of F was 6.873 and relevance was at $p < 0.05$. This indicates the existence of a direct correlation between the criterion and the four independent variables (reasonable priced; value for money; good value; and product /service knowledge). All four dimensions, reasonable price(βeta of 0.108, *p* value below 0.05) and product/service knowledge (βeta value 0.026, *p* less than 0.05); Value for money (βeta value 0.193, <0.05); and Good value ($\beta = -0.009$, <0.05) were substantially associated with the electronic banking channels usefulness. The t-count exceeded 0.10 and the VIF was less than ten, which implies that there was non-existence of multicollinearity issues among the independence variables. The highest figure of Mahalanobis' s distance is 1.58. This indicates that there are no major problem D < 1. Dwivedi *et al*. (2011) deliberated on the significant association of performance expectancy (usefulness) in influencing the use of online services. It is important to

note that there is a statistical relationship between performance expectancy and use of electronic financial channels Ultimately, this study attained its purpose in establishing comparative data items regarding social influence.

5.4 Objective two of the study

To ascertain the influence of the cultural factor and uncertainty avoidance, on the use of digital banking distribution channels.

This research attempted to analyse the association between variables that would explain the factors of digital banking channels uncertainty avoidance with the aim of understanding the extent of association between the variables. The factors of e-banking channels uncertainty avoidance were examined through application of a five-point Likert-type scale the uncertainty avoidance of electronic banking channels might be dependent on the simple instructions presented by the e-banking service; and upon information ambiguity. The stepwise procedure produced two predictor variables (simple instructions, information ambiguity) in model 2 (table 4.15).Uncertainty avoidance – refers to the extent to which individuals feel threatened by ambiguities and uncertainties and try to avoid it. Individuals with low uncertainty avoidance are willing to take risks and to take individual decisions (Choi, 2018: 105–122).

The criterion variable (e-banking channel) was positively associated with information ambiguity (table 4.15) significance. However, all probable explanatory variables were also associated with one another. The rationality of this model was evaluated considering the association of constant as well as assessment (adapted R square = 0.0089; F = 30.882; p less than 0.05) as the percentage of variation considered by the model. The association between uncertainty avoidance and use of digital channels was found to be significant. The F-value mentioned the importance of the model whereas the model power represented 89% (adapted R^2 proportion) of the variation in the dependent variables. The DW test presented a satisfactory count of 2.176 (within the range of 1.5 to 2.5) implying nonexistence of multicollinearity issues whereas the tolerance counts were acceptable with tolerance-acceptable levels below 0.05 to authenticate the model and respective explanatory variables.

The study also revealed that, with regard to outliers, no multiple regression expectations were dishonoured by the model, normality (both normal plot, and partial regression plot generated reasonable and adequate erratic dispersal of points with persistent inconsistency) and spatiality (zero multicollinearity detected at VIF value above 10 varying from 1.000 to 2.805).

5.5 Objective three of this study

To establish the effect of downstream supply chain customer experience on the underlying impact of facilitating conditions on electronic banking channels

Question Three: Do electronic banking facilitates provide easier communication with my bank?

"Facilitating conditions relates to the availability of resources and services support for users to use the technology" (Aaker at al. 2017:24). These positive factors in e-banking facilitating conditions indicated a statistically significant association with the senior students' opinions. Communication has been singled out as one of the critical factors in adoption of information technologies. 68% of the respondents agree that e-banking facilitates provide easier communication with the bank.

The table 4.13 shows 4 explanatory variables and the criterion, facilitation. The four selected data items show the association between the probable sets of data items with a significance level = 0.05. The dependent variable (facilitation) is significantly related to resources (tools of the trade), service knowledge, e-banking is fun with *p* less than 0.05. The 2 dependant variables were loaded into the forecasting model 2 subsequent to application of the stepwise procedure with R of 0.455 and the variable (resources (tools of the trade) and service knowledge) both within the regression conditions. This study revealed a statistically significant associations between the criteria variable (facilitation) and explanatory variables (tools of the trade, service knowledge and fun). Deng *et al*. (2011; 189-298) revealed that there is "a significant relationship between facilitating conditions and the use of web-based services".

However, Gupta, Iyer, and Weisskirch, (2010) stated that lack of support and assistance, ambiguous information, and insufficient tools deters the users from embracing the online services. However, this study attained its objective by establishing comparative independent factors in e-banking channels facilitating conditions.

5.6 Objective four of this study

To ascertain the degree to which the downstream electronic channels simplicity practice affects the use of electronic banking distribution channels.

Effort expectancy shows the individual's opinions about the effort associated with using the electronic platform or channel (Ain, Kaur and Waheed, 2016:28). Vinodh and Mathew (2012) disclosed a direct association between effort expectancy and the use of electronic government

services. This study examined the perceptions of the respondents on the expected effort for using e-banking channels, where an overwhelming 92% of the respondents agreed that e-banking makes it simpler to perform financial activities as it is not dependant on the bank's operational hours (flexibility). Convincingly, 80% of the respondents agreed that it simple to find and navigate the features in the e-banking channels. This simple navigation boosts customers' confidence as they easily relate to the system. 37% of the respondents neither agreed nor disagreed with convenience, easy navigation and intuitiveness of e-banking. This could also be attributed to resistance to adopt the electronic channel.

In this study, Cronbach's Alpha reliability test was applied to assess the construct consistency whereas the convergent validity of the instrument was evaluated through assessing the factor loadings. This study presented (Table 4.9) the model that included only usefulness which represented 30% of the variance (adapted $R^2 = 0.299$) whereas the subsequent model included flexibility with an additional 4% of the variation clarified and this represented33% of the variation (adapted $R^2 = 0.337$). In the equations: R^2 = 1-SS (Error)/SS (Total); and R^2_{adj} = 1-MSE/MST or $R^2_{adj} = R^2-(1-R^2)p/(n-p-1$ (Garson, 2012). For this research, R square equals 0.343, adapted R^2 = 0.337, F = 52,790 and df (2; 30) with p value lower than 0.05. The collective t-values for the constants are significant at p lower than 0.05. The final model emanated from the stepwise assessment with 2 explanatory data items reflecting relevance in this model. The association among dependent and explanatory variables is clarified by 16.9% of the variation in simplicity and the two proportions, usefulness (β value 0.303, p lower than 0.05) and flexibility (β value 0.314, p less than 0.05) revealed a relevant association with simplicity.

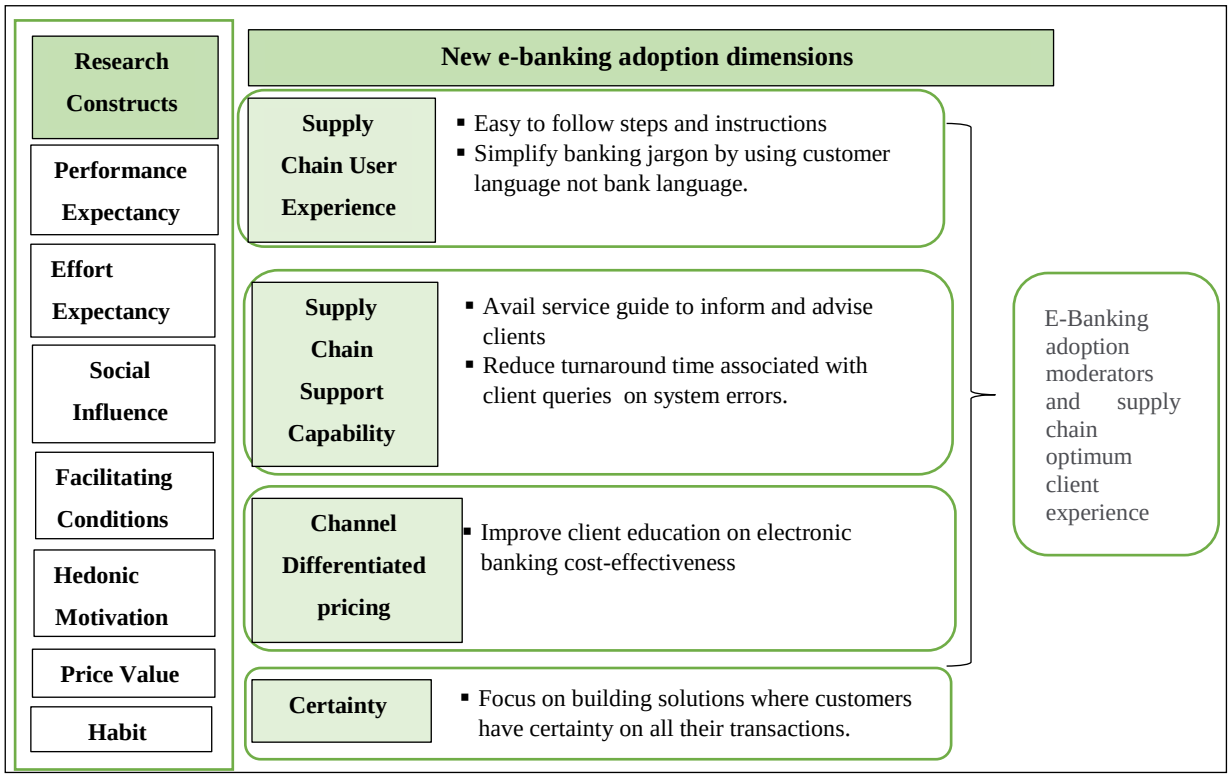
To detect and test autocorrelation with the value of Durbin-Watson, ranges from 0 to 4, values close to 0 implies significantly positive autocorrelation; whereas the values close to 4 imply statistically negative autocorrelation; and values closer to 2 show no serial autocorrelation (Garson, 2012). This study determined a Durbin-Watson value of 1.887, which signals no serial autocorrelation. The application of Durbin-Watson value is to assess the extent of multicollinearity, and the values should be within 1.5 and 2.5 tolerable to disclose individuality of observations (Garson, 2012).

This study shows the Durbin-Watson statistic value as being within the range of 0 and 4. This study has no problems associated with multicollinearity, the tolerance scores are more than 0.20 or 0.10 while the variance inflation factors (VIF) are equal to 1 (or VIF ≤ 10) (Rahlin *et al.*, 2019:351-370; Baum, 2006; Hamilton, 2006). This study has attained its objective in establishing comparative independent factors in e-banking channels effort expectancy.

5.7 Objective five of this study

To develop an integrated electronic banking model that influences the downstream site generation-based customers.

Figure 5. 1: Conceptual factors of electronic platforms adoption and usage



Source: by the student from preceding studies.

This research produced theoretical factors of four important new electronic platform adoption factors (figure 5.1) that are all related to electronic channels adoption challenges. The first dimension, **supply chain user experience**, "is the extent to which a system or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" (Law *et al*., 2009: 10-25)

From bank customer's perspective, user experience comprises ease of use; logical steps and instructions presented by electronic banking channels in a customer language not in banking jargon. Although user experience may be great, customer understanding of the service or system also contributes significantly, as without adequate service knowledge it becomes difficult to use the service. The banks focus more on financial education at the expense of customer system or channel education. Hence if customers have a positive attitude towards e-banking channels user experience, the likelihood of utilising the electronic banking channels is high.

The second dimension, **supply chain support capability**, focuses on the degree to which an individual believes that technical infrastructure exists to support the system use (Venkatesh *et al*., 2012: 157-178).Users of electronic channels expect support when the need arises. It is very important for banks to help customers by embedding customer support and feedback systems into computer-mediated communication tools. Banks should provide electronically-enabled user guides and client advice to improve turnaround associated with client queries on system errors. According to Sergueeva and Shaw, (2017:215) "retailers in different sectors must decide whether and how to apply channel-based price differentiation. As with overall satisfaction, price satisfaction is generated when the actual price matches with a customer's expectations". Bank customers consider prices when gauging the channel-based price differences.

The third dimension, **channel differentiated pricing**, focuses on how channel-based pricing is charged by multichannel retailers to their customers and client education improvement on electronic banking cost-effectiveness. In their study, Vogel and Paul (2015:20-36) found that channel-based price differentiation positively affects customers through perceived value but harms retention through price unfairness and limited self-determination. The findings show that most of the respondents agree that the e-banking services are reasonably priced and that the value they derive from using the e-banking channels is satisfactory. However, banks must invest more in educating clients on channel differentiated pricing to entice more customers to use e-banking instead of traditional baking channels. As with overall satisfaction, price satisfaction is generated when the actual price matches with a customer's expectations (Williams, and Clement, 2017:82).

The fourth dimension, **certainty**, "refers to the extent to which individuals feel threatened by ambiguities and uncertainties and try to avoid it. Individuals with low uncertainty avoidance are willing to take risks and to take individual decisions" (McCoy *et al*., 2010: 81-90). In the main, bank customers are accustomed to dealing with bank consultants, which creates a certain level of certainty for their banking requests. Banks need to convince customers that e-banking channels will execute customer requests the same way that these would be addressed in having a face-face engagement with a bank consultant.

5.8 Hypothesis testing outcome

The previous section fully tested and analysed the study hypotheses that were developed in chapter 2 and the table below encapsulates the hypothesis testing outcomes. All the significance levels produced 0.000 less than 0.05 including the ANOVA table.

Table 5.1: A summary of the hypothesis testing outcome

No.	Hypotheses	Outcomes	Sig.
H_1	Performance expectancy positively affect s the use of e-banking channels.	Accepted	.000
H_2	Effort expectancy positively influences the use of e-banking channels.	Accepted	.000
H_3	Social influence positively drives the use of e-banking channels.	Accepted	.000
H_4	Facilitating conditions have an effect the use of e-banking channels.	Accepted	.000
H_5	Hedonic motivation affects the use of e-banking channels.	Accepted	.000
H_6:	Price value has a positive effect on the use of e-banking channels.	Accepted	.000
H_7	Habit has a positive effect on the use of e-banking channels.	Accepted	.000
H_8:	Uncertainty Avoidance negatively affect the use of e-banking channels.	Accepted	.000

Source: compiled by the researcher from study results

This study findings contradicts the preceding literature which stated that today more than two-thirds of Africa's banking customers say they prefer to use the branch to conduct funds transfers; around half say they use the branch to conduct balance enquiries and bill payments, all of which could be conducted more efficiently and at lower cost through digital and alternate channels (KPMG, 2018:26).

It should be noted that the KPMG survey covered a population of all ages and different income levels, which is different from this study. This study population was mainly students who are characterised as having limited sources of income and limited time in which to do banking. As a result, the study findings revealed simplicity, service knowledge and resources (tools of the trade) as key influential factors for this study population to use e-banking channels. As expected, given the differences in population between the KPMG survey and this study population in terms of ages, income, etc. the variation between the studies is inevitable.

5.9 Data Quality Control

In this study, Cronbach's Alpha reliability testing was applied to assess the construct validity whereas convergent validity of the instrument was evaluated through assessing the factor loadings.

The collective *t*-values for the constants were significant at *p* lower than 0.05. including the ANOVA table. In order to ascertain the factorability of the data and sampling adequacy, this study applied the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests of sphericity as statistical measures. As a rule of thumb, "the moderate to moderate-high intercorrelations without multicollinearity as KMO of 0.60 or higher implies that data will factor well" (Hair *et al*., 2014:613).

In this study, no violations of KMO expectations were found, as the study value 0.833 is an acceptable factorability. The study also conformed to the conditions of both sphericity and acceptable sample size with Bartlett's test of sphericity significant at 0.000 This study applied content validity to ascertain whether the accurate concepts are evaluated with the data gathering tool, or not. For the questionnaire; face validity and nomological validity were also applied to establish whether the scale presents the associations deemed to be present based on existing studies in the multiple regression process and factor analysis

Normality assumptions were tested where both normal plot, and partial regression plot generated reasonable and adequate erratic dispersion of dots with persistent inconsistency and the study applied linearity where zero multicollinearity detected at VIF value above 10 varying from 1.000 to 2.805. The study also revealed that, with regard to outliers, no multiple regression assumptions were dishonoured. Normality was reflected where both normal plot, and partial regression plot generated reasonable and adequate erratic dispersion of dots with persistent inconsistency. This study also assessed the Durbin-Watson value to determine the extent of 'multicollinearity'. The study found no problems associated with multicollinearity, as the tolerance scores were more than 0.20 or 0.10 while the variation increase factors (VIF) were identical to one. The study applied distance measures such as Mahalanobis distance, and Cook's distance as well as a plot diagram.

5.10 Conclusion

The discussion of results detailed the process applied by the researcher to get to the findings of the study. The findings of the study based on the thorough analysis of the collected data. The study aimed to achieve all the fundamental objectives that were outlined on chapter one, and the researcher applied expressive and inferential statistics to analyse all the study findings thoroughly. The fundamental purpose of this study was to examine the determinants that influence the use of electronic financial channels in the South African financial banking industry. All the significance levels produced 0.000 less than 0.05 including the ANOVA table, which shows that the study hypotheses were accepted. The study applied all necessary data controls which includes Cronbach's Alpha, validity and the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests of sphericity were applied as statistical measures. The findings of this study were matched against the preceding studies to

ascertain if the study revealed unique findings. The findings of the study were in line with preceding studies that were conducted on this topic except that South Africa has distinctive characteristics and therefore the study recommendations were made in a South African context but other countries that may share similar characteristics.

Chapter Six: Recommendations and Conclusions

6.1 Introduction

This research sought to investigate the determinants that influence the acceptance and use of digital banking channels in South Africa and the definite objectives were; to ascertain the extent of acceptance and use of downstream digital banking distribution channels by generation-based clients. It also sought to determine the effect of cultural factors and uncertainty avoidance, on the use of digital financial distribution channels. It was also necessary to determine the extent to which the downstream electronic banking simplicity practice influences the usage of electronic banking distribution channels, and to develop the integrated electronic banking model that influences the downstream site generation-based customers. All the outlined objectives were attained, and this section will detail a summary of the entire thesis and the findings for respective objectives.

6.2 Problem statement and Impartiality

In the opening chapter, the study outlined the problem statement which expressed the encounters of acceptance and use of electronic banking channels in the retail financial industry, specifically in the downstream supply chain distribution network. Banks have heavily invested in technological channels as a novel platform for enhancing customer experience while concurrently improving operational workflows for example, digital transactions (Lee, 2009). In South Africa, the four major banks, namely, FNB, Absa, Nedbank, and Standard Bank, are responding to advancing digital disruption by making significant investments in digital transformation (Businesstech, 2018:20). The literature review provided an analysis of existing research outcomes on factors influencing adoption and use of technology that moderately addressed some research questions aligned to performance expectancy, effort expectancy, social influence, facilitation conditions, price value, and uncertainty avoidance.

However, the focus of this study was on the determinants that affect the acceptance and use of electronic financial channels considering the uncertainty avoidance, simplicity, usefulness, resources (tools of the trade), and social influence as some of the key influential factors. The purpose of the study was clearly outlined upfront through the study research objectives. To address the research questions, the research methodology techniques assisted in providing the tools to use in articulating and thoroughly analysing and unpacking all the collected data. This study should present meaningful general insights into the banking industry even though the study was confined to KwaZulu-Natal only.

The respondents of this study were primarily 56% female and 44% male students, all of them had a bank account and 34% had been with their current banks for more over 10 years, whereas 24% had been with their banks for 4 to 6 years and 21% had been with their banks for 7 to 10 years. The participants confirmed that simplicity, resources (tools of the trade), and service knowledge were the most influential factors in using electronic banking channels. The majority of the participants of this study 82% confirmed that they use electronic banking channels and that they have banking relationships with multiple banks. According to Gu *et al*. (2009:15), "the perceived ease of use has been validated by numerous electronic banking studies to have a crucial role in predicting customers intention to use electronic banking".

This study revealed new insights and provided different views with regard to the determinants that affect the acceptance and use of digital banking channels, however the subsequent section aligns the literature that advocated the empirical study outcomes and recommendations.

6.3 The use of electronic banking channels

This study revealed that, electronic banking channels are beneficial to both customers and the financial institutions. The supply chain management practices have been transformed by the evolution of the fourth industrial revolution technologies to allow banks and customers to send and receive information with ease throughout the supply chain. From the fourth industrial revolution perspective, supply chains in retail banking are typified by an advanced extent of 'cyber-physical' interconnectivity, empowered by systems that gather bulk information, and which enables instant choices to enhance SC productivity. This study revealed the findings on the use of e-banking channels that the banks have heavily invested into in order to improve client experience. This study revealed that, an overall, 96% of respondents confirmed that young people prefer using e-banking channels than traditional branch channels and only 3% prefers to use branch to do banking. This study findings are in line with Carbo-Valverde, Cuadros-Solas, and Rodrıguez-Fernandez (2019:9) noted found that younger customers who are knowledgeable about digital services are more likely to adopt electronic banking.

The findings of this study are in contradiction with literature which states that, most banking customers in Africa's still perceive branch channel as the preferable channel to perform banking activities (KPMG, 2018:26). However, it should be noted that the population and age differences between the preceding study and this study contributes significantly on the study outcomes. This study population was mainly students who are young and characterised by limited source of income and limited time in which to do banking hence they prefer electronic banking channels, as a result, the study findings revealed simplicity, service knowledge and resources (smartphones, internet, income) as key determinants for this study respondents to use e-banking channels. As expected,

given the differences in population between the existing studies and this study population in terms of ages, income, etc. the variation is inevitable. Literature notes that South African inhabitants ranks lowest in terms of financial educational and economic disparities, which implies that some South Africans cannot afford to purchase tools that would enable them to use electronic digital banking technologies that are available on digital channels.

Literature notes that South Africa's income inequality and socio-economic challenges as part of the determinants that could derail the use of electronic financial channels. This study confirmed that price value, which according to (Venkatesh *et al*., 2012: 157-178) is the consumers' cognitive trade-off between the perceived benefits of using electronic banking services and the monetary cost of using it, is a key factor to use electronic banking. The study found that, the current price charged for electronic banking provides great value (73%), electronic banking services are reasonably priced (70%) and electronic channels are worth the price charged (76%). The study concluded that price value is an influential determinant that affect the use of electronic banking channels.

The literature revealed apparent digital banking advantages from practical study resulting in a definite electronic banking focus (reducing human errors, improved client experience, extended service and wider clientele coverage, convenience and timesaving, quick and improved information sharing, better cash management, improved customer experience). E-banking adoption was theoretically outlined in the problem statement as the important component, in conjunction with UTAUT2 and the empirical study was mainly narrowed to e-banking adoption factors to understand the factors that influence the use of electronic banking.

In supply chain management, e-banking brings an advantage in the form of electronic information integration that enhances the information flow to be in line with the flow of services resulting in improved transparency and flexibility in the planning and implementation of supply chains. Supply chain integration with regard to clients and internal processes capability is construed as a representation of strong obligation to the support functionalities, applicability, receptiveness, and flexibility. Competitive advantage in terms of competing on response strategy where a set of values relate to rapid, flexible, and reliable performance (Heizer and Render, 2011:68).

6.3.1 Electronic banking simplicity practice

Literature mentions that customer's perceived-usefulness of electronic banking and its intended advantage to save time and convenience are key motivating factors to adopt electronic banking services. This study found that convenience is a key important factor that influences their acceptance

and use of digital banking channels. It is worth noting that convenience (flexibility) is associated with 24/7 availability of electronic channels which makes it simpler to perform banking activities.

The literature notes that electronic banking provides a higher degree of convenience that allows customers to access banking services at any time and has no geographic limitations (Alalwan, Dwivedi, and Williams, 2016:34). In line with this, this study evidenced that performance expectancy is an important determinant that influences the use of electronic banking channels where 92% of the respondents agreed that digital banking makes it simpler to perform financial activities as it is not dependant on bank's operational hours (flexibility). 80% of the respondents confirmed that electronic channels navigation is very simple, which makes it a preferred method to do banking. This easy navigation boosts customers' confidence as it becomes easy to interact with digital banking channels. These results are in line with Morosan and DeFranco (2016: 17-29)) who noted that performance expectancy is the important predictor of intention in their study of consumers' intention to use mobile payment in hotels.

This study findings are also supported by Huang (2018) findings that validated that performance expectancy directly affect the willingness to use technology, which is in conformity with UTAUT2 theory (Venkatesh *et al*., 2012). On the other hand, the study findings are in contradiction with literature which mentions that South Africa ranks low in literacy, implying that South Africans finds it difficult to understand and use electronic banking channels. The study findings concluded that customers find it easy to understand and use e-banking channels. One of the objectives of this study was to determine the degree of the downstream digital banking simplicity practice influences the usage of electronic banking distribution channels. This study has confirmed that the downstream electronic banking simplicity practice in conjunction with simple navigation affects the use of digital banking channels. The study confirmed that simplicity is an important determinant that influences the use of electronic banking channels.

6.3.2 Empirical Social influence perspective

The study covered three items under social influence, these are, external social influence, family influence and societal influence. The study found social influence to be an important determinant that affects the use of digital banking channels. The respondents agreed (68%) that people who they look up to (role models) influenced them to use electronic banking channels.61% of the respondents confirmed that people who are important to them (i.e. family) influenced them to use electronic banking, whereas the other 55% of the respondents agreed that community plays an important role in influencing them to use e-banking. This finding is supported by (Oliveira, Thomas, Baptista and Campos, 2016:404-414) where social influence was discovered to be an important determinant of users' acceptance of the cellphone payment solution.

This study did not focus on social influence from a social media perspective where people get influenced by what social media publishes, but instead this study focused on social influence in the context of family, community and role models. It should be noted that social influence could be negative or positive, depending how it is interpreted. The intention of this study was to ascertain if any of these social influences (community, family, and role models) promotes the use of digital channels. Evidently from the study findings, the study confirmed that social influence is an important factor that influences the use of electronic banking.

6.3.3 Facilitating conditions in electronic banking systems

This study also attempted to understand the effect of facilitating conditions in the use of digital financial channels. Facilitating conditions included the availability of resources, and the understanding and knowledge of e-banking channels. In accessing a technological solution, the aesthetic design could facilitate the behavioural intentions to use electronic-based tools. This factor was examined by asking respondents if users possess necessary tools to use digital channels (smartphones, internet); if users possess enough knowledge to use digital channels; if support from the online channels is available when problems are encountered; and if assistance is not required in order to use electronic banking.

This study found the presence of a direct association between e-banking facilitation conditions and the use e-banking channels. The study findings revealed that having necessary resources (i.e. smartphone, internet access) influences the use of digital banking channels. Furthermore, the study also discovered that having necessary knowledge about electronic banking channels influences the use of digital channels, where a combined 94% respondents confirmed that having necessary knowledge about electronic banking is vital to the use of e-banking. Correspondingly, the study also found self-service as an important facilitation factor where 61% of the respondents confirmed that assistance is not required to use digital banking channels. Simply put, understanding how to use e-banking coupled with availability of resources like internet and smartphones enables customers to use e-banking channels without assistance (self-service). The study concluded that facilitation is an important determinant that influences the use of electronic financial channels.

6.3.4 Empirical analysis on e-banking Uncertainty avoidance

Alrawashdeh *et al*. (2012) notes that more information would surely reduce information uncertainty but does not necessarily lead to more clarity and Uncertainty Avoidance has a negative relationship with the acceptance of information technology. This study found that the association between

uncertainty avoidance and the use of digital channels statistically significant, which means that uncertainty avoidance influences the use of digital channels. The study respondents confirmed that users understand the instructions presented by e-banking channels, hence they use the channels. This implies that if the instructions or information presented on e-banking channels is simple enough for users to understand, the use of digital channels will increase. Therefore, the study found uncertainty avoidance is an influential determinant that affects the use of digital financial channels. The study findings are in line with Valverde, Solas, and Fernandez, (2019) who state that the use of online financial services starts with information-based services, for example, customers start by checking their bank balances, should the instructions be simple enough, customers continue using electronic banking services. It was one of this study objectives to ascertain the influence of cultural factors, uncertainty avoidance, on the acceptance and use of digital channels. This objective, together with other objectives of this study, was fully achieved.

6.4 Summary of Conclusions

The findings of this study were matched against the preceding studies to ascertain whether or not the study revealed unique findings. The findings of the study were in line with preceding studies that were conducted on this topic in developed economies except that South Africa has distinctive characteristics since it is a developing country and therefore the study recommendations were made in a specifically South African context, but other countries may share similar characteristics. Although the South African banks continue to embrace and adopt the 4IR associated technologies, the banking industry operates within the limitations of an emerging country subjected to significant socio-economic challenges. The adoption and use of financial services and products, digital channels and fintech innovations are constrained by, income inequality, low-income consumer market with most getting a low income from the informal economy. These socio-economic challenges result in significant gaps when it comes to financial inclusion, therefore using digital banking channels becomes impossible for the low-income consumer market.

The 4IR digital technologies are challenging the status quo by altering SCM from a traditional model where information moves from manufacturers to wholesalers to end-users, bidirectional, to a more unified process where data moves in manifold directions. With regard to banking, the status quo has always been that customers are served through face-to-face interactions, and walk-ins to branches, the electronic banking in supply chain management is challenging this by delivering these banking services through digital banking platforms. Furthermore, the clients and the banks, through IoT, can now share data easily without walk-ins and face-to face engagements.

6.5 Recommendations of this study

The study findings result in managerial recommendations for banking and policy makers. Banks might revise their digital strategy to concentrate on those factors that influence customers to use electronic banking channels. Based on the findings of the study, the researcher presents the following recommendations to improve the use of electronic banking channels:

- The use of e-banking channels is associated with performance and effort expectancy. This means that that the simplicity to use the e-banking and convenience associated with 24/7 availability coupled with simple navigation of e-banking channels are crucial in promoting the use of e-banking channels. This study further recommends that banks continue to introduce technological solutions that will be easier to use. Technological solutions and electronic supply chain management (e-SCM) should become even more integrated.
- Banks should focus on presenting information in a language that is simple for customers to understand. Simple information and instructions presented on e-banking channels will help banks to encourage customers to use electronic banking.
- Financial institutions are also advised to ensure support is always available on e-banking channels to ensure that customers can ask questions and get assisted while performing transactions electronically.
- Considering the socio-economic challenges in South Africa, although the study found e-banking channels to be reasonably priced and that they provide value for money. Banks should consider making electronic banking channels cheaper, if not free. This will probably be perceived as a benefit to customers and should encourage the use of e-banking channels.
- Banks should, always, strive to provide customer education on how to use e-banking and the benefits associated with doing banking electronically. They can educate customers at a point where a customer visits the branches, or share information on ATMs, internet and publications regarding the use of banking applications, and for electronic banking.
- Banks should have a financial inclusive campaign. They should regularly visit unbanked communities to share information about e-banking and encourage them to use e-banking facilities. Unbanked customers and communities will trust electronic banking if the banks guarantee them simplicity, convenience, and facilitating conditions.
- Banks should direct customers to digital channels when customers visit the banks. The bank tellers should help customers step-by-step to perform a transaction on electronic banking channels. The more this practice is enforced, the more customers will feel comfortable to use e- banking on their own without assistance.

- Banks should use customer information on their database to gain customer behaviour insights. This will help the banks to understand specific customer needs. They should therefore contact the customers and help them to perform those activities digitally.
- As supply chains management is transforming, banks are encouraged to review their supply chains to ensure that clients can access information at any point, easily and on time. This will ensure that customers send information or requests to the banks and banks should respond quicker to customer queries. This will strengthen the relationship and improve information-sharing between banks and customers.
- Social influence was confirmed as an important determinant that affects the use of digital channels. It is recommended that banks should start using prominent community leaders in encouraging people to use e-banking channels. Banks should partner with celebrities, for example, musicians, actors, media people to convey information about digital banking. This will influence people who look up to those prominent celebrities as role models to use electronic banking channels.
- Banks have enough of a footprint in all locations and towns and it is recommended that they start partnering with event organisers in different locations for example soccer tournaments, social gatherings, festivals etc., to market the e-banking channels and to encourage people to buy event's tickets using e-banking channels.
- Furthermore, information should be kept to the minimum on e-banking channels. This will allow clients to read, interpret and apply simple instructions. Banks should encourage customers to visit their bank's websites for detailed information, but on e-banking channels information should be kept as simple, and as succinct as possible.
- Banks are encouraged to offer transparent pricing. Customers should be able to understand how much each transaction will cost them. This transparency will avoid unnecessary visits to the branch by customers. The e-banking channel should display specific pricing or charges details at a point in time, to avoid accumulated monthly charges.
- The study revealed that most customers bank with different banks. It is suggested that financial institutions continuously conduct competitor analysis to understand the factors that persuade their customers to bank with other banks.
- There were also concerns that online banking requires customers to have data on their phones in other to use the online banking services. It is recommended for banks to consider making online banking services free. In other words, users should freely access the e-banking channels without data on their smartphones or computers.
- As South African banks continue adopting and incorporating the fourth industrial revolution technologies into their operations for example artificial intelligence and

robotics, it is recommended that customers are educated on the use of these technologies. This will reduce volumes at branches as most of the services will be efficiently provided through these 4IR technologies.

- As e-SCM continue integrating SC activities , they should allow banks and customers to send and receive information with ease throughout the supply chain. It is recommended that banks consider enabling clients to open accounts electronically, track and trace their bank card order status electronically, and follow-up on requests using e-banking channels.
- It is also recommended that, given the literacy level in low income communities, to ensure financial inclusiveness, banks should consider using other South African languages and not default to English all the time. This should help customers understand what they are expected to do when performing transitions on e-banking channels.

In the 4IR era, which drives the new banking technologies, regulators should pay attention to the potential impact of 4IR transformation driven by the banking industry. As technological banking solutions advance, the regulators should ensure that the focus on financial inclusion is not neglected. The study recommends that Policy makers should help banks in encouraging customers to use electronic channels. As the numbers of e-channel users grows banks should tighten security and anti-fraud processes. The privacy of customers should be prioritised.

6.6 Limitations and delimitations

The concepts of performance expectancy, effort expectancy and uncertainty avoidance presented some challenges, however, the comprehensibility of the questionnaire coupled with a simple random and purposive sampling technique addressed those foreseeable challenges. The researcher together with research assistants distributed the survey instrument to students to complete the questionnaires in our presence, allowed them to ask questions for clarity. All the respondents answered the questionnaire completely, however, it is not understood how respondents interpreted all the questions, however when the instrument was tested for internal reliability it displayed consistency. This study had obvious limitations, which include, the sample size, which was limited to the area of KwaZulu-Natal signalling a lack of broader coverage of the population, and the study focused on a specific industry. The experience in UTAUT2 model was removed for this study, it is suggested that future studies include and test the impact of experience on the use of e-banking to be included in further studies. The results and boundaries of this study provide a great foundation for considering forthcoming studies regarding the adoption and use of digital channels in the financial sector and determinants that affect the use of the digital channels.

6.7 The value and future of the study

The input of this research in different research sectors could be augmented by further research into the key aspects of this enquiry. In order to make a greater contribution to academic knowledge. Notwithstanding the study's limitations , this study managed to bring supplementary information into different sectors which includes, retail banking, e-banking channels, and SCM.

In accordance with the findings, it is now important to extend the study to facilitate an understanding of precisely how social influence, uncertainty avoidance, facilitating conditions and simplicity affect the use of digital banking channels in rural areas and other developing economies with different socio-economic challenges. Generally, the customer education and availability of resources enables customers to explore using technological solutions. It would also be meaningful to understand further how the banking industry improves financial inclusion and entices customers to use digital channels. Future research should investigate how to promote financial inclusiveness and how to encourage most customers to use electronic banking, instead of having only a relatively small percentage of customers using electronic channels within the financial sector.

6.8 Conclusion

The study validated determinants that affect the adoption and use of electronic banking channels, hypotheses on influential determinants and addressed the research questions. The effect of facilitating conditions was confirmed as significant in influencing the use of digital channels in the financial sector, including the role performance expectancy and, simplicity, uncertainty avoidance and social influence. This shows that the retail banking has an opportunity to improve the e-banking channels by ensuring that these determinants are considered during the crafting of electronic financial solutions. Although fourth industrial revolution affects every industry globally, Africa still lags behind due to infrastructural and socio-economic challenges. South Africa should continue to adopt and implement 4IR associated technologies in order to improve client experience and in order to remain competitive. This is of vital importance because 4IR will continue to transform supply chain management, and more integrated services are expected to be delivered within the banking industry.

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Appendix

Appendix 1: Questionnaire

UNIVERSITY OF KWAZULU-NATAL

School of Management

Voluntary Questionnaire Doctor of Philosophy (PhD) - Supply Chain Management Research Dissertation

Researcher:	Mr Mbuso Emmanuel Nzama	082 469-8448	205507912@stu.ukzn.ac.za
Supervisor:	Dr Thokozani Patmond Mbhele	031-2607524	mbhelet@ukzn.ac.za
Assistant Administrative Officer:	Ms Mariette Snyman	031-260-8350	Snymanm@ukzn.ac.za

Title: Adoption of Electronic Banking Distribution Channels in South Africa: The unified theory of acceptance and use of technology

The purpose of this survey is to solicit information from post-graduate students on the factors and barriers that impact retail bank customers' full adoption of electronic banking in order to realise its benefits. The information and ratings you provide will go a long way in helping us to identify the effectiveness of electronic banking distribution channels among retail banks in order to improve the customer experience and enhance banks' profitability. The questionnaire should only take 10-15 minutes to complete. In this questionnaire, you are asked to indicate what is true for you. There is thus no 'right' or 'wrong' answer to any question. If you wish to make a comment,

please write it directly in the booklet and make sure that you do not skip any questions. Please answer all these questions as honestly as you possibly can.

Section One

The questions below ask about your bank and your personal profile. Please tick the appropriate box.

1. Your Gender:

Female	
Male	

2. Name of your bank: _____

3. How many years have you banked with this bank?

Less than 1	1- 3	4 - 6	7 - 10	More than 10

4. How many banks do you have an account with?

None	One	Two	Three	Four or more

5. What is your highest qualification?

Honours	Masters	B-tech	Post-Grad

6. How many banking channels do you use to perform your daily banking?

Physical	ATM	Contact Centre	Branch	Four or more
Electronic	**Cellphone**	**Banking App**	**Online banking**	**Four or more**

7. How many electronic banking distribution channels has your bank introduced over the past five years?

One	Two	Three	Four or more

8. Which of the following critical factors influence your decision to use electronic banking?

Please select TWO factors in each category (tick your choices).

	Positive	Negative	
9	Simple to navigate	Unclear instructions on how to use the service	
10	Cheaper than visiting the branch	Nobody is available to help when problems are experienced	
11	I can use it any time (convenience)	Too much confusing information presented on e-banking channels	

Section Two

This section poses dichotomous questions *(Yes or No)* on general perceptions, bank channels and the impact of information technology. Please circle or tick the appropriate box(es).

	General perceptions, bank channels and information technology		
12	The fact that e-banking is simple to use influences the use of e-banking channels	**Yes**	**No**
13	E-banking channels' simple navigation helps to perform banking transactions successfully	**Yes**	**No**
14	Unclear and confusing information on e-banking channels frustrates people	**Yes**	**No**
15	Electronic banking channels fulfil their promises and commitments	**Yes**	**No**
16	Electronic banking channels promote and enhance communication and the relationship with the bank	**Yes**	**No**
17	Young people prefer e-banking to traditional branch channels	**Yes**	**No**

Section Three

The following questions relate to customers' experience of the use of electronic banking channels. Based on your experience and perceptions, please circle or tick the appropriate number *(1 = strongly disagree; 2 = disagree; 3 = neutral or neither agree nor disagree; 4 = agree and 5 = strongly agree).*

	Performance Expectancy					
19	Electronic banking makes it easier for me to do my daily financial transactions.	**5**	**4**	**3**	**2**	**1**
20	Electronic banking is more useful than traditional forms of banking (physical branch).	**5**	**4**	**3**	**2**	**1**
21	Electronic banking facilitates easier communication with my bank.	**5**	**4**	**3**	**2**	**1**
	Effort Expectancy					
22	I find electronic banking easy to use and flexible as I can bank at any time.	**5**	**4**	**3**	**2**	**1**
23	It is easy to find and use the features in electronic banking.	**5**	**4**	**3**	**2**	**1**
24	It is easy to learn how to operate electronic banking channels.	**5**	**4**	**3**	**2**	**1**
	Social Influence					
25	People who I look up to think that I should use electronic banking	**5**	**4**	**3**	**2**	**1**
26	People who are important to me (family) think that I should use electronic banking	**5**	**4**	**3**	**2**	**1**
27	In general, the community encourages me to use electronic banking	**5**	**4**	**3**	**2**	**1**

Facilitating Conditions						
28	I have the necessary resources to use electronic banking (smartphone; internet)	**5**	**4**	**3**	**2**	**1**
29	I have the necessary knowledge to use electronic banking	**5**	**4**	**3**	**2**	**1**
30	Support from an individual or service is available when I encounter problems with e-banking	**5**	**4**	**3**	**2**	**1**
31	Electronic banking is not the only channel I use for banking	**5**	**4**	**3**	**2**	**1**
32	I do not need assistance to use electronic banking	**5**	**4**	**3**	**2**	**1**

Section Four

The following questions relate to the likelihood of using electronic banking after experiencing or reading about it. Based on your experience and perceptions, please circle or tick the appropriate number *(1 = strongly disagree; 2 = disagree"; 3 = neutral or neither agree nor disagree; 4 = agree and 5 = strongly agree).*

Hedonic Motivation						
33	Using e-banking channels is fun	**5**	**4**	**3**	**2**	**1**
34	Using e-banking channels is enjoyable	**5**	**4**	**3**	**2**	**1**
35	Using e-banking channels is very entertaining	**5**	**4**	**3**	**2**	**1**
Price Value						
36	E-banking services are reasonably priced	**5**	**4**	**3**	**2**	**1**
37	E-banking is good value for money	**5**	**4**	**3**	**2**	**1**
38	At the current price, e-banking offers good value	**5**	**4**	**3**	**2**	**1**
Habit						
39	Using e-banking channels has become a habit for me	**5**	**4**	**3**	**2**	**1**
40	I depend on e-banking to perform my banking activities	**5**	**4**	**3**	**2**	**1**
41	Using e-banking channels has become natural to me	**5**	**4**	**3**	**2**	**1**
Uncertainty Avoidance						
42	Information on electronic banking channel is simple to understand	**5**	**4**	**3**	**2**	**1**
43	I get confused when a lot of information is presented on electronic banking	**5**	**4**	**3**	**2**	**1**
Behavioural Intention						
44	I intend to use e-banking channels in my daily life	**5**	**4**	**3**	**2**	**1**
45	I predict that I will use e-banking channels more frequently	**5**	**4**	**3**	**2**	**1**
46	I plan to use e-banking channels in the near future	**5**	**4**	**3**	**2**	**1**

End of the Questionnaire

Thank you for taking the time to complete this questionnaire.

Consent:

I, _____ *(Name: Optional)* hereby confirm that I understand the content of this document and the nature of the research project, and I consent to participation in the research study.

I understand that participation is voluntary, and I am at liberty to withdraw from the process at any time, should I so desire.

Participant's Signature: _____ Date:_____

Appendix 2: Ethical Clearance

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

17 June 2019

Left Indent

Mr Mbuso Emmanuel Nzama (205507912)
School of Management, IT & Governance
Westville Campus

Dear Mr Nzama,

Protocol reference number: HSS/0358/019D
Project title: Adoption of Electronic Banking Distribution Channels in South Africa: The UTAUT2 Application

Approval Notification – Expedited Application

In response to your application received on 12 April 2019, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 1 year from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

[redacted]

Dr Rosemary Sibanda (Chair)

/ms

Cc Supervisor: Dr Thokozani Patmond Mbhele
cc Academic Leader Research: Professor Isabel Martins
cc School Administrator: Ms Angela Pearce

Humanities & Social Sciences Research Ethics Committee
Dr Rosemary Sibanda (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
Telephone: +27 (0) 31 260 3587/8350/4557 **Facsimile:** +27 (0) 31 260 4609 **Email:** ximbap@ukzn.ac.za / snymanm@ukzn.ac.za / mohunp@ukzn.ac.za
Website: www.ukzn.ac.za

Appendix 3: Title Amendment

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

12 August 2020

Mr Mbuso Emmanuel Nzama (205507912)
School of Management, IT & Governance
Westville Campus

Dear Mr Nzama,

Protocol reference number: HSS/0358/019D
New project title: Adoption of electronic banking distribution channels in South Africa: The unified theory of acceptance and use of technology

Approval Notification – Amendment Application

This letter serves to notify you that your application and request for an amendment received on 11 August 2020 has now been approved as follows:

- Change in title

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form; Title of the Project, Location of the Study must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

Best wishes for the successful completion of your research protocol.

Yours faithfully

[redacted]

.....
Professor Dipane Hlalele (Chair)

/ms

cc Supervisor: Dr Thokozani Patmond Mbhele
cc. Academic Leader Research: Prof Isabel Martins
cc. School Administrator: Ms Angela Pearce

Humanities & Social Sciences Research Ethics Committee
UKZN Research Ethics Office Westville Campus, Govan Mbeki Building
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Tel: +27 31 260 8350 / 4557 / 3587
Website: http://research.ukzn.ac.za/Research-Ethics/

Appendix 4: Turn-It-In Report

Turnitin Originality Report

PhD -Thesis by Mbuso Nzama

Processed on: 22-Jul-2020 1:16 PM CAT
ID: 1355106433
Word Count: 47881

Similarity Index
6%
Similarity by Source
Internet Sources:
3%
Publications:
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Student Papers:
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sources:

< 1% match (Internet from 30-Nov-2018)

http://modir3-3.ir/article-english/ISI/isi120-2017494861.pdf

< 1% match (student papers from 04-Jun-2014)

Submitted to University of KwaZulu-Natal on 2014-06-04

< 1% match (Internet from 09-Sep-2019)

https://pdfs.semanticscholar.org/1b24/fa61ebeb5e255e02f8e183825f427717c05d.pdf

< 1% match (student papers from 10-Jan-2020)

Submitted to University of Malaya on 2020-01-10

< 1% match (Internet from 29-Mar-2020)

http://www.scielo.org.za/scielo.php?pid=S1560-683X2019000100003&script=sci_arttext

< 1% match (publications)

Ali Abdallah Alalwan, Yogesh K. Dwivedi, Nripendra P. Rana. "Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust", International Journal of Information Management, 2017

Appendix 5: English Language Editor Report

Asoka ENGLISH LANGUAGE EDITING
14 Boundary Rd., Escombe, 4093

Cell no.: 0836507817

सत्यमेव जयते

DECLARATION

This is to certify that the FOLLOWING THESIS has been English Language Edited

Adoption of Electronic Banking Distribution Channels in South Africa.
Candidate: Nzama ME

[redacted]

DISCLAIMER
Whilst the English language editor has used electronic track changes to facilitate corrections and has inserted comments and queries in a right-hand column, the responsibility for effecting changes in the final, submitted document, remains the responsibility of the client and the editor cannot be held responsible for the quality of English Language expression used in corrections or additions effected subsequent to the transmission of this certificate on 22/08/2020.

Director: Prof. Dennis Schauffer, M.A.(Leeds), PhD, KwaZulu (Natal), TEFL(London), TITC Business English, Emeritus Professor UKZN. Univ. Cambridge Accreditation: IGCSE Drama. Hon. Research Fellow, DUT. Durban University of Technology.

Appendix 6: Multiple regression analysis on digital banking channels price value and usefulness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	Degree of freedom1	Degree of freedomf2	Sig. F Change	
1	.436a	0,190	0,187	0,960	0,190	71,564	1	305	0,000	
2	.455b	0,207	0,199	0,953	0,017	3,282	2	303	0,039	1,967

a Predictors: (Constant), e-banking is fun,
b Predictor: (Constant), Resources (tools of trade), Service Knowledge
b Dependent Variable: e-Banking facilitation.

"ANOVA"

Model		"Sum of Squares"	Degree of freedom	"Mean Square"	F	Significance.
1	"Regression"	65,945	1	65,945	71,564	.000b
	"Residual"	281,052	305	0,921		
	"Total"	346,997	306			
2	Regression	71,904	3	23,968	26,399	.000c
	Residual	275,093	303	0,908		
	Total	346,997	306			

Coefficients

Model	Unstandardised Coefficients		Standardised Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	"Beta"		Sig.	Lower Bound	Upper Bound	Zeroorder	Partial	Part	Tolerance	VIF
1 (Constant)	1,598	0,290		5,521	0,000	1,029	2,168					
e-banking is fun	0,565	0,067	0,436	8,460	0,000	0,433	0,696	0,436	0,436	0,436	1,000	1,000
2 (Constant)	0,686	0,483		1,419	0,157	-0,266	1,637					
e-banking is fun	0,525	0,068	0,405	7,662	0,000	0,390	0,659	0,436	0,403	0,392	0,937	1,067
Resources (tools of trade)	0,190	0,103	0,118	1,853	0,065	-0,012	0,392	0,220	0,106	0,095	0,643	1,556
Product/Service knowledge	0,044	0,112	0,025	0,393	0,695	-0,177	0,266	0,189	0,023	0,020	0,637	1,569

Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	e-banking is fun	Resources (tools of trade)
1	1	1,982	1,000	0,01	0,01	
	2	0,018	10,473	0,99	0,99	
2	1	3,956	1,000	0,00	0,00	0,00
	2	0,027	12,192	0,01	0,92	0,07
	3	0,010	20,241	0,85	0,08	0,43
	4	0,007	23,370	0,14	0,00	0,50

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2,67	4,48	4,00	0,485	307
Std. Predicted Value	-2,744	0,986	0,000	1,000	307
Standard Error of Predicted Value	0,071	0,301	0,101	0,041	307
Adjusted Predicted Value	2,69	4,50	4,00	0,487	307
Residual	-3,481	2,093	0,000	0,948	307
Std. Residual	-3,653	2,196	0,000	0,995	307
Stud. Residual	-3,666	2,235	0,000	1,001	307
Mahal. Distance	0,706	29,494	2,990	4,053	307
Cook's Distance	0,000	0,066	0,003	0,007	307
Cantered Leverage Value	0,002	0,096	0,010	0,013	307