



**THE EFFECT OF CULTURE, VALUES, DIFFUSION OF
INNOVATION AND TECHNOLOGY ACCEPTANCE ON
ATTITUDES TOWARDS DIGITAL BANKING ADOPTION**

by

MONICA ANICETO MACAMO

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PROMOTER: Professor J.P.R. Joubert

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DECLARATION

I, Monica Aniceto Macamo, student number 31693059, hereby declare that this thesis entitled “**THE EFFECT OF CULTURE, VALUES, DIFFUSION OF INNOVATION AND TECHNOLOGY ACCEPTANCE ON ATTITUDES TOWARDS DIGITAL BANKING ADOPTION**” is my own work, and that all the sources that I have used and quoted have been indicated and acknowledged by means of a complete list of references. I declare that the thesis has not in part or in whole been previously submitted for any other degree or examination at this or any other university.

I further declare that ethical clearance to conduct the research has been obtained from the Department of Industrial and Organisational Psychology, University of South Africa. Permission to conduct the research was obtained from the participating stakeholders. I also declare that the study was carried out in strict accordance with the UNISA Policy on Research Ethics and that I conducted the research with the highest integrity during all phases of the research process, taking into account UNISA’s Policy on Copyright Infringement and Plagiarism.



MONICA ANICETO MACAMO

11 August 2020

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DEDICATION

This thesis is dedicated to my husband Jose Mate, my children Allan Mate and Ashia Mate; your invaluable and unconditional love and support nurture me and make me stand. To my mother, Maria da Luz Chaúque, your prayers, mama, consolidate my faith every day. To my sisters, brothers, nieces, nephews, godparents, godchildren and larger family, your support is what makes me feel bold.

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ABSTRACT

THE EFFECT OF CULTURE, VALUES, DIFFUSION OF INNOVATION AND TECHNOLOGY ACCEPTANCE ON ATTITUDES TOWARDS DIGITAL BANKING ADOPTION

PROMOTOR : Prof J.P.R. Joubert
DEPARTMENT : Industrial and Organisational Psychology
DEGREE : PhD Industrial and Organisational Psychology

The purpose of the study was to develop a model of attitudes toward digital banking, by exploring the relationship between values, culture, the diffusion of innovation and the Technology Acceptance. In addition, actual behaviour in the use of digital banking, as well as the moderating effects of gender, age, education level, income, and urban versus rural backgrounds, was included to provide additional insights into the financial services market in Maputo, Mozambique. A quantitative survey with a convenience sample ($n = 403$) of bankable individuals (male and female) between the ages of 21 and 60, was conducted from 2015–2018. The findings revealed significant relationships between the variables included in the empirical model. Structural equation modelling indicated that the data were a good fit, resulting from the use of a correlations-derived measurement model. These findings provide new insights into the development of tailor-made digital banking actions to drive usage in different segments, which will contribute to the body of knowledge on consumer behaviour and digital banking adoption and use.

Keywords: attitudes towards digital banking; culture; diffusion of innovation; digital banking; intention to use; perceived behavioural control; subjective norms; technology acceptance; values

OPSOMMING

DIE UITWERKING VAN KULTUUR, WAARDES, DIE DIFFUSIE VAN INNOVERING EN DIE AANVAARDING VAN TEGNOLOGIE OP INGESTELDHED E RAKENDE DIE AANVAARDING VAN DIGITALE BANKWESE

Hierdie studie se doel was om 'n model van ingesteldhede teenoor digitale bankwese te ontwikkel deur ondersoek in te stel na die verband tussen waardes, kultuur, die diffusie van innovering en die aanvaarding van tegnologie. Werklike gedrag wanneer digitale bankwese gebruik word, asook die modererende effek van gender, ouderdom, onderwysvlak, inkomste en stedelike teenoor plattelandse agtergrond, is ingesluit om bykomende insigte te verkry in die finansiële dienstemark in Maputo, Mosambiek. 'n Kwantitatiewe opname met 'n gerieflikheidssteekproef ($n = 403$) van bankbare individue (manlik en vroulik) tussen die ouderdomme 21 tot 60, is in die tydperk 2015 tot 2018 onderneem. Die bevindinge toon dat daar beduidende verbande is tussen die veranderlikes wat by die empiriese model ingesluit word. Die modellering van strukturele vergelykings toon dat die data goed gepas het omdat 'n korrelasie-afgeleide metingsmodel gebruik is. Hierdie bevindinge lei tot nuwe insigte in die ontwikkeling van pasgemaakte digitale bankwese-aksies om gebruik in verskillende segmente aan te dryf. Dit sal bydra tot die bestaande kennis van verbruikersgedrag en die aanvaarding en gebruik van digitale bankwese.

Sleutelwoorde: ingesteldheid teenoor digitale bankwese; kultuur; diffusie van innovering; gebruiksvorneme; waargenome gedragskontrole; subjektiewe norme; tegnologie-aanvaarding; waardes

ISIFINYEZO ESISIKHETHO UMONGO WOCWANINGO

**UMPHUMELA WOSIKO, AMAGUGU, UKUSABALALA KOBUQAMBI KANYE
NOKWAMUKELWA KWETHEKNOLOJI KWIMIBONO MAYELANA
NOKUSEBENZISA IBHANGI NGENDLELA YEDIJITHALI.**

Inhloso yalolu cwaningo bekuwukwenza imodeli yendlela yokubona mayelana nokusebenzisa ibhangi ngendlela yedijithali, ukuhlola ubudlelwane phakathi kwama-value, usiko, ukusabalala kobuqambi kanye nokwamukelwa kwetheknoloji. Nangaphezu kwalokho, indlela yokuziphatha ekusebenziseni ibhangi ngendlela yedijithali, kanye nemiphumela ethobayo yobulili, iminyaka yobudala, izinga lemfundo, ingeniso, kanye nokuqhathanisa abasemadolobheni nabasemakhaya, kwabandakanywa ukuhlinzeka ngemibono engezelelekile kwimakethe yamasevisi ezezimali eMaputo eMozambique. Kwenziwe inhloso ngobuningi ngesampuli ye-convenience ($n = 403$) wabantu abasebenzisa ibhangi (abesilisa nabesimame) abaphakathi kweminyaka engu 21 kanye nengu 60 kwenziwe ukusukela ku 2015–2018 Imiphumela iveza ubudlelwane obubalulekile phakathi kwezinto ezehlukene ezibandakanya imodeli yobufakazi obubambekayo. I-structural equation modelling ikhombise ukuthi ulwazi belungoluhambisana kahle, ngokuvela kumphumela wokusebenzisa i-correlations-derived measurement model. Okutholakele kunikeza imibono emisha ngokukuthuthukiswa kwezinyathelo zokusebenzisa ibhangii ngendlela yedijithali okuhlinzekelwa abantu ngokuhambisana nabo, ukuphakamisa ukusetshenziswa ngabantu bemikhakha ehlukene, lokhu okuthela esivivaneni kumthamo wolwazi ngendlela yokuziphatha kwabasebenzisi, kanye nokwamukelwa kokusebenzisa ibhangi ngendlela yedijithali kanye nokusetshenziswa.

Amagama abalulekile: indlela yokubona izinto ngokusebenzisa ibhangi ngendlela yedijithali; ukusabalaliswa kobuqambi; ukusebenzisa ibhangi ngendlela yedijithali; inhloso yokusebenzisa; ulawulo lwendlela abantu abaziphatha ngayo; ama-subjective norms; ukwamukela itheknoloji; amagugu

RESUMO

O EFEITO DA CULTURA, VALORES, ACEITAÇÃO DE TECNOLOGIAS E DIFUSÃO DA INOVAÇÃO NAS ATITUDES EM RELAÇÃO À BANCA ELECTRÓNICA

O presente estudo tinha como objectivo desenvolver um modelo de atitudes em relação à banca electrónica explorando a relação entre os Valores, a Cultura e a Difusão da Inovação e Aceitação de Tecnologias. Além disso, o comportamento real relacionado com o uso de serviços da banca electrónica, assim como o efeito moderador do género, idade, nível de escolaridade, rendimentos e os contextos urbano versus rural foram incluídos para permitir melhor compreensão do mercado de serviços financeiros de Moçambique (Maputo). De 2015 a 2018, fez-se um inquérito quantitativo em uma amostra de conveniência ($n = 403$) de indivíduos bancáveis (masculinos e femininos) com idades compreendidas entre os 21 e os 60 anos. Os resultados revelaram relações significativas entre as variáveis incluídas no modelo empírico. A modelagem de equações estruturais indicou um bom número de dados, o que resultou num modelo canónico de medição derivada de correlações. Ademais, faz-se uma exposição e interpretação de achados sensíveis sob o ponto de vista ético no contexto de banca electrónica baseado no consumidor. Estes achados servirão de base para um novo conhecimento para o desenvolvimento de acções de banca electrónica personalizadas com vista a incentivar o uso em diferentes segmentos, o que acrescentará valor ao conhecimento actual sobre o Comportamento do Consumidor e a utilização de serviços de banca electrónica.

Palavras-chave:

atitudes relacionadas à banca electrónica; cultura; difusão da inovação; banca electrónica; intenção de uso; percepção de controlo comportamental; normas subjectivas; aceitação de tecnologias; valores.

NKATSAKANYU

VUYELO RA NDHAVUKO, MIKHUVA, KU AMUKERIWA KA THEKINOLOJI NI KU HAXIWA KA SWITIRHISIWA SWINTSWHA EKA MALANGUTELO YO YELANA NI KU TIRHISA BANGI YA INTERNET

Xikongomelo xa dyondzo leyi a ku ri ku hlamusela malangutelo ya vanhu ehenhla ka ku tirhisiwa ka bangi ya internet hi ku kambisisa vuxaka lebyi nga kona exikarhi ka Mikhuva, Ndhavuko ni ku Haxiwa ka Switirhisiwa Swintswaha ni leswi thiywaka ku amukeriwa ka thekinoloji. Ku engetela kwalaho, ku katsiwile mikhuva ya vhanu ehenhleni ka ku tirhisa bangi ya internet, ku katsa ni vuyelo leri ringaniselaka ro va munhu a ri wanuna kumbe wansati, ntanga, dyondzo, muholo, ni leswaku u tshama dorobeni kumbe emakaya, leswaku ku twisisiwa hi vuenti leswaku mintirho ya swa timali yi tshamise ku yini eMozambique (Maputo). Nxaxamelo wa swivutiso swo teka tinhlayo wu tirhisiwile eka ntlawa lowu voniweke wu ringana ($n = 403$) wa vanhu lava nga tirhisaka bangi (va xinuna ni va xisati), lava nga ni 21 ku ya ka 60 wa malembe ku sukela 2017 ku ya ka 2018. Tinhlamulo ti kombe leswaku ku ni ku yelana lokukulu exikarhi ka swivutiso leswi katsiweke eka xivumbeko xo hlamusela ha xona. *Structural equation modelling* yi kombe leswaku ku ni mihandzu yo tala, leswi endleke leswaku ku va ni xivumbeko lexi se xi tiviwaka xa mpimo lowu taka hi ka ku yelana ka swilo (*correlations-derived measurement model*). Mihandzu leyi yelanaka ni swilo leswi khumbaka mahanyela lamanene leswi lavaka ku voniwa hi vukheta na yona ya vikiwa yi tlhela yi hlamuseriwa hi ku landza matirhelo ya bangi ya internet hi ku ya vatirhisi va yona. Mihandzu leyi yi ta tisa vutisi byintswaha leswaku ku makiwa mintirho ya bangi ya internet leyi tivaka ku tsakisa mutirhisi leswaku ku engeteriwa ku tirhisiwa ka yona exikarhi ka mintlawa yo hambana, leswi na swona swi nga ta engetela vutivi ehenhleni ka Mikhuva ya Vatirhisi ni matirhiselo ya bangi ya internet.

Maritokulu:

malangutelo ehenhla ka bangi ya internet; ku haxiwa ka switirhisiwa swintswaha; bangi ya internet; ku lava ku tirhisa; ku lawula loku xiyiweke ka mikhuva; ntsako; milawu leyi nga khanyiki; ku amukeriwa ka thekinoloji; mikhuva.

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ABBREVIATIONS AND ACRONYMS

ATM	Automated Teller Machine
DBC	Digital Banking Channel
DPT	Digital Psycho-Transculturation
DT	Digital-Transculturation
IDT	Diffusion of Innovation Theory
EOU	Ease of Use
NES	Net Emotional Scores
NEV	Net Emotional Valence
PBVS-C	Picture-Based Value Survey for Children
PEOU	Perceived Ease of Use
POS	Points of Sale
PU	Perceived Usefulness
PVQ	Portrait Value Questionnaire
SAM	Self-Assessment Manikin
TAM	Technology Acceptance Model

CHAPTER 1:

SCIENTIFIC OVERVIEW OF THE RESEARCH

This study focuses on constructing and testing an empirical model for understanding the effect of values, culture, diffusion of innovation and technology acceptance on consumer attitudes towards digital banking among banking industry consumers residing in Maputo City and Maputo Province in Mozambique.

This chapter provides the background to and motivation for the study, which flow into the formulation of the problem statement and research questions. From the aforementioned, the aims of the study will subsequently be presented. The paradigm perspectives which guide the research are also discussed, while the research design and methodology, with its different steps which give structure to the research process, are described as well. Finally, an outline is given of the chapters in the study.

1.1 BACKGROUND AND MOTIVATION FOR THE STUDY

The context of this research is consumer attitudes toward digital banking channels in the Mozambique consumer context. More specifically, this study focuses on developing a model comprising values, culture, diffusion of innovation, and technology acceptance variables that may positively and potentially influence the said attitude. The constructs of relevance to this study are: (1) values, culture, diffusion of innovation, and technology acceptance (conceptualised as mentioned below); and (2) attitude towards digital banking (conceptualised as indicated below).

However, this section first presents some background information on Mozambique as a country and the financial sector in the country.

1.1.1 The country Mozambique

Mozambique (Moçambique) is geographically located on the south-eastern coast of Africa, opposite the island of Madagascar, and covers an area of 801 590 square kilometres). The land area in Mozambique constitutes 784 090 square kilometres and inland water constitutes 17 500 square kilometres.

It is bordered by Tanzania to the north, the Indian Ocean (Mozambique Channel) to the east, the Republic of South Africa to the south, eSwatini (formerly, Swaziland),

South Africa, and Zimbabwe to the west, and Zambia and Malawi to the northwest. Mozambique has a total border of 7 041 kilometres in length, of which 2 470 kilometres is coastline (Nations encyclopaedia, 2019).



Figure 1.1
Map of Mozambique

Source: Free World Maps (www.freeworldmaps.net)

1.1.2 Population of Mozambique

According to the report of the Mozambique's National Statistics Institute (INE) released on 29 April 2019, reporting on data collected during the Mozambique Census 2017 (from 16 to 30 September 2017), Mozambique has a total population of 27 909 708 people. Between 2007 and 2017 the population grew by 35%. As regards gender, 48% are male and 52% female, while as to residential background, 33.4% live in urban areas and 66.6% in rural areas. Of this population, 99.5% are Mozambican nationals, whereas 0.5% are foreign nationals (142,319). The functional age groups are divided into three ranges (0-14 years = 46.6%); (15-64 years = 50.1%); and (65 and + years = 3.3%). The operational age ranges are divided into below 17 years (53.0%) and above 18 years (46.9%). The median age is 16.6 years and the majority of the population ranges between 15 and 40 years of age (38%) (INE, 2019).

The report reveals that there is a total of 6 145 684 households (66.2% headed by males and 33.8% by females), and 11 029 of household leaders are within the age range of 12-14 years. With respect to education, 39% of the population above 15 years of age is illiterate. With regard to activity, 57.6% are economically active (51% males and 49% females). Of these, 31% are domestic workers and 24% are students (INE, 2019).

Concerning access to technology, 26.4% of the total population has access to a cellular phone; 6.6% can access the internet, while 4.4% have access to a computer. With regards to financial inclusion, 9.3% have a bank account: 20.5% of the population in urban areas and 0.6% of the population in rural areas. With regards to mobile money, 11.7% have used mobile money services (INE, 2019).

1.1.3 The Mozambican financial sector

The Mozambican government's policies promote financial services and financial inclusion. The target is to provide 40% of the adult population with physical or electronic access to the financial services offered by formal financial institutions by 2018, and 60% by 2022 (Central Bank of Mozambique, 2016; FSDMoç, 2018a, 2018b, 2018c, 2019).

Financial Sector Deepening Mozambique (FSDMoç) is a Mozambican organisation that is driven by, and drives, its mission of "Working together for financial inclusion in Mozambique". In support of this mission, FSDMoç has conducted various research studies on financial inclusion in Mozambique.

According to FSDMoç (2019), the total adult population (aged +16) in Mozambique was estimated at 14.43 million in 2014, representing 80% of the total population, while the annual population growth is 2.79% (FSDMoç, 2018a, 2018b, 2018c, 2019). With regard to residential locality, 67% of the population lives in rural areas and 33% in urban areas. In terms of gender, 48% of the population are male and 52% are female (FSDMoç, 2019). A total of 8.7 million of the adult population is technologically excluded from using any type of financial services (unbanked). The excluded population is made up of 69% of the adult population living in rural areas and 43% of urban adults, meaning that 75% of unbanked adults live in rural areas and 25% lives in urban areas (FSDMoç, 2019).

Research by FSDMoç found that the unbanked population had an average age of 35 with about half (47%) younger than 30 years of age. FSDMoç also found that in terms of education, 76% of unbanked Mozambicans had attained some form of education, of which primary school accounted for 62%. It is interesting to note that the majority (55%) of the unbanked were female, while only 41% of the banked were female. About half of the unbanked population (51%) derived their main source of income from agriculture and fishing, and 70% earned less than MZN5 000 per month. Conversely, 51% of the banked adults earned less than MZN5 000, while the average income in Mozambique is MZN11 000 (FSDMoç, 2019)

1.1.4 Banking transformation in Mozambique

Mozambique recorded a significant improvement in recent years, with a boom in the banking sector. For example, in 2016 there was a substantial increase in banking service distribution channels, with a particular focus on branches (680), ATMs (1 670), and Points of Sale (POS) (25 310), as well as mobile money agents (25 754) (Bank of Mozambique, 2016; (Baptista, 2016; Deloitte, 2018; FSDMoç, 2018c).

Digitalisation, as used in this thesis, refers to the continuous improvement of customer satisfaction through the deployment of innovative solutions that deliver digital experience and operational excellence; standardised in every customer-facing channel, and is a trend driven by customer experience, technological advancement and economic growth (Forest & Rose, 2015).

By combining internet and mobile technology, Fintech, the emerging financial service organisation, disrupted the banking industry in Mozambique. It not only transformed the banking services business, it is concurrently transforming people's lifestyles and culture, with its business model that encompasses, amongst others, third party payments and financial investments (Tseng, Han, Su, & Fan, 2017). This is a phenomenon that could be labelled as the *e-transculturation* of banking. Therefore, the banks face an imperative call to address customer needs by, for example, improving the customer experience, providing banking convenience, as well as optimising operating expenditure through the migration of customers to digital banking channels (Afshan & Sharif, 2016; Baptista, 2016).

1.1.5 Psychology of banking

At the present time, people are living in a “PsycholoGITAL” era, also termed as the era of *Digital Psycho-Transculturation* or *e-Transculturation*. The term Transculturation is derived from the work of Ortiz (1995), and it is based on the belief that the digital phenomenon experienced in the banking financial services industry is transforming the full spectrum of the banking culture, and therefore leads to the concept of Transculturation.

The terms “PsycholoGITAL”, “Digital Psycho-Transculturation”, and “digital-transculturation” were inspired by the work of Ortiz (1995). The researcher of the present study took the liberty of employing these neologisms to describe the transformation of the psychology of banking resulting from the inflow of digital solutions. This also includes the process of cultural transformation marked by the influx of digital banking channels that are transforming the psychology and culture of doing banking, respectively. The researcher ventures to suggest that the terms e-Transculturation, PsycholoGITAL, or Digital Psycho-Transculturation (DPT) and digital-transculturation (DT) might be adopted in Psychology to describe phenomena of a similar nature to those just defined. Digital banking is transforming the culture in the banking services industry, as well as in the general population of banking services users. This is the “social tissue”, with a strong psychological or behavioural impact, hence the neologisms e-Transculturation of banking, PsycholoGITAL or digital psycho-transculturation of banking (Ortiz, 1995; 2003).

1.1.5.1 Transculturation

Ortiz (1947; 1995; 2003) defines *transculturation* as a process of cultural transformation marked by the influx of new culture elements and the loss or alteration of existing ones. Ortiz asserts that transculturation encompasses more than transition from one culture to another; it does not consist merely of acquiring another culture (acculturation) or of losing or uprooting a previous culture (deculturation). Rather, it merges these concepts and additionally carries the idea of the consequent creation of new cultural phenomena (neoculturation). When transculturation takes place people will struggle to maintain or regain their own traditional way of living or of doing things; hence an identity transformation takes place (Ortiz, 1947; 1995; Sam & Berry, 2010). In a culturally diverse world, *Acculturation of Innovation* is a given, in the sense that

innovation is imminent in every cultural system, and its acculturation is determined by each cultural group. However, transculturation encompasses a broader spectrum than just acculturation (Ortiz, 1995; Sam & Berry, 2010).

1.1.6 The digital banking journey

Due to the advent of the fourth industrial revolution, industry is marked by technological breakthrough in almost every sector, including the financial sector. The financial sector is witnessing strong transculturation in which banks are transforming and disrupting the customer experience by the introduction of digital platforms. This era is characterised by the development of such platforms and their consequent diffusion and implementation, which impacts significantly on consumer attitudes, or on the lifestyles of people and their behavioural transformation. Therefore, *digital psycho-transculturation* could be defined as the cultural and psychological transformation as a result of digital diffusion. This dynamic is bringing about a digital psycho-transculturation phenomenon driven by the diffusion, acceptance and adoption of digital banking channels.

The historical era for Digital Banking Channels (DBC) originated in the last decade of the 20th century with the introduction of self-service channels, such as online banking. This digital revolution is disrupting the culture of doing banking and is intended to improve customer service and experience levels by providing channels through which consumers will be able to do banking without having to go to a branch and stand in long queues.

It is evident that DBCs bring with them a new form of banking accompanied by significant evolution in technology. Examples of these channels include: Internet Banking, Mobile Banking and Automated Teller Machines (ATMs), amongst others. These technological advances in the banking industry are aimed at accelerating the transition from traditional branch banking to new ways of managing daily banking transactions at a place that is convenient for the customer, with the support of electronic devices (Deloitte, 2017; Pikkarainen, Pikkarainen, Karjaluoto, & Pahnla, 2004).

1.1.6.1 Consumer banking habits

According to PwC's 2018 Digital Banking Consumer Survey (PwC Financial Services, 2018), consumer banking habits have continued to evolve. Users have diverse banking options, with innovative devices and digital banking platforms that provide consumers with multiple choices and convenience as regards banking. Nevertheless, traditional banking continues to hold its space of relevance for certain transactions.

However, banking through the use of electronic devices represents challenges for most of the banking industry in Mozambique, and consumers are still reserved with regards to the adoption of DBCs. To tackle these challenges successfully, banks should be cognisant of various values and cultural factors. For example, perceptions of risk, and lack of adequate support and training from banking institutions are some of the reasons why digital banking is not used. The implications of these findings from a study by Mbiakoup (2012) are that banks could focus more on cross-selling DBCs together with other financial products. For example, installing personal computers inside branches in conjunction with campaigns and demonstrations may improve the adoption rates of digital banking.

As a result of this accelerated move into the digital approach that imposes change on the business of banking, the operators in this industry need to convince customers to change their mindset, which can be achieved through the implementation of culture-relevant approaches.

Rogers (1983) perceives diffusion as the process by which an innovation (in the present case, new ideas and methods) is communicated through certain channels over time among the members of a social system. Lack of diffusion of innovation in the banking industry might lead to customer resistance to adopting DBCs.

Schein (2004) aptly comments that value and culture are not the same in every country, province and community. Values are enduring beliefs about desirable end-states, and serve as guiding principles in peoples' daily lives (Schwartz, 1992). According to Al-Jaafreh and Al-abadallat (2012, p. 4), Hofstede (2000) perceives culture as "the means by which people communicate, perpetuate, and develop their knowledge about and attitudes toward life"; these include shared values, beliefs, assumptions, expectations, perceptions and behaviour.

The technology acceptance theorists posit that an attitude toward using an information system is based on two primary antecedent variables: perceived usefulness (PU) and perceived ease of use (PEOU) (Davis, 1989; Taherdoost, 2018).

Previous studies reveal that getting innovation adopted is not easy; therefore, influencing consumer attitudes towards making use of digital banking could be very difficult (Rogers, 1983).

1.1.6.2 Digital banking adoption

Studies in digital banking acceptance reveal that there are a number of variables that influence consumer acceptance of DBCs. These variables range from demographic (for example, income, assets, education, age, gender and marital status), technological (for example, absence of a proper telecommunications infrastructure and shortage of IT training), social (for example, opinions of friends, opinions of parents and opinions of colleagues) to psychological (for example, perceived relative advantage, perceived compatibility, perceived complexity, trialability, observability and perceived risk – also known as psychological risk) (Sundara & Perera, 2018). Other variables include potential loss of self-esteem (ego loss) from the frustration of not achieving a buying goal (Featherman & Pavlou, 2003); perceived cost (PC), PU and PEOU (Davis, Bagozzi, & Warshaw, 1989; Lee, Hsieh, & Hsu, 2011). There seems to be a positive relationship between diffusion of innovation and technology acceptance, and attitudes toward the adoption of digital banking. However, there is a lack of research on values and cultural aspects, although these are important factors that influence a consumer's attitude and behaviour.

Previous studies (Al-Jaafreh & Al-Abedallat, 2012; Hofstede, 2000) describe culture as the all-encompassing force that forms personality, which in turn is the key determinant of consumer behaviour. Therefore, understanding culture's influence on consumer behaviour has become crucial in every sphere of science and business in today's continually-changing world. As a result of the acknowledgement of the importance of culture on consumer behaviour, research across cultures is increasingly being conducted, and studies have endeavoured to establish a relationship between culture and consumer behaviour. Researchers have found differences in consumption patterns amongst people of diverse ethnic groups and various geographic subgroups

that hold differing cultural values in various consumer behaviour aspects including attitudes and decision-making (Jung & Kau, 2004).

The underlying assumption is that if diffusion of innovation takes place, and measurements of user motivation are taken after a relatively brief exposure to a test system, this would permit practitioners to gather information regarding the relative acceptability of various alternative digital channels and services much earlier in the development process, without the disruptive process of test-bed implementation (Davis, 1985). While past research has identified differences in various consumer behaviours across cultures, there is still a relative gap with regards to an integrated framework which takes into consideration culture. This gap can be filled by the integration of both Hofstede's (1980) and Schwartz's (2012) cultural and values dimensions, as well as the diffusion of innovation and technology acceptance, moderated by demographic variables (gender, age, education level, urban versus rural background and income), focusing on the Mozambican context.

1.2 PROBLEM STATEMENT

In view of the foregoing discussion, there is clearly a need to investigate the relationship between values, culture, diffusion of innovation and technology acceptance, as it has not been thoroughly investigated, particularly in the Mozambican context.

- **values**, conceptualised as benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition,
- **culture**, conceptualised as power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, long-term/ short-term orientation,
- **diffusion of innovation**, conceptualised as perceived relative advantage, perceived compatibility, perceived complexity, perceived trialability, perceived observability,
- **technology acceptance**, conceptualised as perceived ease of use and perceived usefulness,

and their influence on consumer attitudes towards the adoption of digital banking (subjective norms, perceived behavioural control, and intention to use digital banking).

This study also analyses the moderating effect of demographic variables (age, gender, education level, income and urban versus rural background).

It is evident from the background discussion above that an understanding of how values, culture, diffusion of innovation and technology acceptance relate to consumer attitudes towards digital banking may potentially enhance the adoption and usage of DBCs.

The review of the current literature on values, culture, diffusion of innovation, technology acceptance and attitudes towards digital banking points to the following research problems:

There is a knowledge gap in the literature, in regards to the clear relationship between values, culture, diffusion of innovation and technology acceptance (independent variables) and attitudes towards digital banking (dependent variables). The present study used Maputo, Mozambique evidence to contribute to filling the existing gap, particularly in the Mozambican context.

Moreover, the existing models do not concurrently clarify the relationship between values, culture, diffusion of innovation and technology acceptance, and consumer attitudes towards adoption, whilst sufficiently accounting for the moderating effects of the demographic variables (age, gender, education level, urban versus rural background and income). In addition, there seems to be a lack of knowledge regarding the theoretical and empirical relationship between diffusion of innovation, values, culture, technology and consumers' attitudes towards the adoption of digital banking channels, particularly in the Mozambican context.

This study seeks to explain the factors that determine the attitudes towards digital banking, and the purpose is therefore to investigate the relationships between values, culture, diffusion of innovation, technology acceptance as independent variables, and the influence they exert on consumer attitudes towards digital banking as the dependent variable. This study will add value to the literature dealing with attitudes towards digital banking; and also apprise banking industry operators of the necessity to take into consideration environmental values and culture when addressing the issues pertaining to the consumer's decision-making and attitude towards digital banking.

The specific nature of the relationship between diffusion of innovation, values, culture, technology acceptance and consumers' attitudes towards the adoption of digital banking and the implication for consumer psychology practices aimed at enhancing the adoption of digital banking is not known in the Mozambican context.

It would appear that research into the relationship between diffusion of innovation, values, culture, technology acceptance and consumers' attitudes towards the adoption of digital banking will make a contribution to the discipline of Industrial and Organisational Psychology, particularly with regard to Consumer Psychology practices.

1.3 RESEARCH QUESTIONS

The problem statement leads to the following general research question, which is followed by a set of specific research questions thereafter.

1.3.1.1 General research questions

Can the values, culture, diffusion of innovation and technology acceptance variables be modelled to inform attitudes towards digital banking?

1.3.1.2 Research questions with regard to the literature review

Research question 1:

What does the literature address with regard to values and culture (conceptualised as power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, long-term/ short-term orientation), diffusion of innovation (conceptualised as perceived relative advantage, perceived compatibility, perceived complexity, perceived trialability, perceived observability), and technology acceptance (conceptualised as PEOU and PU), with regard to usage of digital banking?

Research question 2: What does the literature address with regard to attitudes towards digital banking, and PAD Theory (Pleasure, Arousal, Dominance), specifically, the Self-Assessment Manikin (SAM)?

Research question 3: What is the nature of the theoretical relationship between the values (conceptualised as in Research question 1), and culture (conceptualised as in Research question 1), diffusion of innovation (conceptualised in Research question

1), technology acceptance (conceptualised as in Research question 1), and attitudes towards digital banking (conceptualised as in Research question 1) and biographical characteristics (measured as age, gender, educational level, income and urban versus rural background)?

Research question 4: Can an integrated scientific theoretical model that describes the nature of the theoretical relationship between the values (conceptualised as above), culture (conceptualised as above), diffusion of innovation (conceptualised as above), technology acceptance (conceptualised as above), and attitudes towards digital banking (conceptualised as above) be construed?

Research question 5: What are the implications of the digital banking model for consumer attitudes towards digital banking and intention to use digital banking?

1.3.1.3 Research questions with regards to the empirical study

Research question 1: .What is the nature of the statistical relationship between values (as previously conceptualised), culture (as previously conceptualised), diffusion of innovation (as previously conceptualised), technology acceptance (conceptualised as PU and PEOU), attitudes towards digital banking (as previously conceptualised), and demographical characteristics (as mentioned above)?

Research question 2: .What is the nature of the overall statistical relationship between the independent latent variables of values (conceptualised as mentioned above), culture (conceptualised as noted above); diffusion of innovation, technology acceptance (conceptualised as above) and the dependent variable, namely, attitudes towards digital banking (conceptualised as noted above)?

Research question 3: .Does a model testing the effect of values, culture, diffusion of innovation, and technology acceptance on consumer attitudes towards digital banking and demographic characteristics show good fit?

Research question 4: Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards adoption, is there a good fit between the elements of the empirically manifested structural model and the theoretical model?

Research question 5: Do the demographical variables (defined above) significantly moderate the relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking?

Research question 6: Do significant differences exist between the demographical variables that will act as significant moderators between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking?

Research question 7: Based on SAM, do individuals of different demographic variables (as mentioned earlier) differ with regard to their attitude towards banking channels?

1.4 AIMS OF THE RESEARCH

From the above research questions, the following aims were formulated.

1.4.1 General aim

The general aims of this research are as follows:

To construct a model that explains the relationship between values, culture, diffusion of innovation, technology acceptance, attitudes towards digital banking, and the moderating effect of the demographic variables (gender, age, educational level, income and urban versus rural background) in the relationship.

The following are the specific aims of the literature review and empirical study:

1.4.2 Specific aims in terms of the literature review

In terms of the secondary research phase or literature study, the specific aims are as follows:

Research aim 1: To theoretically conceptualise values, culture, diffusion of innovation, and technology acceptance with regard to the use of digital banking.

Research aim 2: To theoretically conceptualise attitudes towards digital banking as well as the PAD Theory (Pleasure, Arousal, Dominance), addressing the SAM.

Research aim 3: To explore the theoretical relationship between the values and culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.

Research aim 4: To construct an integrated scientific theoretical model that explains the nature of the theoretical relationship between the values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.

Research aim 5: To thoroughly assess the implications of the digital banking model for consumer attitudes towards digital banking and intention to use digital banking.

1.4.3 Specific aims in terms of the empirical study

In terms of the empirical study, the specific aims of this research are as follows:

Research aim 1: To empirically investigate the nature of the statistical interrelationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.

Research aim 2: To empirically assess the nature of the overall statistical relationship between the independent latent variables (values, culture, diffusion of innovation, technology acceptance) and the dependent variable (attitudes towards digital banking)

Research aim 3: To empirically determine whether the variables of values, culture diffusion of innovation, and technology acceptance, positively and significantly predict the attitudes towards digital banking.

Research aim 4: Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking, to empirically assess the fit between the elements of the empirically manifested structural model and the theoretical model.

Research aim 5: To empirically assess whether the demographical variables significantly moderate the relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.

Research aim 6: To empirically assess whether significant differences exist between the demographical variables that will act as significant moderators between values, culture, diffusion of innovation, technology acceptance, as independent variables and attitudes towards digital banking as dependent variable.

Research aim 7: To empirically assess, with the use of SAM, whether individuals of different demographic variables differ with regards to their attitude towards banking channels.

1.5 STATEMENT OF SIGNIFICANCE

Values, culture, diffusion of innovation, and technology acceptance appear to exert some influence on the consumer's attitude towards digital banking. Past studies (Hofstede, 1980; Jung & Kau, 2004; Roger, 2003; Schwartz, 2012; Schwartz & Sorthaix, 2018) have identified differences in various consumer behaviours across cultures.

As mentioned, this study could contribute to the field of industrial and organisational psychology in three distinct areas: theoretical, methodological and practical.

1.5.1 Potential contribution on a theoretical level

In terms of its theoretical contribution, this study may prove useful in identifying the relationships found between the independent variables (values, culture, diffusion of innovation; and technology acceptance, the moderating variables (gender, age, education level, income and urban versus rural background), and the dependent variable (attitude towards digital banking). Given the revelation of significant relationships, the model/ framework that is developed and empirically tested based on the findings, may be useful in developing further models or frameworks which may be empirically tested. Exploring how individuals' demographic characteristics moderate the relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking may prove useful in understanding the consumer's attitude towards digital banking or any technological innovation, and the effect of values and culture on the attitude towards digital banking or the technology adoption process.

This research provides a framework to the body of knowledge in the Industrial and Organisational Psychology field, with a particular focus on Consumer Psychology that will help to predict consumer attitudes towards digital banking channels or any enhanced technology. In explicit terms, the framework that resulted from this study forms the basis that represents a theoretical model, which looks into the moderation of demographic variables with values, culture, diffusion of innovation and technology

acceptance variables. The framework could be useful in future studies envisaging the understanding of consumers' decision-making processes towards the adoption of digital banking or any enhanced technology.

1.5.2 Potential contribution on an empirical level

The potential contribution could be that of constructing an empirically tested framework that can be used to predict the attitude towards digital banking channels. The study indicates whether values, culture, diffusion of innovation, and technology acceptance predict such attitudes. The study also indicates how the demographical variables significantly moderate the relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards adoption. The study may also indicate whether individuals from different demographic groups differ in terms of their attitudes towards digital banking channels.

1.5.3 Potential contribution on a practical level

With today's increasing demand by banks for customers to migrate towards digital technology, in order to enhance their experience and to enable the banks to uphold their competitive edge in the market, this research makes a practical contribution in providing a framework that offers an indication of variables that can be taken into account when trying to predict consumer adoption behaviour.

As intimated, this study may be relevant in the Industrial and Organisational Psychology field and particularly Consumer Psychology practice, given that it aims at investigating consumer behaviour towards the adoption of digital banking. Therefore, such psychologists, especially Consumer Psychology professionals, may develop a better understanding of this field.

This research raises awareness that consumers from different demographic segments must be approached in a range of different ways when introducing new technology, as they may react differently as a result of the values and culture that drive their attitude toward the adoption of new technology (digital banking channels).

1.6 CONCEPTUAL RESEARCH FRAMEWORK AND HYPOTHESES

The objective of this study is to examine the attitudes towards digital banking in Mozambique, through investigating the moderating effect of the relationship between variables. A research framework was developed as discussed in Chapters 4 and 5.

1.7 THE PARADIGMATIC PERSPECTIVE OF THE RESEARCH

According to Guba and Lincoln (1994), paradigms are basic belief systems based on ontological, epistemological, and methodological assumptions. A paradigm represents a worldview that defines, for its holder, the nature of the world, the individual's place in it, and the range of possible relationships to that world and its parts. The beliefs are basic in the sense that they must be accepted simply on faith (however well argued); there is no way to establish their ultimate truthfulness (Guba & Lincoln, 1994).

Mouton and Marais (1990, pp. 7-9) postulate that one of the characteristics of research in the social sciences is that different research traditions and paradigms may be found within each of the descriptive methodologies; hence social science descriptions are multi-paradigmatic. Kuhn (1970) argues that a paradigm is a model for conducting a normal study and can be defined as a set of rules and regulations that clarify boundaries for the researcher regarding what should be researched and how the research should be conducted. Furthermore, Kuhn (1970) emphasises the importance of paradigms by stating that one of the things a scientific community acquires along with a paradigm is a criterion for choosing problems that, as long as the paradigm is taken for granted, can be assumed to have solutions (Babbie, 1992). For Babbie (1992), a paradigm is a fundamental model or scheme that organises our view of something.

Babbie further asserts that although a paradigm does not necessarily answer important questions, it tells us where to look for the answers. In a nutshell, paradigms could be defined as the central belief system or perspective that guides the researcher to choose the method through which to go about finding out that which is unknown. The ontological approach deals with what sort of things exist in the social world and assumptions about the form and nature of that social reality, while the epistemological approach is concerned with the nature of knowledge and ways of knowing and learning about social reality.

In the next section the intellectual climate is discussed within which this study was conducted.

1.7.1 The intellectual climate

This study was undertaken from the humanistic, behaviourist and positivist paradigmatic perspective.

1.7.1.1 Humanistic paradigm

The basic assumptions of the humanistic paradigm are that human beings are positively motivated by the need to grow and realise their utmost potential. Environmental factors hinder people from unlocking their potential and as a result they fail to realise it. Human beings are not passive elements; they have the freedom to engage in behaviours that positively determine their purpose. As such, individuals are not victims of events, they are able to influence their course and purpose, and have the freedom to determine their destiny in a positive way. Human beings are dignified and should be studied as an integrated whole. The humanistic paradigm subscribes to the holistic approach to human existence, and places its focus on people's freedom, values, potential, meaning of life, personal responsibility and self-actualisation. When applied to consumer behaviour, human beings have the desire to acquire and consume products and services that meet their needs, or enhance their experience (Hoffman, Lopez, & Moats, 2013; Mitonga-Monga, 2015).

1.7.1.2 Behavioural paradigm

This research is based on the *attitude-behaviour* paradigm which stems from cognitive psychology, on the basis that consumers will firstly decide to adopt digital banking, primarily because of the functions it performs, secondly because of the ease or difficulty associated with making the system perform these functions, and thirdly according to their demographic group (Davis, 1989).

On the other hand, according to Engel, Blackwell and Miniard (1995), consumer behaviour is of particular interest to those who, for various reasons, desire to influence or change that behaviour. They argue that the dominant perspective is *logical positivism*, in which the objectives are twofold: (1) to understand and predict consumer behaviour, and (2) to discover cause-and-effect relationships that govern persuasion and or education (Engel *et al.*, 1995).

1.7.1.3 Positivist paradigm

The empirical findings of this study were approached from the perspective of the positivist research paradigm. In this regard, the objective of the study is independent of researchers, and knowledge is found and verified through direct observations or measurements of events (Krauss, 2005). According to Bryman (2012), the phenomenon is analysed by taking it apart to examine the components of the parts, in order to establish the facts. Epistemologically, positivists perceive science as a way in which to discover the truth, so that it can be understood well enough to be predicted and controlled (Bryman, 2012; Mitonga-Monga, 2015).

According to Mitonga-Monga (2015), the underlying belief of the positivists is in empiricism, which subscribes to the idea that observation and measurement are at the core of any scientific endeavour. The positivist research paradigm seeks to explain, clarify and predict what happens in the social world by searching for regularities and causal relationships between its basic parts. Social scientific knowledge is considered to be real, ordered and stable, and upholds basic patterns that are better than common sense (Mitonga-Monga, 2015). Researchers indicate that social science found its essence in the tradition of positivism, which believes that scientific theories can be objectively supported by means of empirical evidence. This paradigm is crucial to this study because it attempts to draw objective conclusions by minimising errors through statistical data analysis.

The empirical study in this research is in the form of a quantitative study and was conducted within the assumptions of the positivist research paradigm. Thematically, the quantitative research focuses on the relationship between values, culture, diffusion of innovation, technology acceptance, and attitude towards digital banking. The study provides quantitative measures of those constructs that have a concrete and tangible value through the use of statistical science and techniques. This quantitative approach is perceived as objective and relating to conditions that are independent of individual thought and perceptible to all observers by relying on statistical procedures.

1.7.2 The market of intellectual resources

The market of intellectual resources refers to the collection of beliefs that have a direct bearing on the epistemological states of scientific statements (Mouton, 1996). For the purpose of this study, the theoretical models, meta-theoretical statements, conceptual

descriptions of the values, culture, diffusion of innovation, technology acceptance, and attitude towards digital banking will be discussed. In addition, the central hypothesis and theoretical and methodological assumptions will be described in this section.

1.7.2.1 Meta-theoretical statements

Meta-theoretical statements represent an important category of assumptions underlying the theories, models and paradigms of research. In the disciplinary context, this study focuses on Industrial and Organisational Psychology as the field of application (Mouton, 1996; Salkind, 2012). Meta-theoretical statements are presented as follows:

- ***Industrial and Organisational Psychology***

The present research has been conducted within the field of Industrial and Organisational Psychology, defined as the scientific study of the relationship between people, focusing on the application of psychological principles to change behaviour, or the adjustments people make to the environment, people they meet, and the things they do in the living process (Guion, 1965; Riggio, 2013). A particular focus of this research is on the sub-field of Consumer Psychology;

- ***Consumer Psychology***

Consumer Psychology is defined as the study of how people relate to the products and services that they consume by examining the psychological variables that influence the behaviour of consumers, and which provides opportunities to analyse factors which are most important in the decision-making process, specifically when people decide to acquire a particular product. The decision is also influenced by consumers' motivation, attitudes and perceptions (Jacoby, 2003; Schiffman & Kanuk, 2004). Therefore Consumer psychology can be defined as the study of people's buy motives, by understanding the underlying cognitive processes and emotions that explain their decision-making and how they choose to respond to the influence of the environment. In addition, it provides an understanding of the influence of endogenous factors (such as personality) in buying

decisions and choices. It is important to emphasise that this research fits specifically in the context of Consumer Behaviour.

- ***Consumer Behaviour***

Stankevich (2017) defines Consumer Behaviour as the study of consumers (individuals, groups, or organisations) and their selection, securing, usage, and disposing processes and practices, of products, services, experiences, or ideas to satisfy their needs and the impacts that these processes have on the consumer and society (Stankevich, 2017). According to Engel *et al.* (1995), consumer behaviour is defined as the study of those activities directly involved in obtaining, consuming, and disposing of products and services, including the decision processes that precede and follow these actions (Engel *et al.*, 1995).

- ***Psychometrics***

Psychometrics comprises a sub-discipline of psychology that focuses on the study of the theory and practice of psychological assessment and measurement, including the development of norms and standards that govern psychological tests and related statistical procedures (Gregory, 2014). Psychometrics enables researchers to measure behaviour in different forms, as well as to explain the intra and interpersonal psychological functioning of the individual. For the purposes of this study, questionnaires were employed to measure values, culture, diffusion of innovation, technology acceptance, and attitude towards digital banking variables.

1.7.2.2 Theoretical framework

The theoretical model in the present research consists of the following variables:

- ***Values***

According to Schwartz (1992), values serve as guiding principles in peoples' daily lives because they are enduring beliefs about desirable end-states. Values play a very important role in consumption activities, serving as guiding principles in consumers' everyday life (Schwartz, 1992; Ungerer & Joubert, 2011).

- ***bCulture***

According to Hofstede (2000), culture is the means by which people transmit, disseminate, validate and develop their knowledge about and attitudes toward life; these include shared values, beliefs, assumptions, expectations, perceptions and behaviour (Hofstede, 2000; Jaafreh & Al-abedallat, 2012).

- ***The Diffusion of Innovation***

According to Rogers (1983) diffusion is the process by which an innovation (new idea) is communicated through certain channels over time among the members of a social system. Diffusion is a form of social change process, by which modifications occur in the structure and function of a social system.

- ***The Technology Acceptance Model***

Davis (1989) introduced the Technology Acceptance Model (TAM), based on the attitude-behaviour paradigm from cognitive psychology. Davis argues that people adopt an application primarily because of the functions it performs, and secondarily because of the ease or difficulty associated with making the system perform these functions. The model provides a basis for tracking the impact of external factors on internal beliefs, attitudes, and behaviour (Davis *et al.*, 1989).

- ***Attitude towards digital banking***

According to Mansour, Eljelly and Abdalla (2014), the term 'attitude towards a behaviour is a learned tendency to evaluate things in a certain way. It; refers to the degree to which performance of behaviour is positively or negatively valued. Ajzen and Fishbein (1980) have demonstrated that an individual's attitude towards any object can be predicted with a high degree of accuracy from the knowledge of the individual's beliefs which affect their attitude towards the object and the evaluative aspect of these beliefs. Subjective norms, perceived behavioural control, intentions, as well as the SAM are addressed as sub-dimensions or determinants of attitude.

1.7.2.3 Central hypothesis

Values, culture, diffusion of innovation, and technology acceptance can be viewed as, predictors of attitude towards digital banking channels. This hypothesis further assumes that values, culture, diffusion of innovation and technology acceptance significantly affect the consumer attitude towards digital banking. Furthermore, individuals from various demographic groups will differ regarding their attitudes towards digital banking.

1.7.2.4 Theoretical assumptions

Based on the literature review, this study addresses the following theoretical assumptions:

- There is a need for research that seeks to integrate values, culture, diffusion of innovation, technology acceptance, and attitude towards digital banking variables.
- The demographic characteristics, the values, culture, diffusion of innovation technology acceptance, and attitude towards digital banking will influence consumers to use digital banking.
- The association between the values, culture, diffusion of innovation, technology acceptance, and attitude towards digital banking variables can be moderated by the demographic characteristics.
- Knowing individuals' values, culture, diffusion of innovation, technology acceptance variables, and their attitude towards digital banking variables will enhance consumer usage of digital banking, as well as the development of client centric digital banking platforms by the financial services players.

1.7.2.5 Methodological assumptions

According to Mitonga-Monga (2015), methodological assumptions are beliefs underlying the nature of the scientific research, including research conducted in the field of social science, which go beyond methodological preferences, assumptions or presuppositions concerning that which good research must be based on. Wildemuth (1993) declares that the method to be employed in a particular study should be selected based on the nature of the research, as well as the research question being addressed. Mouton (1996) admits that there is a direct relationship between methodological beliefs and the epistemological status of research findings (Mitonga-

Monga, 2015). The methodological dimensions with relevance to the present study are discussed in the following section, following the framework proposed by Mouton and Marais (1993), whose purpose is to incorporate the five dimensions of social science research: sociological, epistemological, ontological, teleological, and methodological (Mouton & Marais, 1993). These five dimensions are briefly discussed below.

- ***Sociological dimension:***

The sociological dimension indicates that scientists operate within a clearly defined community linked in research networks that form the basis for further research (Mouton & Marais, 1993). This present research focuses on the positivist approach, and makes use of various research networks. Mitonga-Monga (2015) highlights that the sociological dimension complies with the requirements of sociological research ethics. Philosophically, in the sociological dimension, research is experimental or non-experimental, analytic or exact, given that the issues being studied are subject to quantitative research and analysis (Mitonga-Monga, 2015). The present research is non-experimental in nature and focuses on the quantitative analysis of variables and concepts that are described under Chapters 6 and 7, which address the empirical and research results.

- ***Epistemological dimension:***

This dimension relates to the search for truth, indicating that the aim of research is to generate valid findings which are as close to the truth as possible. According to Mitonga-Monga (2015), the epistemological dimension is a form of required proof for clarifying and justifying a statement concerning knowledge about the social world, and is concerned with the theory of knowledge, which seeks to inform researchers about how to discover the truth. The current study attempts to achieve this dimension by means of a logical research design with a view to obtaining valid results, and focuses primarily on testing the central hypothesis in order to discover whether it is true or not (Mouton & Marais, 1993; Mitonga-Monga, 2015).

- ***Ontological dimension:***

The ontological dimension refers to the discussions and disputes concerning the various ways in which research dimensions can be defined and classified, and defines the reality being measured. It refers to statements and assumptions about the nature

of the social reality. Researchers using this dimension are objective, subjective and pragmatic, and believe that reality can be tested and verified. Such researchers will attempt to determine causes and effects, as well as explanations of phenomena. The present research integrates various adoption theories and the results are generalised to qualify the consumer's attitude towards digital banking. The current study is objective and pragmatic as it systematically seeks to measure the independent and dependent variables under study (Mouton & Marais, 1993; Mitonga-Monga, 2015).

- ***Teleological dimension:***

This dimension refers to the fact that social science is goal-driven, with practical and theoretical research objectives or outcomes. The goals of the present undertaking are definitive, namely, to investigate the factors or variables underlying the decision to adopt electronic banking channels and services. According to Mitonga-Monga (2015), it is critical that the problem being investigated is clearly stated, together with the research questions and aims. This dimension seeks to develop the field of Industrial and Organisational Psychology, in particular fostering the sub-field of Consumer Psychology by expanding the body of knowledge with regard to consumer adoption processes (Mouton & Marais, 1993, Mitonga-Monga, 2015).

- ***Methodological dimension:***

The methodological dimension relates to the coherence of the application of scientific methods to the investigation of the phenomena, in terms of the views of social science advocates that have classified research methodologies as being either quantitative or qualitative. The research process followed in the present study is quantitative (exploratory, descriptive and explanatory): it involved data collection by means of questionnaires, while other information is presented in the form of a literature review and an empirical study focusing on the effect of values, culture, diffusion of innovation and technology acceptance on attitude(s) towards digital banking (Mouton & Marais, 1993; Mitonga-Monga, 2015).

1.8 RESEARCH METHODOLOGY DISCUSSED IN CHAPTER 5

In the next section the research design and research approach are presented.

1.8.1 Research design

This study employed a descriptive research design. According to Babbie (1992), science is an enterprise dedicated to “finding out”, from which two major aspects of the research design derive: firstly, the investigator must specify what to find out, and secondly, determine the best way to find out. According to Babbie and Mouton (2001, p. 72), research design “addresses the planning of scientific inquiry – designing a strategy for finding out something.” and “a plan or blueprint of how one intends conducting the research”. Mouton and Marais (1990, p. 34) refer to a research design as “the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure”.

1.8.2 Research approach

This study followed a quantitative research design. The quantitative approach involves the study of the interplay among variables. It also studies the dispersion of scores in a sample data set by analysing and measuring how variables change, allowing it to determine the outcomes of the research. The quantitative approach is deemed important for this study, given its emphasis on evidence-based practice in psychology (Tabachnick & Fidell, 2019). This section will discuss exploratory research, descriptive research and explanatory research as related to the present study. Thereafter the concepts of validity, reliability, units of analysis and the variables as relevant to the present study are discussed.

1.8.2.1 Exploratory research

An exploratory research study was employed with a view to identifying the key variables that might predict a consumer’s attitude towards digital banking by analysing values, culture, diffusion of innovation, technology acceptance (independent variables), and subjective norms, perceived behavioural control, and intention (dependent variables informing attitudes). In addition, the Self-Assessment Manikin (SAM) emotions assessment was utilised to assess the consumers’ attitudes towards digital banking. The reason of using SAM in this study is because it is a non-verbal scale and it does not require a high level of literacy and is helpful in an environment with language barriers.

As part of the data collection process in the current study, a questionnaire was

constructed to assess the moderating effect of the demographical variables on the relationship between the independent variables (values, culture, diffusion of innovation, technology acceptance) and the dependent variable (attitudes towards digital banking). In order to validate the questionnaire, an item analysis was conducted to ensure the language accuracy, after the translation and back-translation of the measurement instrument. This enabled a better understanding of the language, as well as testing for the feasibility of more research, and also determined the best methods to be used in subsequent studies.

1.8.2.2 Descriptive research

According to Borg and Gall (1989), descriptive research is unique due to the number of variables being employed. Like other types of research, descriptive research can include multiple variables for analysis.

In order to understand what variables drive Mozambican retail banking consumers towards adoption of Digital Banking Channels (DBC), the study employed a descriptive research design (Babbie & Mouton, 2001). Descriptive research was used to explain the moderating effect of the demographic variables (gender, age, educational level, income, urban versus rural background) on the independent variables (values, culture, diffusion of innovation, and technology acceptance). A Cronbach's alpha was also performed to assess the internal consistency reliabilities and validity of values, culture, diffusion of innovation, technology acceptance, and attitude constructs.

1.8.2.3 Explanatory research

An explanatory research study was employed in efforts to explain the nature of relationships between the moderating variables, the independent latent variables and the dependent variables. The approach was also applied to hypothesis testing to provide an understanding of the relationships that exist between these variables, specifically in terms of the degree of significance.

1.8.3 Validity

According to Rosnow and Rosenthal (2009) (in Mitonga-Monga, 2015), the purpose of research is to describe the population in terms of the sample's characteristics. Thus, the research design and the literature review should ensure that the research is valid in respect of the variables being investigated. In this study, research validity was

ensured by reviewing literature that is relevant to the study, as well as utilising appropriate instruments. This assisted the researcher in making informed conclusions regarding the research questions that the study sought to answer (Mitonga-Monga, 2015).

1.8.3.1 Validity with regard to the literature review

To ensure validity of the literature review, only literature that was relevant to the research topic, as well as the problem statement and aims of the study was used. In addition, this study attempted to make use of recent literature from empirical sources, in order to ensure that the literature is valid. However, other classical and contemporary mainstream research was referred to when it was relevant to the conceptualisation of the variables under investigation in this study (Mitonga-Monga, 2015).

1.8.3.2 Validity with regard to the empirical study

In empirical research, validity is ensured through the use of appropriate and standardised measuring instruments. Those used in this study were critically examined for their criterion-related validity, in order to ensure the accurate prediction of scores on the relevant criterion, as well as to ensure content validity and construct validity (the extent to which the measuring instruments measure the theoretical constructs they purport to measure).

1.8.4 Reliability

Reliability is the degree to which measures yield consistent results and are free from error (Mitonga-Monga, 2015). Two important aspects that are related to reliability are repeatability and internal consistency. This study makes use of existing literature sources, and theories and models to ensure the reliability of the literature review. The reliability of the empirical study was ensured through the use of inter-item correlations.

1.8.4.1 Reliability with regard to the literature review

Reliability refers to the notion that different research participants being tested by the same instrument at different times should respond identically to the instrument (Mitonga-Monga, 2015). Reliability with regard to the literature review was addressed

by using existing literature sources, theories and models that are available to other interested academics (Mitonga-Monga, 2015).

1.8.4.2 Reliability with regard to the empirical study

In the empirical study, it was not possible to test the participants twice in order to confirm test-retest reliability. However, the data gathered was used to confirm consistency. Inter-item correlation was performed in order to determine the reliability of the items contained in the questionnaire. In this way, the overall reliability of the research was improved (Mitonga-Monga, 2015).

1.8.5 Unit of analysis

Babbie (1992, p. 5) stresses that “one of the first steps in designing a research project involves a clarification of the unit of analysis”, which is the object to be studied. Units of analyses are those units the researcher examines in order to create summary descriptions of all such units and to explain differences among them. Any variety of individuals may comprise the unit of analysis for social scientific research Babbie (1992). According to Babbie (2013), “unit of analysis” refers to factors such as characteristics, incidents and behaviour which could interest the researcher and enable her or him to describe, explain and summarise them (Babbie, 2013; Mitonga-Monga, 2015). In this study, the unit of analysis is the individual (Mouton, 1996). The “individual” refers to a banking services consumer residing in Maputo City and Maputo Province in Mozambique.

The universe of the analysis consisted of the bankable Maputo population. Participants in six Maputo districts (three rural and three urban) were targeted, through a convenience sampling technique, meaning that the researcher selected the individuals according to population, and targeted 1 000 participants out of a population of about 81 000 bankable consumers, to ensure that a minimum of 400 to 500 usable questionnaires were obtained. Of this sample 20% came from each of the six districts, through the use of different and appropriate data collection communication channels.

Since this study focuses on the constructs of values, culture, diffusion of innovation, technology acceptance and attitude towards digital banking, individual scores of each of the measuring instruments were taken into consideration, and at group level, the overall scores on all the measuring instruments were considered. On a sub-group level,

gender, age, educational level, income and urban versus rural background scores were taken into account in determining whether there is an association between the given variables, in order to develop a model to inform the understanding of consumer usage of digital banking in Maputo, Mozambique.

1.8.6 Variables

This study attempted to measure the direction and magnitude of the relationship between four independent variables (values, culture, diffusion of innovation, and TAM) and three dependent variables (subjective norms, perceived behavioural control, and intention to use digital banking), being the constructs that inform the attitude towards digital banking. The research also measured the overall relationship between the independent variables and the attitude towards digital banking (as a dependent variable).

According to Cohen *et al.* (2011), the distinction between the independent and dependent variables resides in the basic cause-and-effect relationship between specific phenomena. However, due to the cross-sectional nature of this research, the focus was not on establishing a cause-and-effect relationship, but rather on establishing the relationships between variables (Mitonga-Monga, 2015).

For the purposes of this study, in order to determine the relationship between the independent variables and the dependent variable of attitude towards digital banking, criterion data on the latent variables and the dependent variables was collected by means of standardised measuring instruments selected for the purpose of this research.

The demographic information (age, gender, educational level, income and urban versus rural background) was considered as centred variables moderating the relationship between values, culture, diffusion of innovation, technology acceptance (independent variable), and the attitude towards digital banking factors (dependent variable).

Figure 1.2 below provides an overview of the core research variables and relationships investigated in this study.

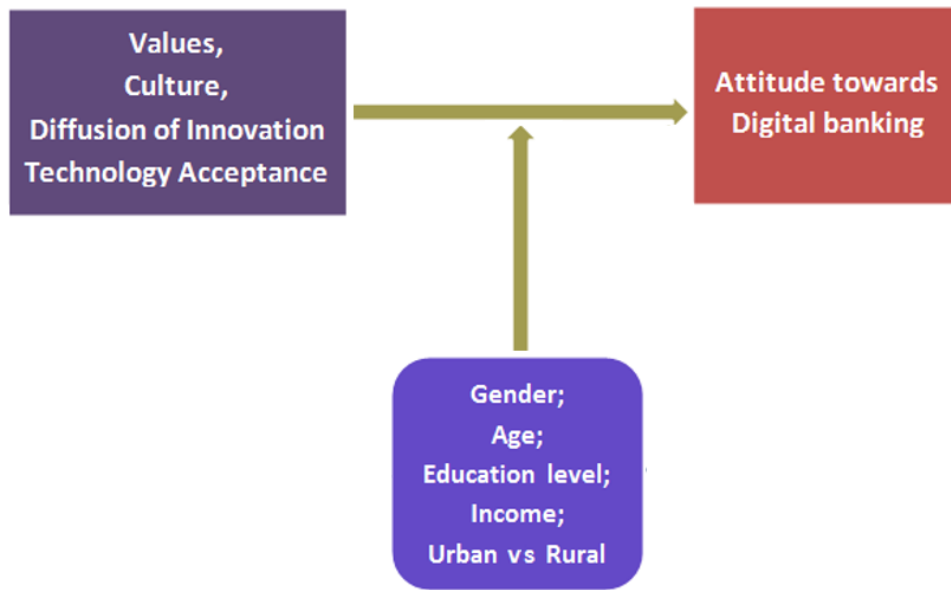


Figure 1.2
Core research variables and relationships of this study

1.9 DELIMITATIONS

This study was confined to research dealing with the relationship between the core constructs, namely, values, culture, diffusion of innovation, technology acceptance, and attitude towards digital banking. In an attempt to identify factors that could influence consumers to develop their attitude towards the usage of digital banking platforms and services, the variables used as moderating variables were limited to age, gender, educational level, income and urban versus rural background. This study therefore only focused on the effects of the above constructs.

No attempt was made to manipulate any of the information, results or data on the basis of family or spiritual background. Also not included in any classification process were factors of disability or illness, either physical or psychological. This study was intended to be foundational research, which restricted its focus to the association or relationship between variables.

If there is an association, then this information could be useful to future researchers, in order to address other issues relating to the constructs. The main purpose of this research was not to establish the cause-and-effect of the relationship, but merely to determine whether or not the relationship does exist, as well as to determine whether or not the relationship between values, culture, diffusion of innovation and technology

acceptance variables, and the attitude towards digital banking is influenced by demographic characteristics.

1.10 ETHICAL CONSIDERATIONS

According to the UNISA Ethics policy, “All research should be conducted with scholarly integrity, excellence, social responsibility and ethical behaviour in research activities” (Section 1.6.2 of the revised Policy). Research involving humans comprises any research that involves the direct or indirect participation of human participants and institutions, therefore creates an obligation to protect the rights and interests of human participants and institutions. According to Mitonga-Monga (2015), ethical considerations are an important part of a research process. Babbie (2013) defines research ethics as the minimum standards of moral principles that guide the behaviour of researchers. These principles include compliance with social sciences and professional obligations when dealing with research participants.

In conducting this research ethical guidelines were ensured by the following: (1) The purpose of the research was clearly communicated to the participants; (2) Written informed consent was obtained from the participants; (3) The participants were requested to take part voluntarily and were assured that they could withdraw from the study at any stage with no consequences to them; (4) Privacy, confidentiality and anonymity were assured, as well as objectivity and integrity.

In order to obtain authorisation to conduct the survey, the researcher obtained a Research Ethics Clearance from the UNISA Research Ethics Review Committee (Appendix A).

The research method is systematically presented in adequate detail so as to enable other researchers to replicate the research. The study was conducted in Mozambique from January 2015 to 2018.

The data-collection instrument (questionnaire) was structured according to theoretical guidelines and the respondents responded within the boundaries of the questions asked, although they were not guided in expressing their responses, so no bias ensued. The responses of the respondents were compiled, while the typical themes that have a bearing on consumer variables/ variables involved in electronic banking adoption were identified.

As part of the efforts to uphold ethical requirements, the following ethical considerations were followed:

- Receiving the informed consent of research participants
- Maintaining the utmost confidentiality as regards results
- Ensuring, as far as possible, the anonymity of participants
- Utilising classical and recent sources applicable to the study
- Conducting research within recognised parameters
- Acknowledging all literature and other sources from which information was obtained
- Consulting experts in data analysis and the field of research, in order to ensure a scientific research process
- Informing participants about the results of the research
- Compiling and reporting information pertaining to the results of the research according to prescribed guidelines.

1.11 RESEARCH PROCESS

The research methodology of this study is divided into three phases: the literature review, empirical study, and conclusions, limitations and recommendations, as well as areas for future research. Research methodology involves the process used from the initial formulation of the research problem, questions, hypotheses, aims, literature review, data collection and analysis, hypothesis testing, generalisations, interpretations and conclusion. The methodology includes secondary research such as literature research, primary research such as interviews, surveys and other research techniques, and includes both present and historical information. Mixed-methods research (also called mixed research in this thesis) is becoming increasingly articulated, attached to research practice, and recognised as the third major research approach or research paradigm, along with qualitative and quantitative research (Joubert, 2019). This study employed a quantitative research approach.

The phases and steps in the research process are discussed next.

1.11.1 Phase 1: Literature review

Step 1: Values, culture, diffusion of innovation and technology acceptance variables

A critical evaluation of recent research in values, culture, diffusion of innovation, and technology acceptance was undertaken. Based on this conceptualisation of the given constructs, conceptual models were used to illustrate the principles and concepts discussed in the literature. Finally, the factors influencing values, culture, diffusion of innovation and technology acceptance variables were discussed.

Step 2: Attitude towards digital banking variables

A critical evaluation of research relating to these constructs, as well as the PAD Theory (the SAM), was conducted and described. Based on these conceptualisations of the abovementioned constructs, models were used to illustrate the principles and concepts discussed in the literature. Finally, the variables influencing consumer attitude toward digital banking were also discussed. A critical evaluation of research in the field of organisational psychology relating to the constructs of consumer behaviour was provided.

Finally, the implications for Industrial and Organisational Psychology and business ethics practices pertaining to consumer attitudes towards digital banking were discussed.

Step 3: The theoretical framework

This step relates to construction of a theoretical framework in the moderating effects of demographic variables in relationship between the said variables. The theoretical framework is based on the hypothetical relationship between these constructs and on the possible effects of demographic variables. Finally, this step culminated in a framework to understand the effects of these factors on digital banking, as manifested in the literature. The implications for Industrial and Organisational Psychology and business ethics practices pertaining to consumer attitudes towards digital banking were equally discussed.

1.11.2 Phase 2: The empirical study

This study made use of a quantitative research design (Cohen *et al.*, 2011, in Mitonga-Monga, 2015). It consisted of the following nine steps:

Step 1: Determination and description of the sample

The procedure for determining the sample and sample characteristics was outlined and discussed in this step.

Step 2: Formulation of research hypotheses

The research hypotheses were formulated in order to achieve the objective of the study.

Step 3: Choosing and motivating the data-collection instrument (questionnaire)

This step described the measuring instruments used to conduct this research.

Step 4: Administration of the data-collection instrument

In this step the process used to collect data was considered.

Step 5: Scoring of the data-collection instrument

This step discussed how the data was captured and analysed.

Step 6: Statistical processing of data

This step described the statistical procedures relevant to this research.

Step 7: Reporting and interpreting the results

This step indicated how the results were presented.

Step 8: Integration of the research findings

Findings related to the literature review are integrated with the findings from the empirical study, in order to arrive at the overall findings of the research.

Step 9: Formulation of conclusions, limitations and recommendations

The final step involved the drawing of conclusions based on the results and their integration with the theory. The limitations of the study were also discussed and recommendations were made for future research in terms of values, culture, diffusion

of innovation, and technology acceptance variables (independent variables), and the attitude towards digital banking variables (dependent variable), specifically with regard to the consumer attitude towards digital banking.

1.12 CHAPTER DIVISION

This study is divided into seven chapters as follows:

Chapter 1: Scientific overview of the research

The purpose of this chapter was to present an overview of Mozambique and the financial services industry there, and to provide the background to and motivation for the study, which flowed into the formulation of the problem statement and research questions. From the aforementioned, the aims of the study were subsequently presented.

Chapter 2: Values, culture, diffusion of innovation and technology acceptance

The purpose of this chapter is to address the first research aim and part of the third research aim of the literature review, which aims to theoretically conceptualise values, culture, diffusion of innovation and technology acceptance, as well as to explore the theoretical relationship between the values, culture; diffusion of innovation; technology acceptance and demographical characteristics.

Chapter 3: Attitude towards digital banking

The purpose of this chapter is to deal with the second research aim, and part of the third research aim of the literature review, which aims to theoretically conceptualise attitudes towards digital banking, and Pleasure, Arousal, Dominance (PAD) Theory, namely the SAM, as well as the demographic influences; in addition to exploring the theoretical relationship between attitudes towards digital banking and demographical characteristics.

Chapter 4: Theoretical framework

This chapter addresses the fourth research aim which is to construct an integrated scientific theoretical model that explains the nature of the theoretical relationship between the constructs of values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.

Chapter 5: Research Methodology

The purpose of this chapter is to describe the empirical study and the statistical procedures used for testing the research hypotheses. Firstly, an overview of the study's population and sample is presented. The measuring instruments are discussed and the choice and discussion of each is justified, followed by a discussion of the administration, the scoring of the data-collection instrument, the research hypotheses and a description of the data gathering and statistical processing methods. The formulation of the research hypotheses is stated, while the chapter concludes with a chapter summary.

Chapter 6: The research results

This purpose of this chapter is to present the results of the empirical investigation. The chapter focuses on step 7 of the empirical investigation. The statistical results of the empirical research are presented by means of tables as well as in figures. The chapter ends with decisions regarding the research hypotheses and a chapter summary, indicating the achieved research aims.

Chapter 7: Discussion and Integration of the results

This purpose of this chapter is to discuss and integrate the results. The chapter focuses on step 8 of the empirical investigation. The empirical research findings are integrated with the literature review, research aims and the objectives. The chapter outlines descriptive statistics, followed by discussions on the correlation analysis and inferential (multivariate) methods. The chapter ends with decisions regarding the research hypotheses and a chapter summary, indicating the achieved research aims.

Chapter 8: Conclusions, limitations and recommendations

The purpose of this chapter is to address the general aims to construct and test a model that explains the relationship between diffusion of innovation, technology acceptance, values and culture, attitude towards digital banking, and demographical characteristics. The research results are integrated and conclusions drawn in this final chapter. The limitations of the study will be explained.

1.13 CHAPTER SUMMARY

In this chapter, the background to and motivation for the research, problem statement, objectives of the study, paradigm perspectives, and research design and research methodology of the study were discussed. The motivation for this study is based on the fact that an exploration of the relationship that exists between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking, may assist companies and industrial psychologists in developing strategies and tactical solutions to drive the adoption of digital banking.

CHAPTER 2:

VALUES, CULTURE, DIFFUSION OF INNOVATION AND TECHNOLOGY ACCEPTANCE

This chapter presents a literature review of the independent variables of the study, namely, values, culture, diffusion of innovation, and technology acceptance. According to the literature, there are several factors that influence consumer attitudes towards DBC, which include: relative advantage, PEOU, PU, compatibility, complexity, trialability and subjective norms; all were found to influence attitude and intention (Sundara & Perera, 2018). Part of the first aim in the literature review is to theoretically explore factors influencing attitudes towards digital banking. Such factors are described in this study as values, culture, diffusion of innovation, and technology acceptance, as well as the related variables that exert influence on these constructs. Therefore, that will be the focus of this chapter.

It is important to mention that, although different theories are presented in this literature review, with a view to considering the different angles through which the aspect of attitude towards digital banking may be addressed, only selected ones (diffusion of innovation theory, technology acceptance, the Schwartz Values Framework, the Hofstede Culture framework, PAD Theory, and Theory of Planned Behaviour) are effectively applied in the empirical component of this research.

2.1 VALUES

The recent significant advances in digital technology have disrupted the traditional way of thinking and have brought new insight into doing financial transactions through digital banking. As a result, the financial systems in emerging economies have been strengthened, and financial inclusion for most segments of consumers has been enabled through sustainable and outreaching digital platforms. This is also impacting on values and culture (Khan, Hameed, & Khan, 2017). Values are pivotal in sustaining the cognitive domain of the individual, specifically with regards to aspects such as attitude formation and decision-making, and as a result, this will inform attitudes towards digital banking or the intention of adoption (Ungerer & Joubert, 2011). Values affect behaviour and attitudes and are therefore motivational drivers (Madarie, 2017).

2.1.1 Conceptualisation of values

A discussion of the concepts of values, as well as Schwartz's values theory, and relevant definitions and models are presented in this section.

The value concept unifies the apparently diverse interests of all the sciences concerned with human behaviour (Rokeach, 1973, in Schwartz, 2007). According to Schwartz and Sortheix (2018), values are related to our sense of comfort. Values also explain the motivational bases of attitudes and behaviour.

This theory addresses the basic values that people in all cultures recognise, and it identifies ten motivationally distinct types of values and specifies the dynamic relations among them. Although the nature of values and their structure may be universal, as has been mentioned, individuals and groups differ substantially in the relative importance they attribute to the values. That is, individuals and groups have different value "priorities" or "hierarchies" (Schwartz & Sortheix, 2018).

Every individual holds a set of values with varying degrees of importance; hence a particular value may be very important to one individual but insignificant to another (Madarie, 2017; Schwartz, 2012; Ungerer & Joubert, 2011).

Schwartz (2012) further explains that:

- **Values are beliefs** linked inextricably to affect. When values are activated, they become infused with feeling.
- **Values refer to desirable goals** that motivate action.
- **Values transcend specific actions and situations**, a feature which distinguishes them from norms and attitudes that usually refer to specific actions, objects, or situations.
- **Values serve as standards or criteria**; they guide the selection or evaluation of actions, policies, people, and events.
- **Values are ordered by importance** relative to one another. This hierarchical feature also distinguishes values from norms and attitudes.
- **The relative importance of multiple values guides action.** Any attitude or behaviour typically has implications for more than one value.

The trade-off among relevant, competing values guides attitudes and behaviours (Schwartz, 1992, 1996). Values influence action when they are relevant in the context and important to the individual, so that action is likely to be triggered (Schwartz, 2012; Schwartz & Sortheix, 2018; Simón, Pérez-Testor, Alomar, Danioni, Iriarte, Cormenzana, & Martínez, 2017).

In summarising, values are concepts or beliefs, pertain to desirable end-states or behaviours, transcend specific situations, guide selection or evaluation of behaviours and events, and are ordered in relative importance (Schwartz & Bilsky, 1990; Simón *et al.*, 2017). Therefore, every value is distinct from others because of the motivational goal that underlies it (Simón *et al.*, 2017).

2.1.2 Models of values

Schwartz (2012) defines ten broad values in terms of the broad goal each expresses, its grounding in universal requirements, related value concepts and the motivation that underlies each of them. These are: self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, and universalism.

Table 2.1 and Figure 2.1 present the defining goal for each of the ten broad values as defined by Schwartz (2012).

Table 2.1
Schwartz's values

VALUE DIMENSION	VALUE DESCRIPTION
Hedonism	Refers to emotional striving for pleasure or sensuous self-gratification, affection, indulgence and enjoying life with self at the centre of all (Schwartz, 2012).
Stimulation	Refers to arousal or an organismic need for cognitive experience that triggers innovation, creativity and challenge in life, in order to maintain an optimal, positive, rather than threatening, level of activation (Schwartz, 2012).
Power	Refers to attainment of dominance or control position over situations, people and other resources, through status and prestige (Schwartz, 2012).
Self-direction	Self-mastery and autonomy that produce independence of thought and action - choosing, creating, exploring, and self-regard (Schwartz, 2012).
Achievement	Refers to self-fulfilment which is demonstrated through capability aligned to social and prevailing cultural standards, thereby obtaining social approval (Schwartz, 2012).
Security	Refers to perceived risk neutral environment, stability of self and relationships, harmony, and wellbeing at family, social and macro-level (Schwartz, 2012).
Conformity	Refers to emotional and social intelligence by demonstrating courtesy and sportsmanship behaviours in a predictable manner (Organ, Podsakoff & Mackenzie, 2006; Schwartz, 2012).
Tradition	Refers to civic virtue, respect, commitment, and acceptance of the customs and ideas that one's culture or religion provides, and subordinating the self to socially imposed expectations and to more abstract objects such as religious and cultural customs and ideas (Organ <i>et al.</i> , 2006; Schwartz, 2012).
Benevolence	Refers to altruism or preserving and enhancing the welfare of those with whom one is in frequent personal contact, by being helpful, giving, and caring unconditionally, in family, primary groups, society and any other environment (Organ <i>et al.</i> , 2006; Schwartz, 2012).
Universalism	Refers to conscientiousness, understanding, appreciation, tolerance, and protection for the welfare of all humans, resources and environment (Organ <i>et al.</i> , 2006; Schwartz, 2012).

Source: Khan *et al.*, 2017; Madarie, 2017; Schwartz, 2017; 2015; 2014; Schwartz & Sortheix, 2018.

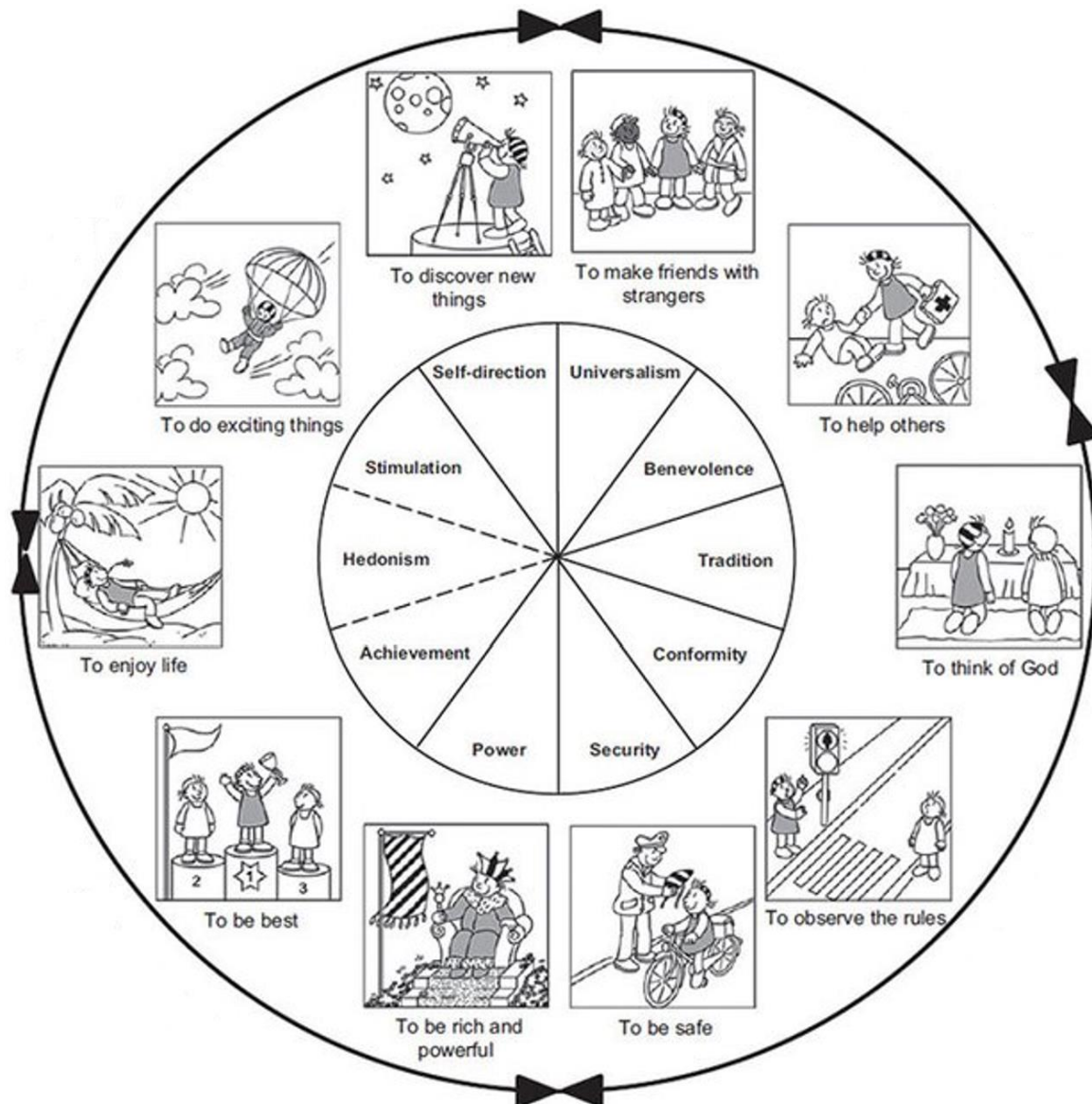


Figure 2.1
Illustration of Schwartz's values

Source: Adapted from Roccas, Sagiv, & Navon, 2017.

To measure the values, Schwartz developed a Portrait Value Questionnaire (PVQ), which helps to assess and predict observable behaviours (Schwartz *et al.*, 2001; Roccas *et al.*, 2017).

Schwartz (2017) has recently refined the values and introduced two more (humility and faith) that are recognised across cultures and that may yield worthwhile new insights. However, these will not be addressed in this study.

The circular structure of values (as illustrated in Figures 2.1 and 2.2) portrays the total pattern of relations of conflict and congruity among values, and represents a

motivational continuum. In Figure 2.2, tradition and conformity are located in a single wedge, given their compatibility in their broad motivational goal. The proximity of any two values in either direction around the circle, reflects the similarity of their underlying motivations: the more distant, the more incompatible their motivations (Schwartz, 2012).

An overview of the Schwartz Theory of Basic Values, which is a theoretical model of the relations among the ten motivational types of values, is illustrated in Figure 2.2 below.

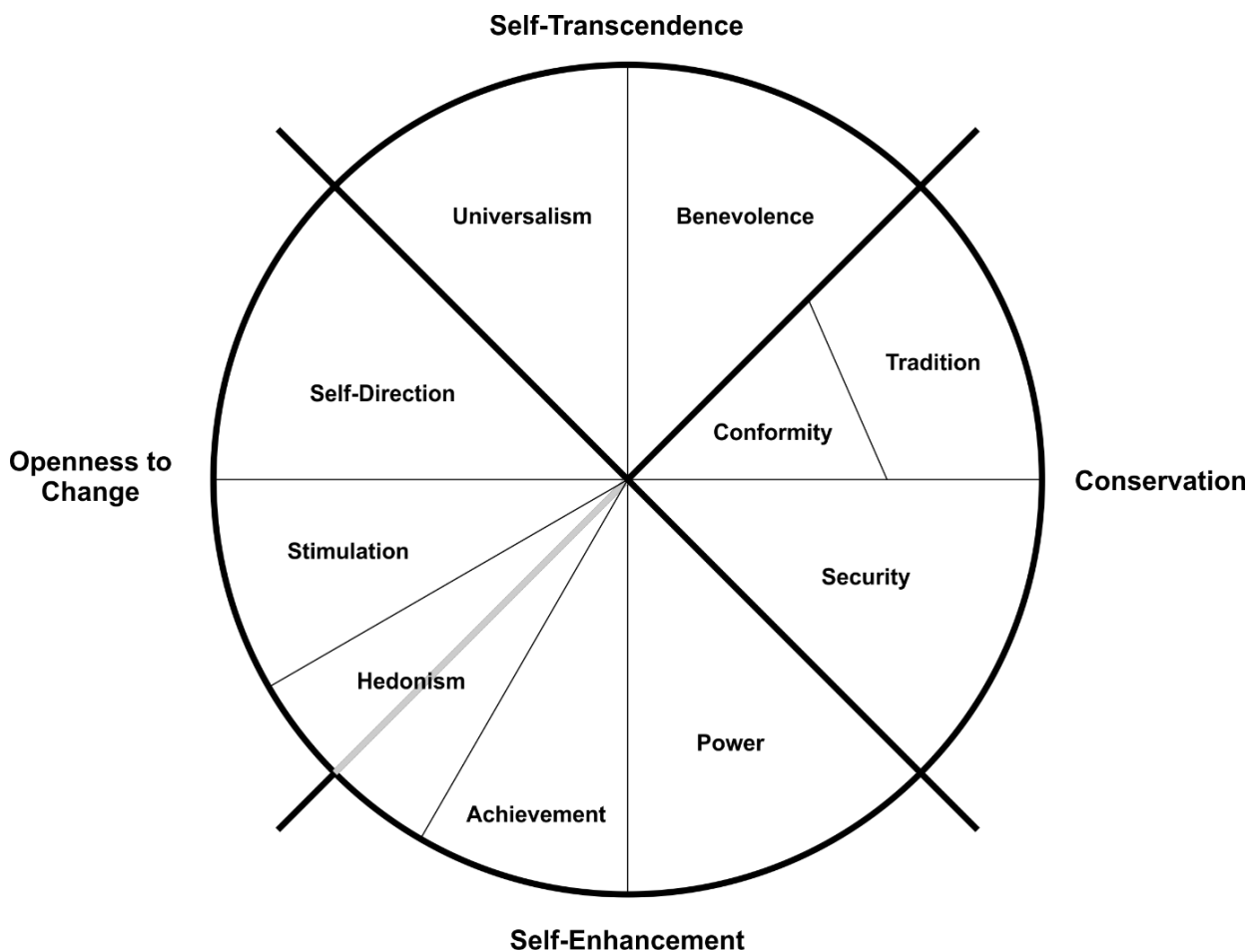


Figure 2.2
The Schwartz Theory of Basic Values model
Source: Schwartz, 2012.

Values are structured in two bipolar dimensions, and there is evident opposition between contending values (Schwartz, 2012). Figure 2.3 (on the next page) provides more information on the two dimensions identified by Schwartz (2012).

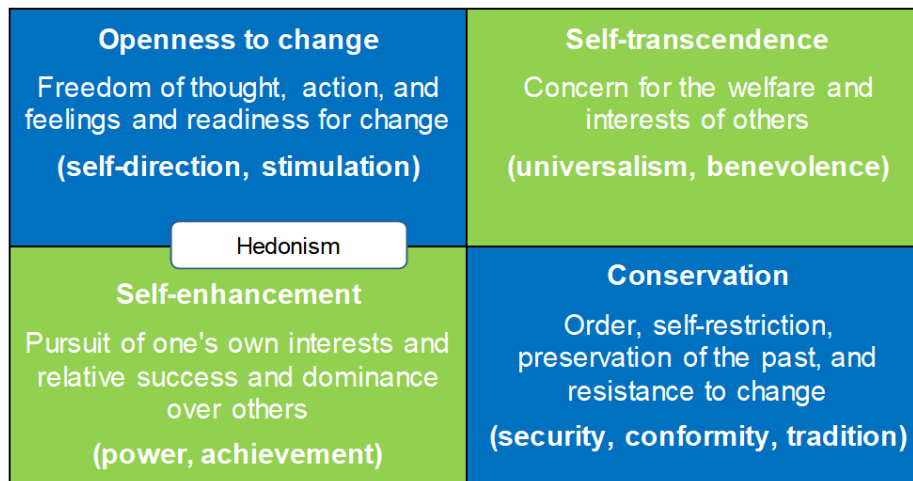


Figure 2.3
 Values structured in two bipolar dimensions

Source: Adapted from Schwartz, 2012.

Emotions may mediate relationship between values. Studies have revealed that people's values influence the emotions they desire to feel, and as a result they will endorse the values that trigger the desired and convenient emotion (Tamir *et al.*, 2016). Therefore, people who experience the emotions they desire to experience, whether positive or negative, are prone to be happier, because these are the result of their own choice, and they experience the emotions resulting from the endorsement of the content of their own values (Tamir *et al.*, 2016; Tamir, Schwartz, Oishi, & Kim, 2017).

2.1.3 The structure of value relations

Actions in pursuit of values have practical, psychological, and social consequences. Practically, choosing an action alternative that promotes one value may literally contravene or violate a competing value (Schwartz, 2012). The person choosing what to do may also sense that such alternative actions are psychologically dissonant. And others may impose social sanctions by pointing to practical and logical inconsistencies between an action and other values the person professes to uphold (Schwartz, 2012).

According to Schwartz (2012), what distinguishes one value from another is the type of goal or motivation that it expresses. As indicated, in his values theory Schwartz defines ten broad values according to the motivation that underlies each of them. Schwartz (2012) argues that these values are likely to be universal because they are grounded in one or more of three universal requirements of human existence with which they help the individual to cope: the needs of individuals as biological

organisms, requisites of coordinated social interaction, and the survival and welfare needs of groups. Schwartz further argues that individuals cannot cope successfully with these requirements of human existence on their own. Rather, people must articulate appropriate goals to cope with them, communicate with others about them, and gain cooperation in their pursuit. Values are the socially desirable concepts used to represent these goals mentally and the vocabulary used to express them in social interaction (Schwartz, 2012).

Schwartz (2012) asserts that although the theory distinguishes ten values, it postulates that, at a more basic level, values form a continuum of related motivations; this continuum gives rise to the circular structure. To clarify the nature of the continuum, Schwartz highlights the shared motivational emphases of adjacent values as follows:



Figure 2.4
Values continuum of related motivations

Source: Adapted from Schwartz, 2012.

2.1.4 Roots of the dynamic structure of value relations

According to Schwartz (2012), the structure of relations among values is common to all human societies; there is a dynamic principle that organises the structure of values, and congruence and conflict are among the values that are simultaneously implicated in decisions.

The dimension of openness to change versus conservation pertains to values that prompt people to follow their own intellectual and emotional interests in unpredictable and uncertain directions as opposed to preserve the status quo and the certainty it provides in relationships with close others, institutions, and traditions (Schwartz, 1992). The conformity, security, and tradition value types underlie the conservation pole, while the values of self-direction and stimulation form the openness to change pole. The second dimension, self-enhancement versus self-transcendence, encompasses values that motivate people to enhance personal interests as opposed to transcending selfish concerns and promoting the welfare of others or nature. Universalism and benevolence underlie self-transcendence, while power and achievement underlie the self-enhancement domain. It is proposed that the final value type, hedonism, is related to both openness to change and self-enhancement (Wang, Dou, & Zhou, 2008).

According to Wang *et al.* (2008), the motivational goals underlying the value types suggest that the dimension of openness to change versus conservation, and the related value types are especially pertinent to consumers' innovativeness. Therefore, adopting new technology, in general, means embracing new ideas, changing the present lifestyles, and taking and accepting risks. These are the qualities closely related to whether, and to what degree, a consumer is open to the changes introduced by market offerings. Although certain innovations may help enhance the consumer's feeling of achievement and power, the relevance of self-enhancement and self-transcendence may be more innovation-category specific, and the value of hedonism may be only applicable to a limited number of innovation categories. Empirical research has also demonstrated that the effect of the self-enhancement versus self-transcendence dimension on consumer innovativeness may be limited compared with that of the other dimensions (Steenkamp, Hofstede, & Wedel, 1999).

Schwartz (2007) states that our values are not merely passive recipients of influence. Value priorities cannot turn back the clock on age and rarely lead to changes in gender. But people's values do affect the level of education they attain; priorities for self-direction and achievement versus conformity and tradition values promote persistence through attaining higher education. Thus, some of the correlation between values and education reflects reciprocal influence.

Reciprocal influence also holds for many of the other life circumstances that affect values. Our value priorities influence whether we develop particular abilities. Previous research suggests that the micro-analytical bias in studying the adoption and diffusion of innovations seems to omit the values which influence the potential adopter of a new product, an important factor that serves to underline the importance of values in explaining and predicting consumption behaviour: A value refers to a single belief that transcends any particular object, in contrast to an attitude, which refers to beliefs regarding a specific object or situation. Values are more stable and occupy a more central position than attitudes within a person's cognitive system. Therefore, they are determinants of attitudes and behaviour, and hence, provide a more stable and inner-oriented understanding of consumers (Daghfous, Petrof, & Pons, 1999).

According to Daghfous *et al.* (1999), a reading of the literature reveals wide disparities in the research findings of the various authors. Only income, education level, professional status, age, and ethnicity variables seemed to display a significant link with the adoption behaviour of individuals (Adcock, Hirschman, & Goldstucker, 1977; Gilly & Zeithaml, 1985; Hirschman, 1980; Rogers & Shoemaker, 1971; Takele & Sira, 2013). Consumers with a stronger predisposition to adopt new products were generally found to be young and to possess a high professional status, income and educational level.

2.2 CULTURE

This section presents an overview of the concept of culture and Hofstede's Cultural Dimensions of Culture, and other relevant definitions and models.

Many change programmes fail because they seek to swim against the wave of clients' cultural values without steering toward clients' perceived needs. Change agents must have knowledge of their clients' needs, attitudes, and beliefs, their social norms and

leadership structure, if programmes of change are to be tailored to fit these clients (Rogers, 1983).

According to Leidner and Kayworth (2006), culture is often partially blamed when organisations experience failure. National culture has also been implicated in organisational failures. A first challenge in conducting research involving culture is that of arriving at an understanding of what culture is, given the myriad of definitions, conceptualisations, and dimensions used to describe this concept (Leidner & Kayworth, 2006; Straub, Loch, Evaristo, Karahanna, & Srite, 2002).

2.2.1 Conceptualisation of culture

Culture has been defined in numerous ways. Hofstede's (2011, p. 3) shorthand definition is: "Culture is the collective programming of the mind that distinguishes the members of one group or category of people from others" (see also Hofstede, 1997, p.5; Ayala, Demmler, & Solís, 2017). Another definition holds that culture is the enduring pattern of behaviour that defines the way interactions and transactions are done (Katzenbach, Oelschlegel, & Thomas, 2016; Ayala *et al.*, 2017).

According to Hofstede (2000), culture is a set of unique values and beliefs that guides the behaviour of people belonging to that culture. It is the means by which people communicate, perpetuate, and develop their knowledge about and attitudes toward life; these include shared values, beliefs, assumptions, expectations, perceptions and behaviour. Hofstede developed a definition of culture based on knowledge (Hofstede, 2000). Other spheres of application of the term culture exist, according to Hofstede (2011). Hofstede states that most commonly the term culture is used for tribes or ethnic groups (in anthropology), for nations (in political science, sociology and management), and for organisations (in sociology and management).

According to Kluckhohn (1962, p. 73), "Culture consists of patterns, explicit and implicit, of and for behaviour acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiments in artefacts". Even though previously the objective reality view of culture predominated (Berry, Carpenter, & Barratt, 2012), the symbolic view of culture has recently become dominant.

In Hofstede's (2011) definition of culture, the concept of groups or categories of people refers to people who are in contact with each other or who have something in common, such as nationality, gender, religion, and ethnicity (El Badrawy & El Aziz, 2011). Culture may also refer to the variation between values, beliefs and motivation of a diverse group and reflects individual core values and beliefs. These are formed through childhood and reinforced all through a person's life (Al-Smadi, 2012).

Hofstede (2011) argues that culture is always a collective phenomenon, but it can be connected to different collectives, and within each collective there is a variety of individuals. If characteristics of individuals are imagined as varying according to some bell curve, the variation between cultures is the shift of the bell curve when one moves from one society to the other; several sets of dimensions have been developed to characterise the concept of national culture.

In the second half of the twentieth century, scholars speculated about the nature of the basic problems of societies that would present distinct dimensions of culture. Hofstede further asserts that the most common dimension used for ordering societies is their degree of economic evolution or modernity, and affirms that a one-dimensional ordering of societies from traditional to modern fitted well with the nineteenth- and twentieth-century belief in progress. In his assertion, Hofstede argues that economic evolution is bound to be reflected in people's collective mental programming, but there is no reason why economic and technological evolution should suppress any other cultural variety. Hofstede adds that there exist dimensions of culture unrelated to economic evolution, and states that one of the weaknesses of much cross-cultural research is not recognising the difference between analysis at the societal level and at the individual level; and this amounts to confusing anthropology and psychology (Hofstede, 2011) .

According to Al-Smadi (2012), previous studies stressed the importance of culture in gaining a better understanding of information system adoption. Furthermore, Shore and Venkatachalam (1996) emphasise the role of culture when transferring information technology applications across culture; before any technology transfer, it is necessary to study user requirements and needs. Those needs and requirements are heavily influenced by culture. Hence, there is a need to explore the role of national culture as one of the factors likely to influence the acceptance of or resistance to

electronic banking services. Nonetheless, as intimated there is no generally accepted definition for culture (Al-Smadi, 2012).

According to Hofstede and Hofstede (2005), cultures have penetrated into every corner of our societies. As with the role of software in computers, culture works as the mental software for humans, which plays a significant role in forming our ways of feeling, thinking, and acting. Culture consists of the unwritten rules of the social game, while Cultural Relativism asserts that one culture has no absolute criteria for judging the activities of another culture as 'low' or 'noble' (Hofstede, 2005). According to Engel *et al.* (1995), it is accurate to state that basic consumer needs and decision processes are universal; nevertheless, there are major cultural differences in the ways in which motivation and behaviour are carried out in practice.

The major assertion of Hofstede's framework is that there are shared values, beliefs and norms that are culture specific; these factors can predict a wide range of human behaviour and practices. The basic thesis of a cognitive approach to culture is that processing frameworks acquired in one culture persist and influence behaviour even though contextual circumstances change (Hofstede, 2000; Jaafreh & Al-abadallat, 2012). Culture and values are discussed in a complementary manner by Schwartz (2012) and Hofstede (2000). This study therefore brings in a mixture of variables from both scholars, to understand the Mozambican consumer attitude toward the adoption of digital banking in a process moderated by demographic variables. The researcher tests how variables from both models predict a consumer's attitude when combined.

2.2.2 The role of culture in innovation acceptance and diffusion

Some socio-cultural elements can be modified, discontinued, or replaced with little impact, either positive or negative, depending on their significance. Certain innovations appear to have undesirable impacts on the majority of people in a social system (culture).

Every social system has certain qualities that should be maintained as a heritage to preserve the welfare of such a system, for example, aspects such as family bonds, respect for human life and property, preservation of individual respect and dignity, and appreciation for others, including appreciation for contributions made by the ancestors. Every system is expected to make provision for individuals' basic needs, improving the quality of life (Rogers, 1983). Innovation enhances the provision of the needs to

maintain a system's functionality. However, it is difficult to avoid making value judgments as to the desirable versus undesirable consequences of an innovation for individuals and their social system, because an innovation may be functional for a system, but not functional for certain individuals in the system (Rogers, 1983).

A study by Rudkin and Erba (2018) found that consumers reported a high level of uncertainty avoidance, suggesting that their daily life is guided by spoken and unspoken social rules which help maintain harmony and order. Gender revealed no significant differences, however, consumers' age and income were related to power distance and masculinity/femininity cultural dimensions. The results suggest significant positive correlation between power distance and age as well as between power distance and income, suggesting that the older consumers and the more income, the more the likelihood to accept and expect that power is distributed unequally (Rudkin & Erba, 2018).

Kalliny and Hausman (2007) argue that while most innovation research has focused on the innovativeness of the idea, there is an urgent need to consider consumers' perceptions of the adoption. Takada and Jain (1991) confirmed that diffusion of innovation is greater in high-context cultures. Further, the adoption of digital solutions is not fully understood; partially because of the lack of fit between technology and culture (Newman & Nollen, 1996; Ronen & Shenkar, 1985; Soh & Sia, 2004). It is claimed that the value system of the individual is critical to innovation adoption (Daghfous *et al.*, 1999). Therefore, there is an urgent need to analyse the effect of cultural characteristics on the process of diffusion of innovation. This study links two main cultural dimensions of Hofstede's measures, namely, individualism/collectivism and uncertainty avoidance, as regards innovation acceptance and diffusion (Dwyer, Mesak, & Hsu, 2005; Kalliny & Hausman, 2007).

The diffusion of innovation is said to be a complex process, involving large numbers of individual decisions, and the diffusion of any one innovation will be due to elements of both extreme hypotheses (Meade & Islam, 2006). Van den Bulte and Stremersch (2004, in Meade & Islam, 2006) conducted a meta-analysis study based on Bass's model applied to new product diffusion and national culture. The meta-analysis study revealed that ratios of diffusion are negatively associated with individualism (individualism means more immunity to social contagion) or positively associated with

collectivism; positively associated with power-distance (a measure of the hierarchical nature of the culture) (Meade & Islam, 2006). The assumption is that classes tend to adopt a new product at a similar time; positively associated with masculinity, in cultures where there is a clear distinction between genders (Meade & Islam, 2006).

Researchers also argue that the individualistic and collectivist mind-set is the most critical factor that affects innovation adoption (Chandrasekaran & Tellis, 2008; Dwyer *et al.*, 2005; Flight, Allaway, Kim, & D'Souza, 2011; Rudkin & Erba, 2018; Steenkamp *et al.*, 1999; Triandis, 1995). A study conducted by Rudkin and Erba (2018) suggests that, in collectivism societies, consumers perceive themselves and act predominantly as members of a larger and cohesive group or community. An individualist society is characterised by reliance on personal beliefs in making decisions, and group norms are not strictly followed, whilst in a collectivistic society, group consensus is critical to decision-making (Perez-Alvarez, 2009; Rudkin & Erba, 2018; Steenkamp *et al.*, 1999).

In individualist societies, people tend to be involved in several remote groups that affect their decisions in the long term, while collectivist societies are linked to one embedded group that affects their decisions in the short term. Therefore, in collectivist societies where embedding groups are influential, innovation acceptance is fostered at its early stage, whilst in individualist societies, innovation diffusion is influenced by the various remote groups, and may sometimes impact the level of innovativeness (Dwyer *et al.*, 2005; Rudkin & Erba, 2018).

Uncertainty avoidance is another critical cultural dimension that influences innovation adoption. It refers to the level of tolerance towards risk (Dwyer *et al.*, 2005; Hofstede 2001). A high uncertainty avoidance leads to a generation of rigid rules within the society, and is expected to slow the acceptance and diffusion of innovations (Dwyer *et al.*, 2005; Kalliny & Hausman, 2007; Perez-Alvarez, 2009; Rudkin & Erba, 2018). In cosmopolitan markets where the cultural heterogeneity of the population produces diverse value systems, the existence of various ethnic groups in such settings suggests the operation of different processes of enculturation (learning the values of one's own culture) and acculturation (learning the values of the host culture) (Daghfous *et al.*, 1999).

2.2.3 Models of culture

In this section, the Hofstede culture model which is composed of six dimensions is presented and explained.

2.2.3.1 The Hofstede Culture Model

Geert Hofstede (a Dutch scholar) applied the model in his original study (Hofstede, 1980) to IBM employees in the different subsidiaries of the company in different countries, between 1967 and 1973, and culturally characterised the 40 largest countries in the world. To date, his study has been replicated in more than 76 countries, both by himself (Hofstede, 2001) and other scholars, such as Minkov and Hofstede (2014), Ayala *et al.* (2017), and Hofstede (2017a).

Dimensions of culture

Consisting of six dimensions (power distance, individualism-collectivism, masculinity-femininity, uncertainty avoidance, long-term/ short-term orientation and indulgence-restraint), the Hofstede model has become a useful and widely recognised assessment instrument to study cultures of different groups, segments of groups, societies and countries (Ayala *et al.*, 2017; Hofstede, 2017a).

Hofstede (2000) identified four main cultural dimensions that form a model for differences among national cultures: individualism-collectivism, masculinity-femininity, power distance, and uncertainty avoidance (Ayala *et al.*, 2017; El Badrawy & El Aziz, 2011; Jaafreh & Al-abadallat, 2012). In the 1980s, on the basis of research by Canadian psychologist Michael Harris Bond centred in the Far East, a fifth dimension, long-term versus short-term orientation, was added (Hofstede, 1991; Hofstede, 2001; Hofstede, 2011; Hofstede & Bond, 1988). The World Values Survey undertaken by Minkov (2007) allowed a new calculation of the fifth, and the addition of a sixth dimension (Hofstede, Hofstede & Minkov, 2010).

According to Hofstede (2011), the dimensions are statistically distinct and do occur in all possible combinations, although some combinations are more frequent than others and are labelled as follows.

Table 2.2
Hofstede culture dimensions

Culture dimension	Culture description
Power distance	Refers to the extent to which the less powerful members of society, organisations and organisms, such as family, accept and expect that power is distributed unequally; it is related to different solutions to the basic problem of human inequality (Ayala <i>et al.</i> , 2017; Hofstede, 2011; Clearly Cultural, 2017a).
Uncertainty avoidance	It is related to the level of stress in a society in the face of an unknown future. Refers to the extent to which the members of a culture feel threatened by uncertain or unknown situations, to society's tolerance for ambiguity by establishing strict behavioural codes, laws and rules and expected behaviours, precision, high censure of unconventional ideas and deviant attitudes, and a belief in absolute truth with a view to minimising situations of uncertainty. Such cultures are less tolerant towards innovation (Ayala <i>et al.</i> , 2017; Hofstede, 2011).
Individualism -Collectivism	This is related to the integration of individuals into primary groups. Refers to the degree to which people in a society are integrated into groups, where individual interests prevail over the group interests, versus societies in which the group interests prevail over the individual interest. In the individualist culture, individuals are expected to look after themselves and their immediate family. Within the collectivist culture people are integrated into strong, cohesive in-groups, often extended families that continue protecting them in exchange for unquestioning loyalty (Ayala <i>et al.</i> , 2017; Hofstede, 2011; Hofstede, 2017c).
Masculinity- Femininity	This concerns the division of emotional roles between women and men. Refers to the distribution of values between the genders. Masculinity stands for a society in which social gender roles are clearly distinct, while femininity stands for a society in which social gender roles overlap. The women in feminine countries have the same modest, caring values as the men; in the masculine countries they are somewhat assertive and competitive, and accord high importance to the achievement of goals (Ayala <i>et al.</i> , 2017; Hofstede, 2011; Hofstede, 2017c).
Long-Term - Short-Term Orientation	This is related to the choice of focus for people's efforts: the future or the present and past. This cultural dimension is based on the concepts of time and immediacy. Short-term orientation cultures are characterised by the beliefs that the past experience and the here and now are more important than the future; reverence for traditions is key; pride in one's own nation and heritage; a great value is placed on altruism and benevolence; luck determines success or failure; Security and self-protection is

Culture dimension	Culture description
	<p>important. Long-term oriented cultures are characterised by such thinking as: the future is very promising and brings about important events; attitude is critical to adapt in circumstances of change and transformation; circumstances can transform traditions; perseverance is vital; the amount of effort will inform the success or failure; it is important to invest and save to secure a future (Ayala <i>et al.</i>, 2017; Hofstede, 2011; Hofstede, 2017c).</p>
Indulgence - Restraint	<p>This encompasses the gratification versus control of basic human desires related to enjoying life. Indulgence stands for a society that allows relatively free gratification of such desires. Indulgent cultures are characterised by both hedonism and stimulation, which result from freedom, expression, fewer boundaries and directives. Individuals have the perception of control over their lives, accord importance to pleasure as well as the pursuit of positive emotions and are inclined to activities that bring arousal, such as sports. Conversely, restraint stands for a society that controls gratification of needs and regulates it by means of strict social norms. Restraint cultures employ the dominant mode, and are characterised by the pursuit of security and control as critical aspects (Ayala <i>et al.</i>, 2017; Hofstede, 2011; Hofstede, 2017c).</p>

Talcott Parsons and Edward Shils (1951, p. 77 in Hofstede, 2011) suggested that all human action is determined by five pattern variables, evident in choices between pairs of alternatives, as listed in Table 2.3 below.

Table 2.3
Hofstede culture dimensions in pairs of alternatives

ALTERNATIVE A			ALTERNATIVE B
1	Affectivity (need gratification)	versus	Affective neutrality (restraint of impulses);
2	Self-orientation	versus	Collectivist-orientation
3	Universalism (applying general standards)	versus	Particularism (taking particular relationships into account);
4	Ascription (judging others by who they are)	versus	Achievement (judging them by what they do)
5	Specificity (limiting relations to others to specific spheres)	versus	Diffuseness (no prior limitations to nature of relations).

Source: Hofstede, 2011

Recent studies confirm the effect of cultural factors on the adoption of digital banking in African countries. Using the Hofstede culture theory, the studies revealed the positive moderation effects of five cultural dimensions on usage behaviour, namely, individualism/collectivism, uncertainty avoidance, long-term/ short-term, masculinity/ femininity, and power distance (Khan, Hameed, & Khan, 2017).

2.3 DIFFUSION OF INNOVATION

Cognisant that digital banking is part of innovation, the researcher believes that it is worthwhile to address the aspects of diffusion of innovation in the literature review.

It is commonly witnessed that even when the advantages of an innovation are evident, it can be challenging for a new idea to be adopted; hence one needs to examine the reason why many innovations take time from the moment of their availability to their effective adoption. This period increases the gap between what is already part of people's knowledge and what is actually being used.

Hence the need to understand what could be the factors that may enable the speeding up of the diffusion of existing innovations, as well as those still to come (Rogers, 1983).

Machiavelli (1513) was wise to admit that an innovator makes enemies with all those who are used to prospering under the status quo, so that only a superficial support is extended by those who are not likely to prosper from such an innovation. Walter Bagehot (1873), scholar of physics and politics, reinforced this view by stating that a new idea inflicts one of the greatest pains on human nature, because it makes one believe that, after all, one's most valuable ideas may no longer be perceived as right or may become obsolete. This is the reason why new ideas may not be welcome to common people, and as a result, an individual who has originated such ideas is deliberately neglected (Rogers, 1983).

2.3.1 Conceptualisation of diffusion of innovation

Innovation is most often seen in, or is related to, any technological inventions, whether these are devices or systems. This section considers the relevant content of diffusion of innovation.

In essence the diffusion of innovation concept may be backdated to more than a century ago, when it was derived from the Laws of Imitations (*Les Lois de l'imitation*) proposed by Gabriel Tarde, a Professor of Modern Philosophy at the Collège de France, and a judge (*juge d'instruction*) who lived during the late 18th and early 19th centuries (1843-1904) (Tarde, 1903). Through these laws, Tarde viewed diffusion of an innovation as the result of conscious and unconscious social imitations among individuals (Kee, 2017), and adaptation and invention (Franklin H. Giddings in Tarde, 1903). Tarde (1903) argued that the Laws of Imitations represent an exposition of the facts and laws of universal repetition, in which elements undergo endless repetition, combined in concrete groups, bodies, systems, and especially, mental and social systems, in a logical process. By observing the process of how innovations have been diffused to date, and are associated with the various aspects of culture, and personal and social values, one can agree with Gabriel Tarde that any innovation is diffused through conscious or unconscious imitation (Kee, 2017).

However, the diffusion of innovation research originated from work characterised by quantitative empiricism, functionalism and positivism, carried out in the USA by social scientists of the "empirical school". Thereafter, European scholars, who generally followed the classical diffusion paradigm, in the late 1950s conducted diffusion studies that had been pioneered by Ryan and Gross (1943). Then, during the 1960s, diffusion

research caught on in the developing nations of Latin America, Africa, and Asia (Rogers, 1983; 1981).

According to Rogers and Shoemaker (1971), there was initially a belief that most diffusion research methods and theoretical generalisations were cross-culturally valid; and the diffusion process seemed to be generally similar in both Third World nations and in the developed or industrialised nations. During the 1970s, this belief was challenged, and critical voices began to be raised about the cultural importation of diffusion research into Third World nations. The key intellectual issue was the cultural appropriateness of social science research being applied under very different socio-cultural conditions in the Third World (Rogers, 1983). This situation has been evidenced even in socio-cultural environments which share similarities. Even at present, the application of the diffusion of innovation assessment instrument may not be understood by the different socio-cultural layers of a society or community.

As stated in Rogers (1983), it should not be assumed that the diffusion and adoption of all innovations are necessarily desirable, nor that all innovations are perceived as beneficial. Hence, the same innovation may be desirable for one adopter in one situation but undesirable for another potential adopter in a different situation. Admittedly, there are some harmful and uneconomical innovations that are generally not desirable for either the individuals or social systems (Rogers, 1983). Examples of undesirable innovations are linked to those that are commonly used by criminals and do not contribute to social harmony.

According to Rogers (1983), consumers of an innovation are more concerned with the consequences, advantages and disadvantages that it may bring to them as opposed to understanding the innovation itself, its applicability and its benefits. Getting a new idea adopted, even when it has obvious advantages, is difficult (Rogers, 2003; p. 1).

2.3.2 Definitions of key terms

This section lists definitions and explanations of some important terms and concepts as used in the current study.

2.3.2.1 Diffusion

Kee (2017) describes *diffusion* as the communication process through which an innovation travels or spreads through certain channels from a person or any unit of

adoption to another within a social system over time. According to Rogers (1983), it is the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas (Rogers, 1983). In a nutshell, diffusion is transmission of new ideas.

2.3.2.2 Innovation

Kee (2017) describes an *innovation* as being an object, technology, behaviour, practice, programme, or idea which is perceived as new to potential adopters. Conversely, Rogers (1983) describes an innovation as an idea, practice, or project that is perceived as new by an individual or other unit of adoption (Rogers, 2003). Rogers argues that an innovation may have been invented a long time ago, but if individuals perceive it as new, then it may still be an innovation for them, and it matters little whether such an idea is "objectively" new, as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation. Newness in an innovation need not merely involve new knowledge. Someone may have known about an innovation for some time but not yet developed a favourable or unfavourable attitude toward it, nor have adopted or rejected it. The "newness" aspect of an innovation or characteristic of an adoption happens in three steps, namely, knowledge, persuasion, or a decision to adopt (Rogers, 2003).

Therefore, diffusion of innovation can be defined as the process of communicating new ideas or technology on a larger scale.

Kee (2017) describes *adoption* as being the decision to accept or reject an innovation, and the subsequent implementation, discontinuance, and/or modification by the potential adopter. Kee further asserts that adoption is an individual process that leads to diffusion as a systemic process, and points out that studies of adoption tend to focus on the perspective of the adopters, while studies of diffusion usually examine the perspectives of the market and society as a whole. Kee argues that although diffusion and adoption are commonly used together in the literature, the two are different levels of processes. Kee also mentions, in addition to adoption, another term that the scholar believes is commonly used in conjunction with diffusion: dissemination.

In his study, Kee (2017) distinguishes *dissemination* and *diffusion* by describing dissemination as being the active push and promotion of an innovation toward members of a social system, whereas diffusion is the organic spread of an innovation from one member to another. A key distinction is that a dissemination effort often employs mass communication strategies, while diffusion usually takes place through interpersonal communication (Kee, 2017).

Rogers (2003) claims that a diffusion effect is the cumulatively increasing degree of influence upon an individual to adopt or reject an innovation, resulting from the activation of peer networks about the innovation in the social system.

In the light of the above, a precondition for innovation is the perception of newness.

Changing people's customs is an even more delicate responsibility than surgery. – (Edward H. Spicer, 1952, p. 13).

Innovativeness is the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system. Innovativeness is one of the best single indicators of the success of development programmes. Innovativeness indicates behavioural change, the ultimate goal of most diffusion programmes, rather than cognitive or attitudinal change (Rogers, 1983).

Change agents should pursue a segmentation strategy of greatest resistance, in which communication efforts are concentrated on the sub-audiences who are lowest in socio-economic status, who feel the least need for the innovation, and who would otherwise be the last to adopt (Rogers, 1973, p. 408). An unfortunate consequence of the tendency of change agents to concentrate their efforts on their elite clients, while largely ignoring the hard-to-get sub-audience of the late majority and laggards, is that of widening gaps between the information-rich and the information-poor in a social system

The units in a system who adopt first, are generally least in need of the benefits of the innovation. This paradoxical relationship between innovativeness and the need for benefits of an innovation tends to result in a wider socio-economic gap between the higher and lower socio-economic individuals in a social system. Thus, one consequence of many technological innovations is to widen socio-economic gaps in a social system. Accordingly, a paradox occurs in which those who might seem to need

an innovation most are the last to adopt it, as already mentioned. The other reason for the paradoxical tendency of those who most need an innovation to adopt it last, is that change agents often follow a segmentation strategy of *least resistance*, in that they especially contact the socio-economic elites, who are often most receptive to innovations (Rogers, 2003)

According to Sahin (2006), Rogers (2003) defined the *rate of adoption* as “the relative speed with which an innovation is adopted by members of a social system” (p. 221), in terms of the logic that the number of individuals who adopted the innovation for a period of time can be measured as the rate of adoption of the innovation. The perceived attributes of an innovation are significant predictors of the rate of adoption. Rogers reported that 49-87% of the variance in the rate of adoption of innovations is explained by these five attributes.

2.3.2.3 The innovation-decision process

Rogers (2003) defines the innovation-decision period as the length of time required to pass through the innovation-decision process. Rogers described this process as an information search and processing activity by the individual, with a view to reducing uncertainty with regards to advantages and disadvantages of an innovation (Rogers, 2003).

According to Rogers (2003), the innovation-decision process involves five sequential stages that follow each other in a chronological order: (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation.

This process is listed in Table 2.4 below.

Table 2.4
Diffusion of innovation states

Innovation stage	Description
Knowledge stage	The individual learns about the existence of innovation
Persuasion stage	The individual shapes his or her attitude as result of knowledge about the innovation; this might be a favourable or unfavourable attitude toward the latter
Decision stage	The individual makes the choice to adopt or reject the innovation, by evaluating advantages, disadvantages, costs, benefits, and trade-offs.
Implementation stage	Reinvention of the innovation in the preparation for its adoption and implementation
Confirmation stage	The individual seeks supportive opinions that confirm his or her decision
Adoption stage	The individual adopts the innovation based on the perceived attributes of the innovation

Source: Rogers, 2003

2.3.2.4 Adopter categories

Based on the level of innovativeness, the adopters can be categorised as listed in Table 2.5 below (Rogers 2003).

Table 2.5
Innovation adopter categories

Category	Description
Innovators	Champions or gatekeepers who introduce the innovation in the system. They are willing to experience new ideas and are prepared to cope with unprofitable and unsuccessful innovations, and a certain level of uncertainty about the innovation.
Early adopters	Sponsors of innovation and role models with favourable attitudes towards innovations, who validate a new idea by adopting it.
Early majority	Cautious, and adopt the innovation just before the rest of their peers adopt it, assessing the benefits and risks before adopting an innovation.
Late majority	Risk averse, they wait until the majority have adopted the innovation, embark when they feel that it is safe to adopt.
Laggards	Conservative and more sceptical with lack of awareness-knowledge about innovations; they first want to make sure that an innovation works before they adopt it.

Source: Rogers, 2003

Braak (2001) (in Rogers, 2003) described innovativeness as a relatively-stable, socially-constructed, innovation-dependent characteristic that denotes an individual's willingness to change his or her habits.

As Figure 2.5 shows, the distribution of adopters is a normal one (Sahin, 2006).

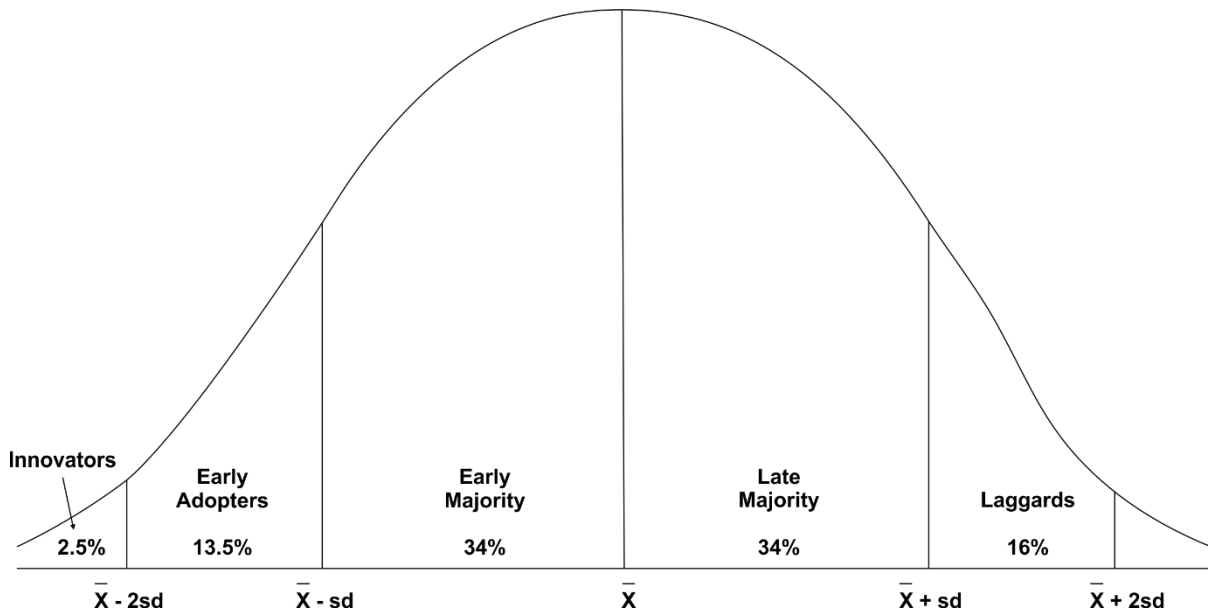


Figure 2.5
Adopter categorisation on the basis of innovativeness

Source: *Diffusion of Innovations* (5th) by Everett M. Rogers. Copyright (c) 2003 by The Free Press. Reprinted with permission of the Free Press: A Division of Simon & Schuster.

The bell curve of adoption represents adopters of successful innovations, however, it does not include incomplete adoption and non-adoption.

2.3.3 Models of diffusion of innovation

2.3.3.1 Rogers' Model of Diffusion of Innovation

Researchers in the concept of diffusion of innovation have experienced conceptual and methodological issues in setting boundaries with regard to technological innovations, especially in terms of determining the end-point and the beginning of a new one. Only the adopters can provide the answer because they are the ones who perceive it.

In Rogers' model (Rogers, 1983; 2003), the scholar proposed what was termed "Attributes of Innovations", and labelled five predictors of the rate of adoption of an innovation. Rogers (2003) described the diffusion of innovation process as "an

uncertainty reduction process” (p. 232), and asserts that individuals’ perceptions of the following characteristics predict the rate of adoption of innovations. According to Rogers (2003), the following attributes of innovations help to decrease uncertainty about the innovation: (1) relative advantage, (2) compatibility, (3) complexity, (4) trialability, and (5) observability, as listed and discussed in Table 2.6 below.

Table 2.6
Dimensions of Diffusion of Innovation Theory

Dimension	Description
Relative advantage	The degree to which an innovation is perceived as being better than the idea it supersedes, or as providing more benefits than its predecessor (Roger, 2003; Sahin, 2006; Moore & Benbasat, 1991; Al-Jabri & Sohail, 2012; Ganiyu & Adeosun, 2013).
Compatibility	This is the degree to which an innovation is perceived as consistent with the consumers’ existing values, beliefs, habits, present and past experiences, and needs of potential adopters (Al-Jabri & Sohail, 2012; Ganiyu & Adeosun, 2013; Rogers, 2003).
Complexity	The degree to which an innovation is perceived as relatively difficult to understand and use, or the extent to which it is perceived as not user-friendly (Al-Jabri & Sohail, 2012; Ganiyu & Adeosun, 2013; Rogers, 2003)
Trialability	Refers to the degree to which an innovation may be experimented with, on a limited basis, or else, the ability to experiment with new technology before adoption (Rogers, 2003; Agarwal & Prasad, 1998; Rogers, 2003; Tan & Teo, 2000; Al-Jabri & Sohail, 2012; Ganiyu & Adeosun, 2013).
Observability	The degree to which the results of an innovation are visible to others or to members of a social system, and where the benefits can be easily observed and communicated (Rogers, 2003; Al-Jabri & Sohail, 2012). Moore and Benbasat (1991) simplified the original construct by redefining observability into two constructs: visibility and result demonstrability (Al-Jabri & Sohail, 2012).

Source: Rogers, 2003

The model illustrated in Figure 2.6 below was employed by Al-Jabri and Sohail (2012) in their study of the factors that influence the adoption of mobile banking, using satisfaction as the dependent variable.

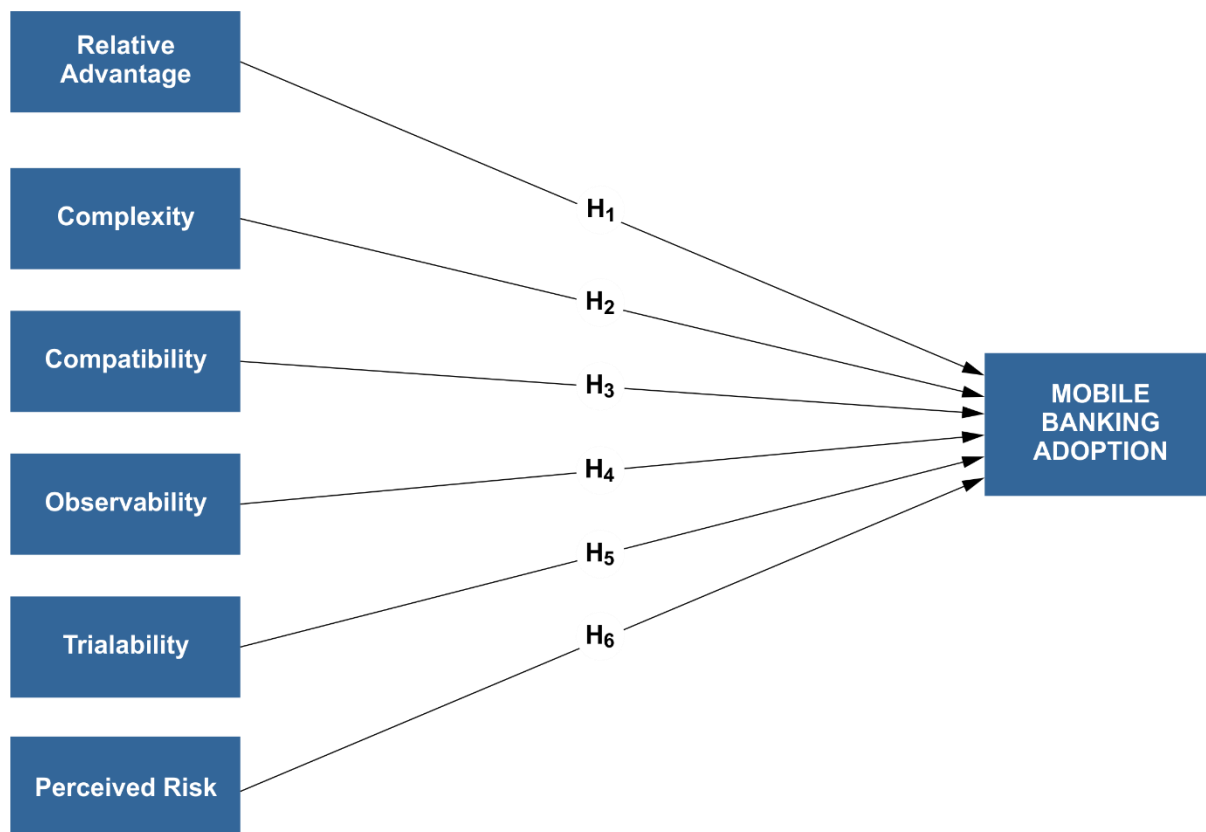


Figure 2.6
The research model

Source: Al-Jabri & Sohail, 2012

They added perceived risk as one of the variables that influences diffusion of innovations. According to Ram and Sheth (1989) (in Al-Jabri & Sohail, 2012), perceived risk refers to the degree of risks in using an innovation. Technology inconsistency or failure usually triggers a perception of risk by customers in their judgment and real behaviour. In technology adoption, there is research evidence of the importance of the perception of risk in deploying new technology or services (Al-Jabri & Sohail, 2012).

2.4 TECHNOLOGY ACCEPTANCE

This section presents relevant definitions and models related to technology acceptance.

The Technology Acceptance Model (TAM), derived from the Theory of Reasoned Action (TRA) which was developed by Fishbein and Ajzen in 1975, was originally intended to explain computer behaviour and to model user acceptance of information technology (Davis *et al.*, 1989).

When Davies (1985-1986) introduced the TAM, was motivated by two main objectives: (1) providing new theoretical insights for the successful design and implementation of information systems that enhance understanding of user acceptance or rejection of new information technology, and (2) providing a theoretical framework for practical "user acceptance testing" to enable system designers and implementers to assess any system prior to its implementation (Davis, 1986; Lai, 2017; Taherdoost, 2018).

Davis asserts that the features determine the degree of actual system usage, and there is an intervening motivational response from the user. The characteristics of the system or device determine user motivation (Davis, 1986; Lai, 2017; Taherdoost, 2018).

2.4.1 Conceptualisation of technology acceptance

The TAM is one of the most widely used models that can be applied in different fields of science to enable the study of technology acceptance and adoption, given that it provides reliability and consistency in predicting system usage. The TAM explains the intention to adopt technology from a three-factor perspective, establishing that perceived usefulness (PU) and perceived ease of use (PEOU) determine a favourable or unfavourable attitude towards an intention, which will result in behaviour to use, or not use, a technology (Taherdoost, 2018).

Davis (1989) introduced the TAM, which is based on the attitude–behaviour paradigm from cognitive psychology, in an attempt to explain the motivation to accept new technology. The model provides a basis for tracking the impact of external factors on internal beliefs, attitude, and behaviour (Davis *et al.*, 1989; Lai, 2017; Taherdoost, 2018).

As indicated, the TAM posits that the attitude toward using an information system is based on two primary antecedent variables, namely, PU and PEOU.

In general, the variables related to the behavioural intention to use information technology, or to the actual use of information technology, may be grouped into four categories: the individual context, system context, social context, and organisational context. While the social context signifies the social influence on personal acceptance of information technology use, the organisational context emphasises any organisation's influence on or support of one's information technology use. The

scholars, Hong, Thong, Wong and Tam (2002) identified relevance, system visibility, and system accessibility as organisational context variables. They reported that their study of a digital library found that the organisational context affects both the PU and PEOU. Lin and Lu (2000) similarly reported that higher information accessibility brings about higher use of information and higher PEOU. In their study, Lin and Lu (2000) found that e-learning accessibility refers to the degree of ease with which a university student can access and use a campus e-learning system as an organisational factor (see also Sung Youl Park, 2009).

According to Lee (2009), and as previously mentioned, the TAM hypothesises that system use is directly determined by the behavioural intention to use, which is in turn influenced by the users' attitudes toward using the system and the PU of the system. Attitudes and PU are also affected by PEOU, which is a person's salient belief that using the technology will be free of effort (Taylor & Todd, 1995). PU, reflecting a person's salient belief in the use of the technology, will be helpful in improving performance. To Lee (2009), the appeal of TAM lies in the fact that it is both specific and parsimonious and displays a high-level prediction power with regards to technology adoption and usage. These determinants are also easy for system developers to understand and can be specifically considered during system requirement analysis and other system development stages. These factors are common in technology-usage settings and can be applied widely to solve the acceptance problem (Taylor & Todd, 1995).

Usefulness and ease of use (EOU) are both believed to be important factors in determining the acceptance and use of information systems. Yet, confusion exists among both researchers and practitioners regarding the nature of the relationship between these two constructs and the relative importance of each in relation to use. While prior research suggests that usefulness is more important than EOU, many developers continue to put a disproportionate amount of emphasis on EOU (Keil, Beranek, & Konsynski, 1995).

According to Keil *et al.* (1995), with regards to prior literature on the usefulness construct, in terms of diffusion of innovation, usefulness can be mapped to the concept of "relative advantage," or the degree to which the innovation is perceived as better than existing practice. Relative advantage has consistently been shown to be among

the more important factors governing the adoption and diffusion of innovations. In a meta-analysis of the innovation literature, Tornatzky and Klein (1982, in Keil *et al.*, 1995) concluded that relative advantage was positively related to adoption. Hence, the diffusion of innovation literature implies a positive correlation between usefulness and use.

Keil *et al.* (1995), in analysing prior literature on the EOU construct, assert that in diffusion of innovation terms, EOU can be viewed as inversely related to the concept of *complexity*. Rogers and Shoemaker (1971 in Keil *et al.*, 1995, pp 77) define the complexity of an innovation as "the degree to which an innovation is perceived as relatively difficult to understand and use". Complexity has consistently been shown to be among the more important factors governing the adoption and diffusion of innovations (Keil *et al.*, 1995).

According to Cheng, Lam and Yeung (2006), PU is the key determinant of user acceptance of Information Technology (IT). The results reported by Moon and Kim (2001) reveal that PEOU has a more significant effect on attitude than PU in the digital context, and perceived playfulness (an intrinsic motivational factor) has a more significant effect on attitude than PU (an extrinsic motivational factor) (Cheng *at al.*, 2006).

2.4.2 Models of technology acceptance

The TAM provides a basis for explaining how external variables, through the mediating effect of two cognitive beliefs (PU and PEOU), influence belief, attitude, and intention to use information technology (Davis, 1989; Lai, 2017; Taherdoost, 2018). Table 2.7 below lists the TAM dimensions and their descriptions relevant to the current study.

Table 2.7
Technology Acceptance Model (TAM) dimensions

	TAM DIMENSION	TAM DIMENSION DESCRIPTION
1	Perceived Usefulness (PU)	This is the degree to which a person believes that using a particular system would enhance his or her banking performance
2	Perceived Ease of Use (PEOU)	This refers to the degree to which a person believes that using a particular system would be free of effort

The original TAM was developed by Fred Davis in 1986 as part of his doctoral thesis, and is presented in Figure 2.7 below (Lai, 2017; Ahmad, 2018). Thereafter, the first modified version of TAM is presented in Figure 2.8.

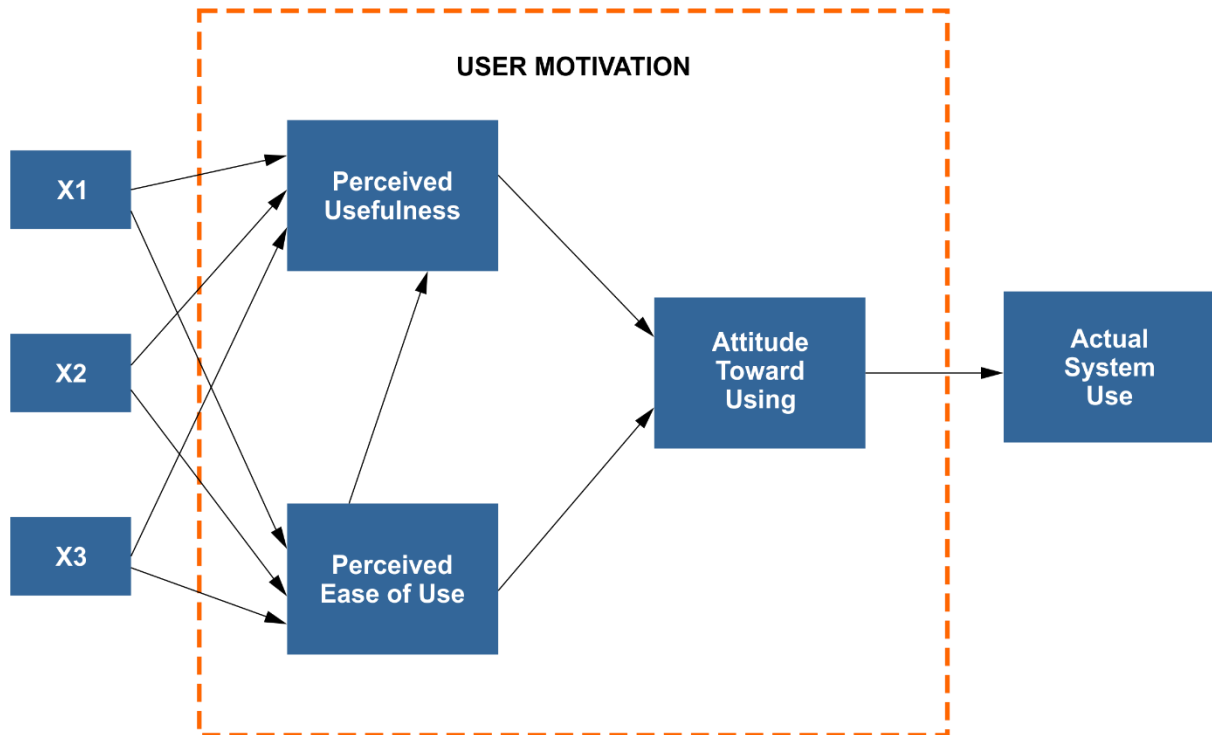


Figure 2.7
Original technology acceptance model (TAM)

Source: Davis, 1985; Lai, 2017; Ahmad, 2018

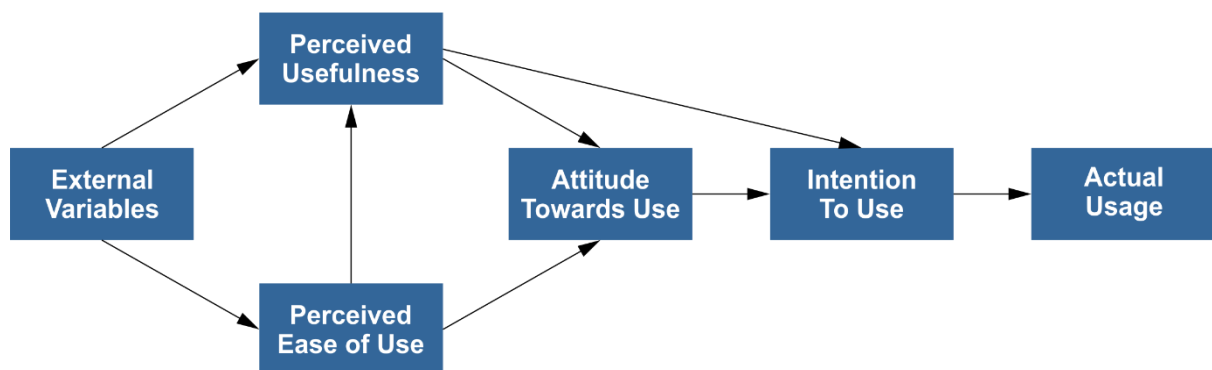


Figure 2.8
First modified version of TAM

Source: Davis *et al.*, 1989; Lai, 2017

The final version of TAM, namely TAM2 (graphically illustrated in Figure 2.9 below) was introduced by Venkatesh and Davis (1996) and is based on the finding that both PU and PEOU have a direct influence on behaviour and intention (Lai, 2017).

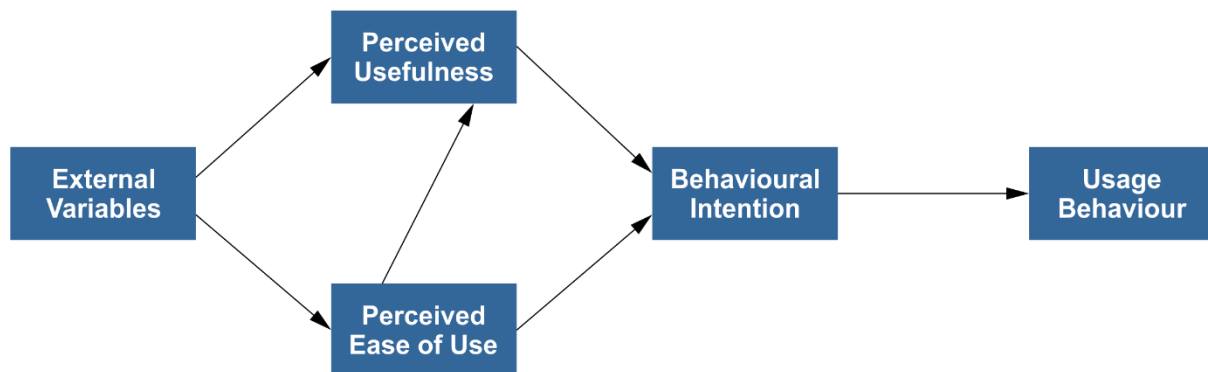


Figure 2.9
TAM2, the final version of TAM
Source: Venkatesh & Davis, 1996.

TAM appears to be able to account for 40% to 50% of user acceptance. As intimated, the theory has evolved over time. The TAM2 (illustrated in Figure 2.9) extended the original model to explain PU and usage intentions including social influence (subjective norm, voluntariness, and image), cognitive instrumental processes (job relevance, output quality, and result demonstrability) and experience. The new model was tested in both voluntary and mandatory settings. The results strongly supported TAM2 and explained 60% of user adoption using this updated version of TAM (Venkatesh & Davis, 2000). This study therefore adopted TAM2 as the baseline model, in addition to TAM.

As suggested in TAM2, the subjective norm, one of the social influence variables, refers to the perceived social pressure to perform, or not to perform the behaviour (Ajzen, 1991). It seems important to determine how social influences affect the commitment of the user toward use of the information system for understanding, explaining, and predicting system usage and acceptance behaviour (Malhotra & Galletta, 1999).

Cheng *et al.*'s (2006) study investigated the behavioural intention of customers to use internet banking services with a focus on users' perceptions of EOU and usefulness of internet banking, and of security in using this new technology to meet their banking needs. These scholars chose TAM as the baseline model for their study, because according to their argument, it is a well-tested model related to users' acceptance of

technology. They then augmented TAM with the construct Perceived Web Security as a predictor of attitude and intention to use, in the assumption that this intention is influenced by attitude, PU, PEOU and Perceived Web Security.

Cheng *et al.*'s (2006) study also revealed that, in addition to PU, perceived web security has a strong and direct effect on the acceptance of internet banking that was not taken into consideration in previous research on TAM in the internet banking context. They found out that perceived web security directly influences intention, rather than passing through the intervening variable of attitude. Sathye's (1999) survey revealed that over 70% of customers expressed concerns regarding web security and the actual benefits when considering internet banking. These concerns measured the highest of all factors, such as difficulty of use and no internet access.

Al-Somali, Gholami and Clegg (2009) investigated the determinants of customer attitudes towards online banking acceptance in Saudi Arabia using an extended TAM. They took into account the effect of what they considered a few additional important control variables, such as the quality of internet connection, awareness of online banking and its benefits, social influence, computer-related self-efficacy, trust, resistance to change and demographic characteristics. According to Al-Somali *et al.* (2009), many studies recognise that demographic factors impact significantly on consumer attitudes and behaviour regarding online banking. They argue that PEOU and PU influence an individual's attitude towards using online banking; in turn, their attitude will influence the intention to use online banking services and therefore influence the actual use of online banking. Actual use will be predicted by an individual's adoption intention (AI). Hence, they proposed the model graphically illustrated in Figure 2.10 below.

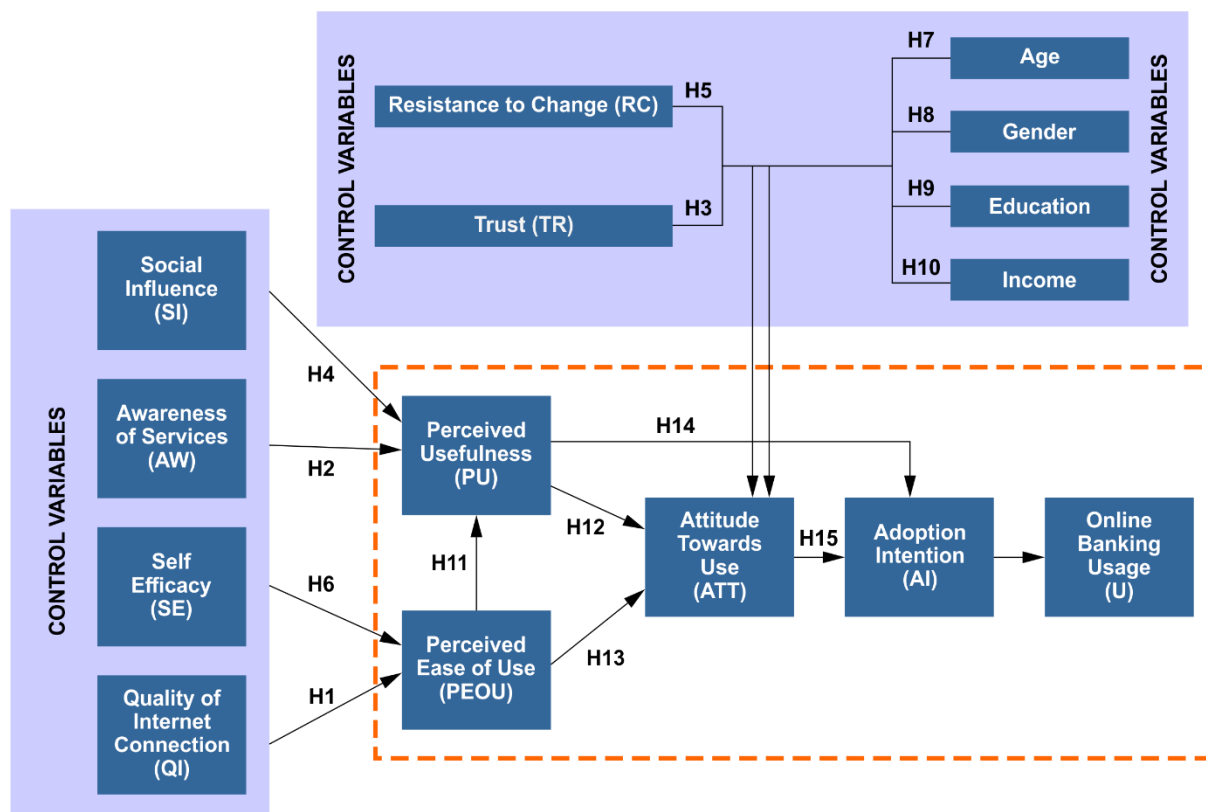


Figure 2.10
Proposed research model – the extended TAM of Al-Somali *et al.*

Source: Al-Somali *et al.*, 2009

The results of the study by Al-Somali *et al.* (2009) revealed that there are 12 variables with significant statistical support. As noted, the quality of the internet connection, the awareness of online banking and its benefits, the social influence and computer self-efficacy are correlated significantly with the PU and PEOU. Moreover, PU and PEOU are correlated with the attitudes towards use (ATT). The results of the statistical analysis of the research model showed that PU has significant correlation with intention to use or adopt (AI). Education, trust and resistance to change are also correlated with the attitude towards the likelihood of use. However, age, gender and income are not correlated with ATT. Trust, age, gender and education explained 85% of the variance in attitude towards online banking use. Education significantly impacted customer attitudes towards using online banking. Surprisingly, age and gender had no effect on attitudes towards use.

Takele and Sira (2013) integrated the TAM, and Fishbein and Ajzen's (1975) Theory of Reasoned Action (TRA); their model consists of factors that influence e-banking adoption, as well as constructs that are related to social, behavioural and technological

issues derived from different theories and models previously developed in relation to the acceptance of a new technology.

2.5 INFLUENCES ON DIFFUSION OF INNOVATION, VALUES, CULTURE, AND TECHNOLOGY ACCEPTANCE

This section presents a summary overview of the range of variables or factors influencing the independent variables in the current study, namely, diffusion of innovation, values, culture, and technology acceptance.

As noted, Rogers (2003) asserted that relative advantage, compatibility, complexity, trialability, and observability are five attributes that influence diffusion of innovation, since they help to decrease uncertainty about the innovation. Rogers described the diffusion of innovation process as “an uncertainty reduction process” (p. 232), and predicted the rate of adoption of innovation. Rogers (2003) also acknowledged that earlier adopters have greater empathy, greater ability to deal with abstractions, greater rationality, greater intelligence, may be less dogmatic, hold a more favourable attitude toward change, are abler to cope with uncertainty and risk, are less fatalistic, and have higher levels of achievement motivation than later adopters.

As previously discussed, Schwartz (2012) defined ten dimensions of values in terms of the broad goal they express, their grounding in universal requirements, related value concepts, and the motivation that underlies each of them. Schwartz’s ten dimensions of values are: self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, and universalism.

As mentioned, Hofstede (2000) identified four main cultural dimensions that are determinants for culture. To reiterate, the literature also reports that individualism and collectivism are the most critical factors that affect innovation adoption (Triandis, 1995; Steenkamp *et al.*, 1999; Chandrasekaran & Tellis, 2008; Dwyer *et al.*, 2005; Flight *et al.*, 2011).

It will be recalled that in the TAM (Davis, 1989), Davis *et al.* (1989), and Sanayei and Bahmani (2012) posit that PU and PEOU are the main determinants of the attitudes (AT) toward using a new technology.

2.6 CHAPTER SUMMARY

Chapter 2 addressed part of the first research aim, namely to theoretically conceptualise and explore diffusion of innovation, technology acceptance, values, culture and attitudes towards adoption, with regards to the adoption of technology, as independent variables. The description of values, culture, diffusion of innovation, the TAM and relevant variables influencing these constructs were also discussed in this chapter.

Therefore, the purpose of the above literature chapter has been achieved.

Chapter 3 discusses attitude toward digital banking, with the aim of providing further clarity regarding the second research question.

CHAPTER 3:

ATTITUDES TOWARD DIGITAL BANKING

Part of the first aim in the literature review is to theoretically conceptualise variables influencing attitudes towards digital banking, as well as the related variables that exert influence on these constructs. This chapter will therefore focus on attitudes towards digital banking.

During the early part of the twenty first century the future of banking was depicted by Roger (2003) as an, electronic bank. There are no bank offices and counters, just computer terminals and screens on which the customers make financial transactions. The 60 000 customer accounts are managed by no more than 40 employees, plus one large computer server. Because of its low overhead costs, this German bank pays 1% higher interest rates than other banks. However, on the downside, the international bankers' association and the bank employees' labour union were concerned about the effect of electronic banking on future unemployment rates.

3.1 CONCEPTUALISATION

According to Lin (2011) the friendly and easy to use interfaces of digital banking services, should predispose users to form positive attitudes towards them.

3.1.1 Definitions of behavioural variables related to attitude to digital banking

This section presents an in-depth discussion of these variables conceptualised and introduced in Chapter 1.

3.1.1.1 Attitude

Attitude is a learned predisposition to behave favourably or adversely towards the environment, change, technology, or any subject, in a consistent manner (Crano & Gardikiotis, 2015; Katz, 1960; Macamo, 2007). Therefore, one could define attitude as an unconscious response mechanism towards objects.

According to Schwartz (2012), attitudes are evaluations of objects as good or bad, desirable or undesirable. These evaluations may concern people, behaviours, events, or any object, whether specific (ice cream) or abstract (progress). They vary on a

positive/negative scale. Values underlie our attitudes; they are the basis for our evaluations.

3.1.1.2 Attitude toward the behaviour

Attitude toward the behaviour refers to the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question. It is viewed as an individual's predisposition towards a particular behaviour (Ajzen, 1991; Fishbein & Ajzen, 1975; Lai, 2017; Mansour *et al.*, 2014; Nchise, 2012; Nguyen *et al.*, 2018; Taherdoost, 2018).

Ajzen and Fishbein (1980) have demonstrated that an individual's attitude towards any object can be predicted with a high degree of accuracy from the knowledge of the individual's beliefs about the attitude object and the evaluation aspect of these beliefs.

To examine consumers' attitudes towards digital banking Lee (2009) defends the integration of TAM and TPB (theory of planned behaviour).

The figure below provides an integrated model of of both TAM and TPB:

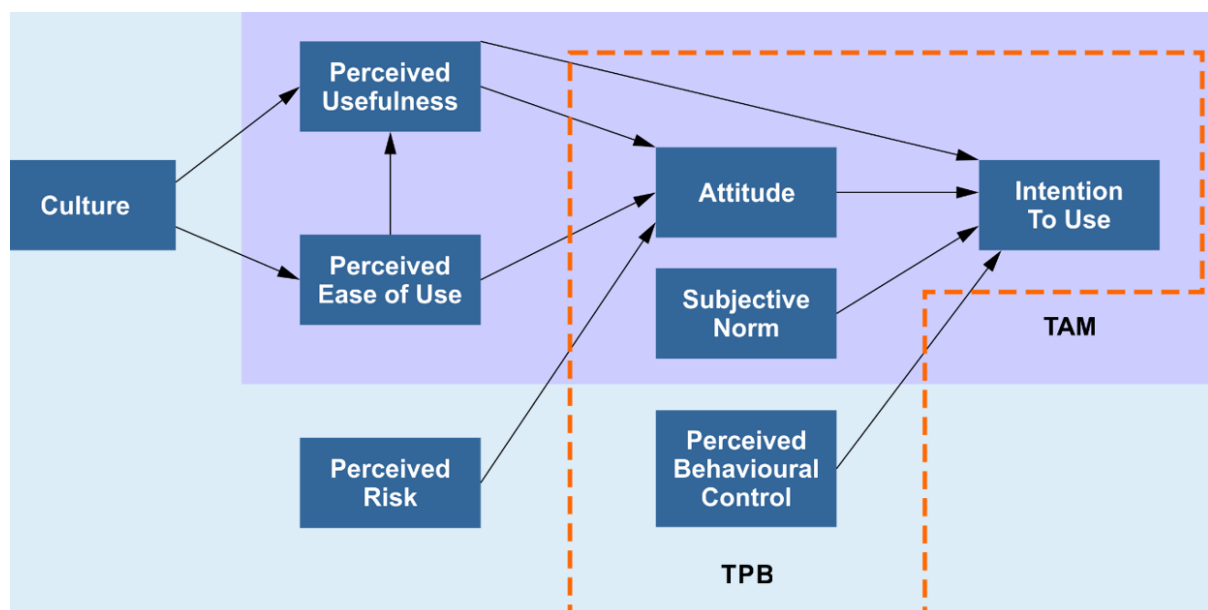


Figure 3.1
The proposed research model

Source: Al-Smadi, 2012, p.307

3.1.2 The Theory of Planned Behaviour

Subjective norms, perceived behaviour control and behavioural intentions are all addressed under the Theory of Planned Behaviour (TPB), which is an extension of one of the commonly used theories in the study of attitude, namely, the Theory of Reasoned Action (TRA). The TRA was proposed by Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980) and addresses factors that influence behavioural intention on the individual's attitudes (Ajzen, 1991; Nchise, 2012; Lai, 2017; Taherdoost, 2018).

The TRA postulates that an individual will intend to perform a particular behaviour when he or she evaluates it positively; this is influenced by behavioural beliefs, which determine the attitudes based on the individual's belief about the consequences of performing such behaviour weighted on the basis of the outcome evaluations of such consequences (Ajzen, 1991; Nchise, 2012; Lai, 2017; Taherdoost, 2018). Therefore, an attitude is an individual's salient belief as to whether the outcome of his or her behaviour will be positive or negative.

The TRA determines that the actual behaviour is the product of two variables, attitudes and subjective norms, in the individual, and establishes that an increase in attitude and subjective norms leads to a stronger intention to perform a particular behaviour.

Conversely, subjective norms are assumed to be a function of beliefs that individuals approve or disapprove of the behaviour. Beliefs that underlie subjective norms stem from the influence of other people which leads one to conform in order to be liked and accepted by them, and are labelled as normative beliefs, alluding to what the individual perceives to be his or her immediate social sphere's attitude to a certain behaviour (for example, my family, friends and colleagues are using internet banking; it is in vogue and therefore I should adopt it) (Ajzen & Fishbein, 1980; Nchise, 2012).

An individual may not condone or agree with certain practices, yet normative social influence places pressure on him or her to comply with the group's social norms. Such normative social influence has been shown to impose a high persuasive influence on individuals, to the extent that the individual will develop a behavioural intention when he/she perceives that the social environment expects that he/she will demonstrate such behaviour (Nchise, 2012; Nguyen, *et al.*, 2018). In the case of the adoption of digital banking, this presupposes that many will adopt it because they perceive others doing so.

As indicated, TRA was developed and tested on the assumption that the behaviour under scrutiny is conscious, and TRA was found to be a model that predicts behavioural intentions and behaviour with reasonable accuracy, and was also found to be useful to come up with strategy and design methods for behavioural changing. Ajzen (1985), proposed an extension of the TRA model, by proposing the Theory of Planned Behaviour (TPB). TPB incorporates an additional variable, the Perceived Behavioural Control (PBC) as an antecedent to behavioural intentions. TPB goes beyond the limits of will and includes beliefs regarding the control of necessary resources, and opportunities for displaying certain behaviour. It established that the more resources and opportunities individuals believe they possess, the greater will be their perceived behavioural control over the behaviour (Madden, Ellen, & Ajzen, 1992).

The Ajzen (1991) TPB provides a useful conceptual framework for understanding and explaining behavioural patterns, as well as individuals' behavioural decision-making. Scholars argue that every behaviour is preceded by the formation of an intention towards it (Nchise, 2012; Satsios & Hadjidakis, 2018).

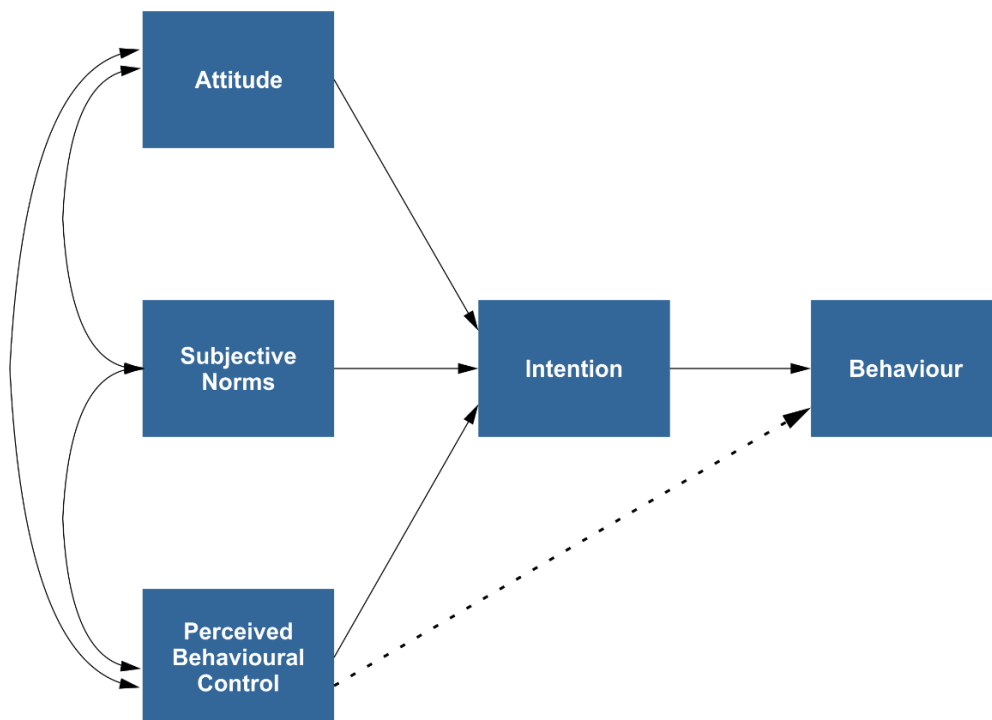


Figure 3.2
The Theory of Planned Behaviour model

Source: Ajzen, 1991, p. 182

The central fact of TPB is the individual's intention to perform a given behaviour, and it addresses the issues of predicting behaviour, which leads to perceived behavioural

control and intentions, on the assumption that intentions capture the motivational factors that influence behaviour. The underlying principle is that the stronger the intention to engage in behaviour, the more likely should be its performance (Ajzen, 1991).

3.1.2.1 Behavioural intention

According to Altawallbeh, Thiam, Alshourah and Fong (2015), intention is a psychological construct that describes an individual's drive in the form of a conscious decision to exert effort to perform a particular behaviour.

Psychological theory addresses the relationship between attitude and behavioural intention. Ajzen and Fishbein (1980) argued, in their TRA, that an individual's behavioural intention is a product of his or her attitude toward the behaviour and subjective norms (see also Hall, Elliott, & Meng, 2018). An intention is consequently the result of attitude and norms, through a process of reasoning on behavioural performance based on personal factors (our attitude towards performing the behaviour) and social factors (our subjective norm-performing behaviour, influenced by perceptions of social acceptance (Ajzen, 2012).

The intentions to perform behaviours of different kinds can be predicted with high accuracy from attitudes toward the behaviour, subjective norms, and perceived behavioural control; and these intentions, together with perceptions of perceived behavioural control, account for considerable variance in actual behaviour (Ajzen, 1991).

3.1.2.2 Subjective norms

This term refers to the perceived social pressure to perform or not to perform the behaviour, which comprises perceived influences that others may exercise on the individual or self (Ajzen, 1991; Fishbein & Ajzen, 1975; Lai, 2017; Nchise, 2012; Nguyen *et al.*, 2018; Taherdoost, 2018).

3.1.2.3 Perceived behavioural control

This phrase refers to the perceived ease or difficulty of performing the behaviour and is assumed to reflect past experience, as well as anticipated impediments and obstacles (Ajzen, 1991; Fishbein & Ajzen, 1975; Lai, 2017; Nchise, 2012; Nguyen *et al.*, 2018; Taherdoost, 2018).

Based on the above, it can also be established that the presence of attitude reveals the presence of emotions, and such emotional context produces an observable behaviour. Therefore, it is relevant to understand emotions, and in so doing link these back to attitude (Macamo, 2007). Emotions are subjective collective functional behaviours and action-predispositions that exert significant influence on the individual's cognitive, perceptive and behavioural domains, and vary across cultures (Geethanjali, Adalarasu, Hemapraba, Kumar, & Rajasekeran, 2017).

3.1.3 The Pleasure-Arousal-Dominance (PAD) Theory

The PAD theory was initially developed by Mehrabian and Russell and published in 1977 (Russell & Mehrabian, 1997), through a manual annotation of English words, of which it contains 151. The annotators used the PAD model for the representation of emotions for the first time, and ever since then, the PAD model has been a reference model (Bakker, Van der Voordt, Vink, & De Boon, 2014; Hall *et al.*, 2018; Landowska, 2018).

Mehrabian and Russell (1974) introduced pleasure (satisfaction), arousal (stimulation) and dominance (control) as three independent emotional dimensions to describe people's state of feeling. These scholars viewed the concepts of pleasure, arousal and dominance as informing an individual's attitude towards behaviour (Bakker *et al.*, 2014; Hall *et al.*, 2018; Mehrabian, 1996; Mehrabian & Russell, 1974).

Researchers discovered that the psychology behind pleasure, arousal and dominance is linked to the distinction between feeling, thinking, and acting (Bakker *et al.*, 2014). Bakker *et al.* (2014) and Mehrabian (1996) suggest that future research should view and conceive pleasure and arousal as affective and cognitive concepts, respectively, and dominance as a conative concept, to help improve the understanding, interpretation and measurement of this dimension (Bakker *et al.*, 2014).

According to Schiffman and Kanuk's (2004) Tricomponent Attitude Model, attitudes consist of three major components, namely, cognitive, affective, and conative. Cognitive is linked to the individual's belief system, while affective refers to the individual's emotions or feelings of towards an object, and conative denotes the behavioural intention or predisposition to perform (Macamo, 2007; Schiffman & Kanuk, 2004).

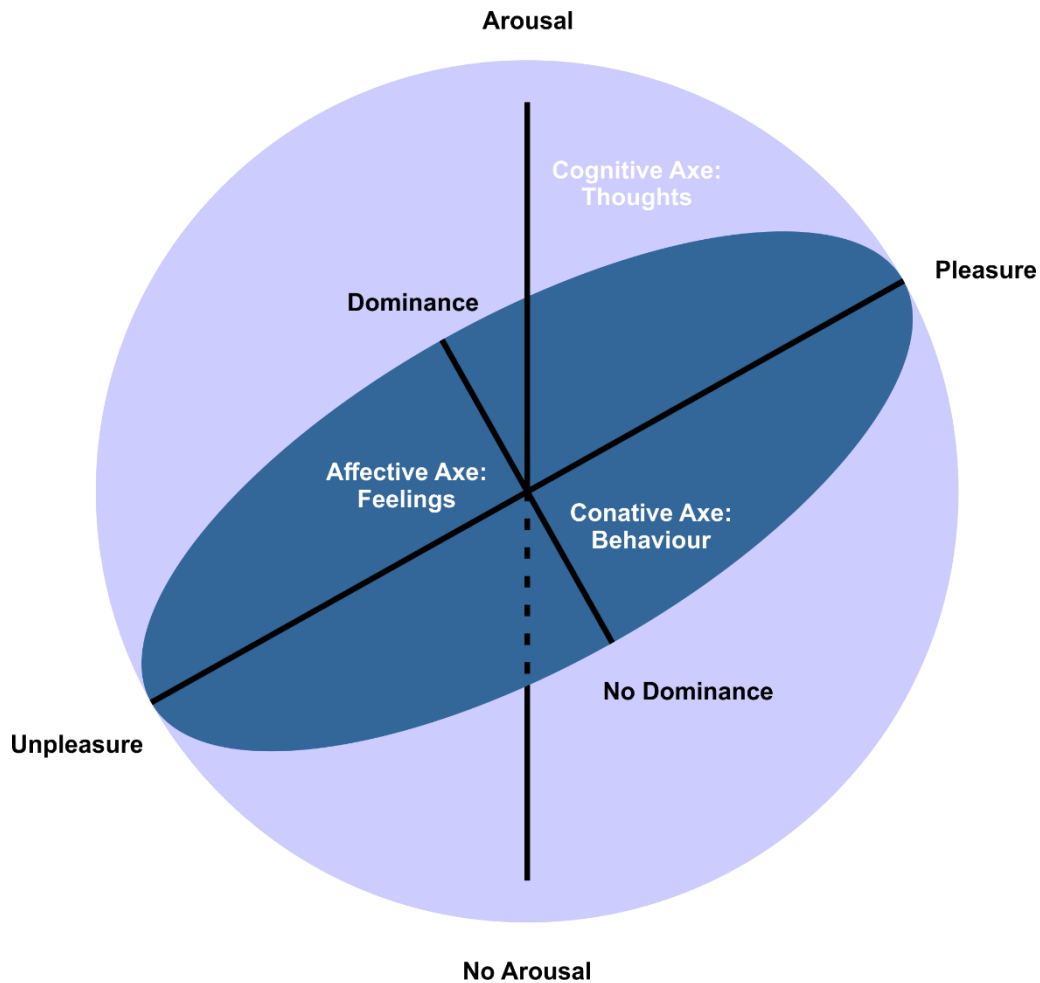


Figure 3.3
 Three dimensional model of pleasure, arousal and dominance
 Source: Bakker & Boon, 2012; Bakker *et al.*, 2014

3.1.3.1 The Self-Assessment Manikin (SAM)

The Self-Assessment Manikin (SAM) was originally invented by Lang (1980) (see also Hodes, Cook & Lang, 1985). It uses a picture-oriented instrument to directly assess the associated pleasure, arousal and dominance in response to events or objects (Bradley & Lang, 1994).

The SAM is a useful tool for assessing and determining the subjective manifestation of emotions associated with stimuli processing, and given its features can easily be applied to diverse segments of individuals in different settings, languages and cultures, it allows for the rapid structural assessment of emotional and affective dimensions (Bradley & Lang, 1994).

To understand the attitudes investigated in this study, the researcher made use of the PAD theory, through the use of SAM, to assess the attitude towards digital banking.

This framework was found to be practical for this research, to address the attitude given its focus on emotions. The SAM, a more cognitive non-verbal manikin, psychophysiological in nature, was employed to explore more subconscious behavioural responses, which are revealed in the emotional context that drives the attitude (Bekker *et al.*, 2014; Bradley & Lang, 1994; Landowska, 2018; Russell & Mehrabian, 1997).

Through the SAM, participants express the emotional contents associated with their general feelings, and these inform their attitude or particular emotive predisposition, which serves as an indication of how favourable or unfavourable the individual's attitude towards DBC is (Bekker *et al.*, 2014; Landowska, 2018).

Figure 3.4 below presents an illustration of the SAM and the semantic differential related to it.

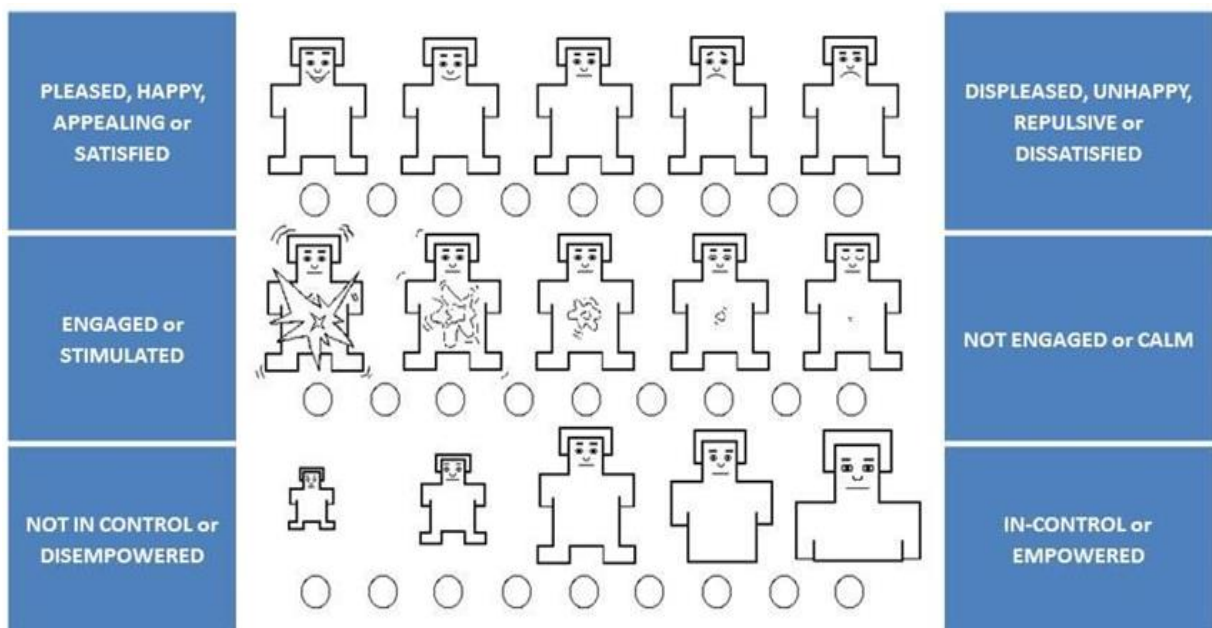


Figure 3.4
Measuring emotion: the Self-Assessment Manikin and the semantic differential

Source: Bakker *et al.*, 2014; Bradley & Lang, 1994.

3.1.3.2 Model of PAD theory

Table 3.1 lists and describes the dimensions of the PAD theory.

Table 3.1
Dimensions of PAD theory

ATTITUDE DIMENSION		ATTITUDE DESCRIPTION
1	Pleasure	Refers to the affective domain of the individual. It is related to the extent to which the individual perceives the environment as satisfying, enjoyable or unfriendly, ranging from extreme pain or unhappiness to extreme happiness, and differentiates positive from negative emotions.
2	Arousal	Refers to the cognitive domain of stimulation. It reveals the extent to which the individual perceives the environment to be stimulating or exciting. It can be described as a differentiation between active and passive emotional states, or a mental activity defining the state of activation, and the degree of excitement or stimulation experienced by the individual.
3	Dominance	Refers to the conative domain or perception of power. It informs one as to whether the individual feels in control, or not, in the environment. It alludes to the extent to which individuals feel controlling or restricted in their behaviour and ranges from control to submissiveness.

Source: Bakker *et al.*, 2014; Hall *et al.*, 2018; Mehrabian, 1996; Mehrabian & Russell, 1974

Researchers have been applying the pleasure and arousal dimension extensively in various studies, although the model is constructed in terms of all three domains (Bakker *et al.*, 2014; Hall *et al.*, 2018). For the present study, it is believed to be pertinent to include the dominant dimension, given the fact that the three domains have an influence on each other: for instance, dominance, the perception of power and control over a digital channel or a device, may also influence the pleasure and the arousal in the attitude towards digital banking. The dominance dimension will present us with the conative aspect of the attitude, which is crucial for innovation adoption, with particular emphasis on digital banking (Hall *et al.*, 2018).

In their study, Chang, Chih, Liou and Hwang (2014) analysed arousal in terms of two sub-dimensions: “Energetic arousal” and “Tense arousal”. The first sub-dimension explores the positive aspects of arousal, such as feeling energised, stimulated, active, and revitalised. Conversely, the “Tense arousal” sub-dimension focuses on the negative emotional domains, such as anxiety, nervousness, uneasiness, and feeling

uncomfortable. These scholars discovered that dominance positively impacted on “energetic arousal” which in turn positively impacted on pleasure, while on the contrary, dominance had a negative impact on “tense arousal”, which in turn had a negative impact on pleasure. However, these authors did not discover any direct relationship between the dominance and pleasure dimensions (Chang *et al.*, 2014; Hall *et al.*, 2018). A research study by Hsieh, Hsieh, Chiu and Yang (2014) discovered that both dominance and arousal directly influence pleasure (Hall *et al.*, 2018; Hsieh *et al.*, 2014).

Previous studies tended to focus less on the dominance dimension, overlooking its relevance, given the misperception of its being less important than arousal and pleasure. Hall *et al.* (2018) suggest that all three dimensions should be treated as relevant, as originally suggested by Mehrabian and Russell (1974). In their study, Hall *et al.* (2018) discovered that there are interrelationships between the three dimensions of the PAD model, and argued that studies in which the three dimensions are analysed as completely independent from each other may fail to leverage the complexity, richness, and explanatory power of the PAD model.

These scholars concluded that the three dimensions are likely to influence each other. Furthermore, the dominance dimension could directly influence both the arousal and pleasure dimensions, whilst arousal is deemed to directly influence the pleasure component. Therefore, the PAD model is a useful instrument in understanding individuals’ surrounding environments. The pleasure may result in a more favourable attitude toward digital banking, as well as arousal. In addition, dominance may also result in a favourable attitude, if the individual perceives they are in control of their environment. However, if a perceived lack of control is dominant, this may result in a negative experience for the individual, impacting the degree of excitement felt or stimulation attained (arousal) as well as the achieved degree of enjoyment (pleasure) (Hall *et al.*, 2018).

Researchers on PAD theory arrived at the following model (path coefficient) as compiled by Hall *et al.* (2018).

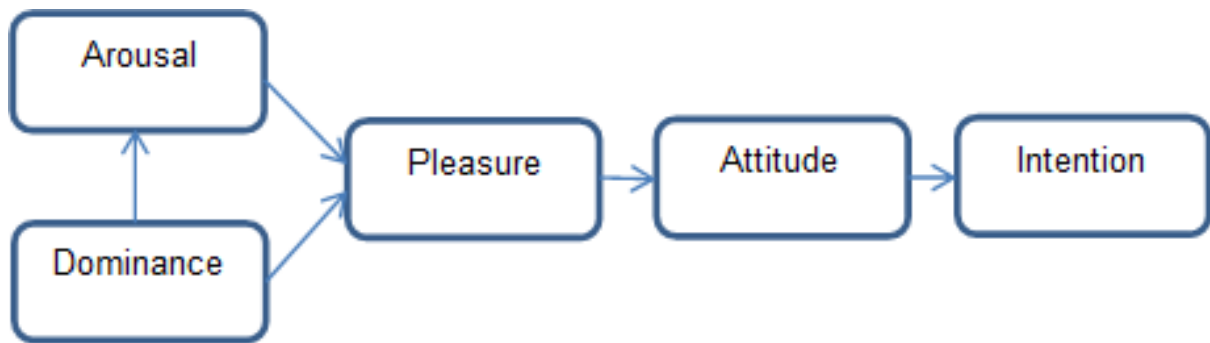


Figure 3.5
The PAD Model

Source: Hall, Elliott, & Meng, 2018

In their study, Hall *et al.* (2018) suggest that future research should also address individual demographics, such as gender and age across different cultures, when studying the influence of the PAD factors on attitudes toward digital platforms, and intentions to use such platforms. The above recommendation on demographics was consequently taken into account in the present research.

Therefore, for the purposes of the present study, PAD theory was considered relevant, with a view to exploring the consumer attitude toward digital banking.

3.2 DIGITAL BANKING

Digital banking refers to the use of the internet as a delivery channel for banking services, including traditional banking services, such as a balance enquiry (Clemes, Gan, & Du, 2012). Digital banking also offers better rates on deposits and loans, enabling the cost savings to be passed on to consumers (Polasik & Wisniewski, 2009). Furthermore, digital banking provides customers with rapid transaction updating, information richness (Palmer, 2002; Shapiro, 1999), speedy transaction access (Mavri & Loannou, 2006) and absolute self-service (Eriksson & Nilsson, 2007). From the banks' perspective, it helps to maintain profitable growth through reducing operation and fixed costs (Chung & Paynter, 2002; Hernando & Nieto, 2007), and allows banks to expand their business geographically without investing in the establishment of new branches; and as a result, the customer base is broadened (Clemes *et al.*, 2012; Giannakoudi, 1999).

On factors influencing non-usage, Gerrard, Cunningham and Devlin (2006) in their content analysis procedure found that seven factors explain why consumers are not

using internet banking in Singapore. In order of frequency, they are: perceptions about risk, lacking knowledge, inertia, inaccessibility, human touch, pricing and IT fatigue (Gerrard *et al.*, 2006).

Respondents in the study conducted by Muzividzi, Mbizi and Mukwazhe (2013) suggested strategies to improve internet banking adoption, proposing that in their view, banks should market their service in order to realise the desired target levels in internet banking adoption (Muzividzi *et al.*, 2013).

According to Clemes *et al.* (2012), the adoption of internet banking has been a challenging issue for banks and various scholars (Karjaluoto, Mattila, & Pento, 2002). Daniel (1999) concluded that in the United Kingdom, customers tend to value convenience, increased choice of access to the bank, and improved control over their banking activities and finances using internet banking. Furthermore, consumers consider accessibility, functionality and services at a low price as important factors in internet banking (Karjaluoto *et al.*, 2002).

Wang, Wang, Lin and Tang (2003) discovered evidence that PEOU, PU and perceived credibility all have significant and positive effects on customers' intentions to adopt internet banking in Taiwan. Gerrard and Cunningham (2003) maintained that internet banking adopters, when compared with non-internet banking adopters, believe internet banking to be more convenient, less complex, and more compatible. However, Lee (2009) noted that perceived risk, in terms of security/privacy risk, is the greatest obstacle to internet banking adoption. Lockett and Litter (1997) indicate that two negative attributes of internet banking are risks and complexity, whereas the most important perceived positive attribute of internet banking is its 24 hours a day and seven days a week availability.

The study by Cheng *et al.* (2006) which investigated the behavioural intention of customers to use internet banking services, provided support for TAM. Their findings are also consistent with those of Davis *et al.* (1989) in that attitude does not fully intervene in the effects of PU and PEOU on intention. In conclusion, their results provide several key insights into the determinants of digital banking usage. First, PU is a major determinant of customer's intentions to use digital banking. Second, PEOU is a significant secondary determinant of a customer's intention. However, it is

mediated through PU, instead of having a direct impact on intention. Finally, Perceived Web Security is also a significant and direct determinant of the customer's intention.

According to Ajzen and Fishbein model, a consumer's attitude towards DBC is a function of the strength with which the individual holds these beliefs (the person's subjective probability that DBCs are related to the different attributes) and his or her evaluation of each attribute. Consumers' attitudes have a strong, direct and positive effect on their intention to actually use a new information system (Jahangir *et al.*, 2007). In understanding the determinants of consumers' attitude, it is argued that this attitude has a strong, direct, and positive effect on consumers' intentions to really employ the new technology or system (Hernandez & Mazzon, 2007).

On this basis, the researcher's assumption is that customer attitude affects the acceptance of electronic banking. Therefore, it is suggested that consumers' attitude towards digital banking has a significant positive effect on users' intention to use DBC (see Mansour *et al.*, 2014).

3.2.1 Models of Attitude towards digital banking

As Clemes *et al.* (2012) reported in their study, the results of the latent root criterion indicate that eight factors should be extracted from the 41 variables submitted for factor analysis. These factors are: (1) a user-friendly website; (2) internet access/internet familiarity; (3) perceived risks; (4) word-of-mouth; (5) price; (6) convenience; (7) marketing communications; and (8) self-image.

Below model illustrates the influence of innovation attributes and knowledge base attributes (values) on attitude towards digital banking, as per the study conducted by Lin (2011, p. 253) and Delafrooz *et al.* (2013)

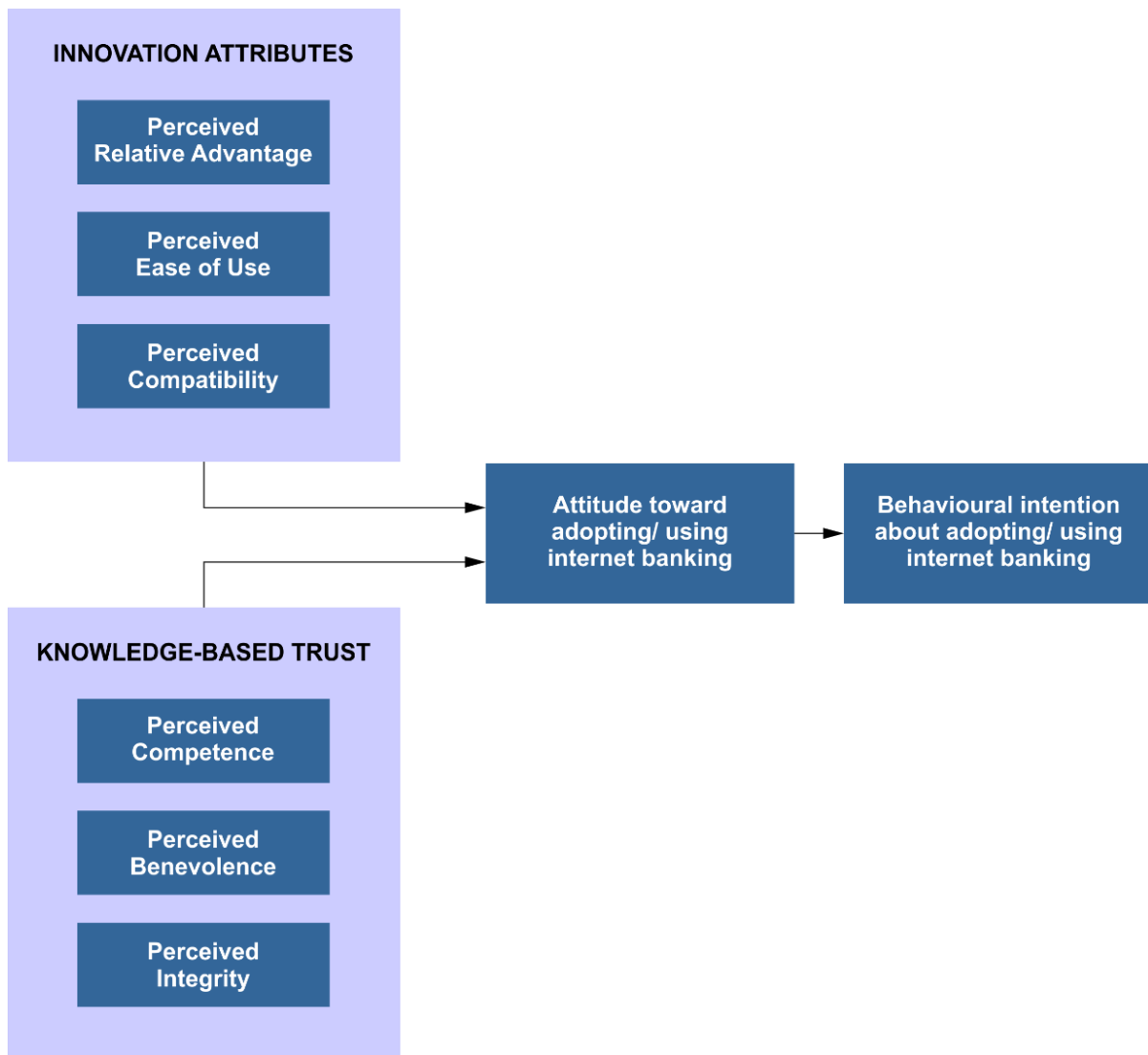


Figure 3.6
Attitude towards Internet Banking model

Source: Lin, 2011, p.253; Delafrooz *et al.*, 2013

3.2.1.1 Schwartz's (1994) theoretical model

Wang *et al.* (2008) examined the relationship between consumption attitudes and new product adoption. Their central argument is that consumers' behaviour towards innovation is positively or negatively affected by their consumption attitudes; based on their demographic characteristics, which may differ amongst different groups of consumers. Figure 3.7 presents the conceptual model of consumption attitudes and new product adoption as developed by Schwartz (1994).

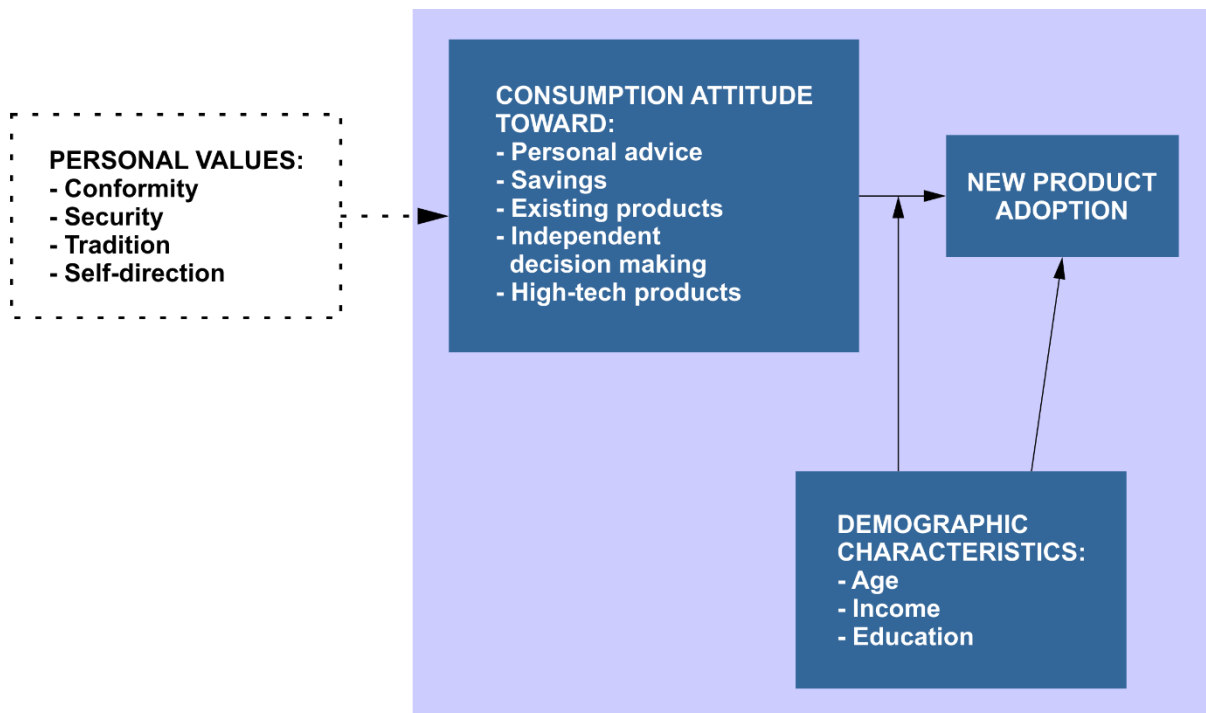


Figure 3.7
Schwartz's conceptual model of consumption attitudes and new product adoption
Source: Wang *et al.*, 2008

The personal values as represented in Schwartz's model are briefly discussed below.

Conformity: attitude toward personal advice

According to Wang *et al.* (2008), the value of conformity emphasises self-restraint in everyday interactions, manifested in such qualities as obedience, self-discipline, politeness, and honouring parents and elders (Schwartz, 1992). People with a high level of conformity value tend to make decisions that conform to the expectations of their close social environment, while those with a low level of conformity value are likely to focus more on their own personal needs and care less about others' expectations (Bearden *et al.*, 1989). In a consumption context, conformity is associated with consumers' information acquisition, a key step in the new product adoption process (Rogers, 1995).

High conformity consumers are more restrictive in their information inflow, relying more on personal sources, such as friends and neighbours, for product information and purchase advice in order to conform to the expectations from one's social their environment (Clark & Staunton, 1994; Kaplan, 1991; Van de Ven, 1993). They are less open to new ideas and novel market offerings (Gatignon & Robertson, 1985;

Rogers, 1995). As such, consumers with a more favourable attitude toward personal advice are expected to be less innovative (Wang *et al.*, 2008).

Security: attitude toward savings

According to Wang *et al.* (2008), security value is concerned with people's needs for safety, predictability, and stability (Schwartz, 1992). Wang *et al.* (2008) indicated that research has revealed that high levels of this value hamper the adoption of new products among international consumers (Daghfous *et al.*, 1999). Likewise, the uncertainty avoidance dimension of national culture has been shown to have a negative effect on consumer innovativeness (Lynn & Gelb, 1996; Steenkamp *et al.*, 1999; Wang *et al.*, 2008).

Tradition: attitude toward existing products

The tradition value is related to one's favourable attitude towards the past and the present and shows one's respect for culture, social norms, and traditions (Schwartz, 1992). In the consumer context, the tradition value implies a favourable attitude toward the products that consumers are currently using. Consumers with such a favourable attitude will be unwilling to replace their old but still functional products with new market offerings (Wang *et al.*, 2008).

Self-direction: attitude toward independent decision-making

According to Wang *et al.* (2008), the self-direction value in the openness to change domain reflects one's needs for independence and autonomy in daily life. In the consumption arena, self-direction is reflected in the attitude toward making independent consumption decisions. Several authors emphasise that consumer innovativeness involves a tendency to make judgments and initiate new behaviours independently of others (Wang *et al.*, 2008).

At the national culture level, Lynn and Gelb (1996) and Steenkamp *et al.* (1999) found that individualism is correlated positively with consumer innovativeness. It is expected that more innovative consumers will be more independent decision makers:

Stimulation: attitudes toward high-tech products

According to Wang *et al.* (2008), stimulation is a value type within the openness to change domain that reflects the need for variety, novelty, and excitement (Schwartz, 1992). Consumers' need for stimulation may be fulfilled by their acquisition and

consumption of new products. Empirical research shows that need for stimulation is positively associated with consumer innovativeness (Joachimsthaler & Lastovicka, 1984; Roehrich, 2004; Venkatesan, 1973).

3.3 INFLUENCES ON ATTITUDE TOWARDS DIGITAL BANKING

This section presents a summary overview of the range of variables or factors influencing the dependent variable in the current study, namely, attitude towards digital banking.

According to Khraim, Al Shoubaki and Khraim (2011), studies on determining the factors influencing the adoption of digital banking have mainly been conducted outside developing and under-developed countries, which leaves clear evidence of a serious lack of literature on studies in developing and under-developed countries. Khraim *et al.* (2011) further assert that among the different models that have been proposed, the TAM (Davis, 1989), adapted from the TRA (Ajzen & Fishbein, 1980), appears to be the most widely accepted among information systems researchers. They further explain that the TAM posits that a user's adoption of a new information system is determined by that user's intention to use the system, which in turn is determined by the user's beliefs about the system. They continue their argument by stating that TAM further suggests that two beliefs – PU and PEOU – are instrumental in explaining the variance in users' intentions. As Davis (1989) noted, future technology acceptance research must address how other variables affect usefulness, ease of use and user acceptance. Therefore, PEOU and PU may not fully explain behavioural intentions towards the use of mobile banking, necessitating a search for additional factors that are better able to predict the acceptance of mobile banking (Khraim *et al.*, 2011).

Khraim *et al.* (2011) state that the five characteristics of the Diffusion of Innovation Theory as proposed by Rogers (1983), and mentioned earlier (2003, p.175) can be used to form a favourable or unfavourable attitude toward an innovation (Khraim *et al.*, 2011). A study on South African consumers revealed that factors, such as trialability and relative advantage, influence their mobile banking adoption (Irwin *et al.*, 2003, in Khraim *et al.*, 2011). Relative advantage, such as the mobility factor, was proven to be an extremely important trigger for mobile banking adoption, and is the strongest

influence in reinforcing the consumer's intention decision to adopt innovation (Deans & Gray, 2010, in Khraim *et al.*, 2011).

3.4 CHAPTER SUMMARY

Chapter 3 addressed part of the first research aim, to theoretically conceptualise and explore the attitude toward digital banking with regard to adoption of DBC and demographic characteristics.

Consequently, this aim was partly achieved in this chapter.

Chapter 4 addresses part of the second research aim, to theoretically conceptualise the statistical nature of the theoretical relationship between, values, culture, diffusion of innovation, technology acceptance and attitudes towards digital banking adoption and how this relationship can be explained in terms of an integrated model and demographic characteristics.

CHAPTER 4: THEORETICAL FRAMEWORK

This chapter addresses part of the third general research aim, namely, to construct and theoretical framework for understanding the effect of values, culture, diffusion of innovation, and technology acceptance on attitudes towards digital banking. The framework will be based on a set of specified demographics as discussed in Chapter 1. This chapter provides a discussion of these demographics, the proposed framework and a number of hypotheses deduced from the framework are then drawn up in Chapter 5.

4.1 DIFFUSION OF INNOVATION AND ATTITUDE TOWARD DIGITAL BANKING AND DEMOGRAPHIC CHARACTERISTICS

According to Rogers (2003), the individual shapes his or her attitude after he or she has come to know about the innovation. The persuasion stage occurs when the individual holds a negative or positive attitude toward the latter, but “the formation of a favourable or unfavourable attitude toward an innovation does not always lead directly or indirectly to an adoption or rejection” (Rogers, 2003, p. 176).

Kolodinsky, Hogarth and Hilgert (2004) indicated that relative advantage, complexity/simplicity, compatibility, observability, risk tolerance, and product involvement are associated with adoption. Income, assets, education, gender, marital status, and age also affect adoption. Talla (2013) established that psychological factors, such as perceptions of relative advantage, perceived compatibility, perceived complexity and perceived cost, influence the adoption of e-banking. Ong'wen's (2012) study also revealed that the same psychological factors influence the adoption of internet banking.

The similar study conducted by Poon (2008) was alluded to earlier. In addition, as has been discussed, young groups are more computer literate and find it easier to accept and use new technologies (Poon, 2008; Zainuddin & Othman, 2014).

A study by Wareham, Levy and Shi (2004) investigated the socio-economic factors underlying the diffusion of the internet and 2G mobiles in the USA. Their study found

that mobile adoption is positively correlated with income, occupation and living in a metropolitan area (Wareham *et al.*, 2004).

Past research has reported that the relative advantage of an innovation is positively related to the rate of adoption (Moore & Benbasat, 1991). Research suggests that when a user perceives the relative advantage or usefulness of a new technology over an old one, they tend to adopt it (McCloskey, 2006; Rogers, 2003). Therefore, when customers observe the distinct advantages offered by mobile banking, they are more likely to accept it (Al-Jabri & Sohail, 2012).

Sahin (2006) asserts that while innovators, early adopters, and the early majority are more status-motivated for adopting innovations, the late majority and laggards perceive status as less significant. Rogers categorised innovations into two types: preventive and incremental (non-preventive) innovations. Rogers notes, “[a] preventive innovation is a new idea that an individual adopts now in order to lower the probability of some unwanted future event” (Rogers, 2003, p. 233). Preventive innovations usually have a slow rate of adoption; hence their relative advantage is highly uncertain. However, incremental innovations provide beneficial outcomes within a short period. To increase the rate of adopting innovations and to make relative advantage more effective, direct or indirect financial payment incentives may be used to support the individuals of a social system in using an innovation. In addition, incentives constitute part of the support and motivation factors (Sahin, 2006).

A research study by Ndubisi and Sinti showed that compatibility is another significant antecedent in determining consumers’ attitude towards internet banking adoption in Malaysia (2006). Compatibility has further been found influential in the adoption of digital technology, and has exhibited a significant correlation with digital banking adoption (Al-Jabri & Sohail, 2012). Thus, it is also likely that the relation between compatibility and adoption will hold in the context of mobile banking (Al-Jabri & Sohail, 2012). Wang *et al.* (2006) reported that mobile banking services are perceived to have extremely user-friendly interfaces; in other words, users see them as easy to use, and hence form positive attitudes towards them (Lin, 2011).

Complexity in use is a major factor in adoption of mobile banking. There is a considerable amount of empirical research into mobile technology that suggests that users’ intention to adopt mobile banking is inhibited by the perceived complexity of the

innovation (Au & Kauffman, 2008; Mallat, 2007; Ondrus & Pigneur, 2006). Common existing literature on adoption barriers is predominantly related to technical complexity. A number of studies have reported that complexity in use, technical infrastructure, and design of technology are individual barriers (Vrechoupoulos *et al.*, 2003). Users will be inhibited in using mobile banking if they find it requires more mental effort, is time-consuming or frustrating. Therefore, it is assumed that perceived complexity inhibits the adoption of mobile banking (Al-Jabri & Sohail, 2012).

Tan and Teo (2000) are proponents of trialability. They argue that if customers are given a chance to try the innovation, this will minimise certain unknown fears, and lead to adoption. With banks providing assistance and demonstrations on mobile banking usage while in the trial period, fears about mobile banking could be minimised, which will also motivate potential adopters to use mobile banking (Al-Jabri & Sohail, 2012).

In the context of mobile banking, observability is defined as the ability to access the banking services at any time and from any location without any delay or queue, as well as seeing the effect of mobile banking transactions immediately, and conveying the accessibility benefits to others. Through such exposure, customers gain knowledge about mobile banking and its benefits, thereby facilitating adoption (Al-Jabri & Sohail, 2012).

Roger (1983) affirms that adoption of software innovations cannot be so easily traced or observed in a physical sense. There is generally an implication that a technological innovation has at least some degree of benefit or advantage for its potential adopters; however, this advantage is not always very precise in the eyes of the intended adopters, to the point that they can be very certain that an innovation represents a superior alternative to the previous practice that it might replace. Therefore, a technological innovation creates some sort of uncertainty in the minds of potential adopters with regard to its expected consequences, as well as representing an opportunity for reduced uncertainty in another sense.

The attitude toward digital banking is based on a decision process. Rogers (2003) defined the innovation-decision period as the length of time required to pass through the innovation-decision process. The above-mentioned scholar described the said process as an information search and processing activity, by the individual, with a view to reducing uncertainty about the advantages and disadvantages of an innovation”.

The given process is one through which an individual (or other decision-making unit) passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision.

As mentioned, the literature also identifies several variables as being related to attitude towards digital banking. One of these variables comprises demographic variables, which are now discussed.

4.1.1 Demographics

According to Pitchayadejanant and Nakpathom (2016), moderators are the variables that inform the strength, effect and direction of the relationship between independent and dependent variables, and, as such, demographic variables are important to describe the effect and direction of various relationships. These researchers studied the effect of demographic information as moderators. Their study revealed that the demographic variables as moderators have an effect and are important to describe the relationship between independent and dependent variables. Additionally, their study proposed the demographic factors to be moderating factors in the conceptual model (Pitchayadejanant & Nakpathom, 2016).

A study conducted by Poon (2008) revealed that people of different age groups, education level, income level, computer literacy, internet accessibility at home/office display significant relationships with the usage of electronic banking. In addition, young groups are more computer literate and find it easy to accept and use new technologies (see Zainuddin & Othman, 2014). Karjaluoto *et al.* (2002) found that the Finnish adopters of internet banking are relatively young. Younger customers are likely to adopt internet banking due to the greater convenience, lower prices, and/or time savings offered (Clemes *et al.*, 2012). In order to encourage more young customers to do so, banks could offer price incentives. For example, banks might offer lower monthly fees to students, as the young age group with a lower disposable income. Lower transaction costs for internet banking may encourage students to use it.

4.1.1.1 Gender

Gender is a variable for which empirical results differ across studies and contexts. A great deal of previous research has focused on the adoption of digital technology as related to gender (Clemes *et al.*, 2012).

However, the previous studies have slightly divergent results, such as that of Clemes *et al.* (2012); Muzividzi *et al.* (2013), Sohrabi (2013), and Zainuddin and Othman (2014). However, Izogo *et al.* (2012) reported that male respondents use e-banking more than their female counterparts. Despite these variations, the theoretical consensus appears to support the notion that this difference can be attributed to various factors. For instance, based on the study by Lichtenstein and Williamson (2006) in Australia, female users are more likely to do internet banking for reasons indicated earlier; they therefore need to have a convenience technology to ease their lives. It is hypothesised that there is a statistically significant interrelationship between the diffusion of innovation and attitudes towards adoption of digital banking. Furthermore, for the purposes of this study, it is hypothesised that gender will moderate the relationship between this diffusion and the attitudes towards adoption of digital banking constructs (see Figure 4.1 at the end of the chapter).

4.1.1.2 Age

Much research has been conducted into diffusion of innovation, attitude toward digital banking and age. This has frequently predicted the relationship between age, innovativeness and attitude towards digital banking. Some studies have found, as discussed earlier, that younger consumers are much more prone to adopting new innovation than older consumers: for instance, Blankenship (1998, in Sahin 2006).

Chawla and Joshi (2018) assert that studies on technology adoption validate the view that younger users behave differently if compared to their adult counterparts. Older users tend to be relative laggards in terms of using technology for any purposes, including for performing banking transactions, as a result of scepticism towards the technology, and they tend to rely mainly on face-to-face transactions, such as branch banking (Chawla & Joshi, 2018).

Clemes *et al.* (2012), and Sohail and Shanmugham (2003) conclude that young and affluent people are more likely to use internet banking services. Poon (2008),

Zainuddin and Othman (2014), Muzividzi *et al.* (2013), Clemes *et al.* (2012), and Flavián *et al.* (2006) reported that older people are less likely to conduct their banking operations using the internet, a finding similar to that of Yiu *et al.* (2007), as well as the findings of Jaruwachirathanakul and Fink (2005) (see also Munusamy *et al.* (2012, in Zainuddin & Othman, 2014). For Rogers (2003), however, no significant difference could be found between the ages of earlier adopters and later adopters, meaning that earlier adopters of innovation are not different from later adopters in age (Rogers, 2003, p. 295).

Previous research by various scholars (Wang *et al.*, 2008) discovered inconsistent evidence about the relationship of age and innovativeness. About half out of 228 studies on diffusion of innovation revealed no relationship, whereas 19% showed that earlier adopters are younger, and 33% indicated they are older. Ong'wen (2012) reported that age may be indicative of risk-avoidance and conservativeness, and thus could be negatively associated with innovativeness (Wang *et al.*, 2008).

Despite these inconsistencies, the theoretical consensus appears to support the concept that age is statistically a predictor of attitude toward digital banking. Yiu *et al.* (2007) established that in terms of age, adoption rates (excluding the elderly, that is, over 55 years) were similar across the whole sample, indicating that the elderly are more reluctant to adopt new innovations. This trend is supported by other studies, such as that of Morris and Venkatesh (2000).

According to Daghfous *et al.* (1999), consumers with a stronger predisposition to adopt innovation were generally found to be young and possessing a high professional status, income and educational level. For the purposes of this study, it is hypothesised that there is a statistically significant interrelationship between the diffusion of innovation and attitudes towards adoption of digital banking. Furthermore, for the purposes of this study, it is hypothesised that age will moderate the relationship between diffusion of innovation and the attitudes towards adoption of digital banking constructs (see Figure 4.1 later in this chapter).

4.1.1.3 Education

The literature appears to suggest that individuals who better understand complex and nuanced issues will be much more likely to embrace more sophisticated innovations such as digital banking (Poon, 2008, in Zainuddin & Othman, 2014). In light of this

view, researchers frequently theorise positive relationships between educational level and innovativeness (Yiu *et al.*, 2007). Empirically the results consistently confirm this assumption. A study conducted by Poon (2008) disclosed that education levels have a significant relationship with the usage of electronic banking. According to Rogers (1983) one of the characteristics of earlier knowers of an innovation, when compared to later ones, is education level, which is accompanied by higher social status, greater exposure to mass media channels of communication, greater exposure to interpersonal channels of communication, greater change agent contact, greater social participation, and more cosmopolitan. Clemes *et al.*'s (2012) empirical results reveal that low qualifications of consumers have the highest negative impact on internet banking adoption. These findings are consistent with those by Yiu *et al.* (2007) and Gerrard *et al.* (2006).

In Rogers's (2003) approach, the education variable can be related to socio-economic characteristics. According to him earlier adopters have more years of education, are more likely to be literate, and to hold a more favourable attitude toward innovation than later adopters. See also Wang *et al.* (2008) on the open-mindedness presumably produced by education. A higher level of educational level might represent a catalyst for proneness to innovation. Individuals with a high educational level who perceive innovation as favourable and ethical are likely to demonstrate a higher rate of innovation adoption.

However, as mentioned there is an ironical facet related to innovativeness that was noted in Rogers' (2003) approach to the innovativeness-needs paradox. Rogers argues that those individuals or other units in a social system who most need the benefits of a new technological idea, such as the less educated, are generally the last to adopt that innovation. For the purposes of this study, it is hypothesised that there is a statistically significant interrelationship between the diffusion of innovation and attitudes towards adoption of digital banking. Furthermore, for this study it is hypothesised that education level will moderate the relationship between diffusion of innovation and the attitudes towards adoption of digital banking constructs (see Figure 4.1 later in this chapter).

4.1.1.4 Urban versus rural background

With regard to urban versus rural background, innovativeness and attitude toward digital banking, it has been observed that the literature does offer little content in terms of previous research. Therefore, it is believed that this study will make a contribution in this regard. However, a study conducted by Wareham, Levy and Shi (2004) investigated socio-economic factors underlying the diffusion of the internet and 2G mobiles in the USA. They reported that living in a metropolitan area is one of the factors that is positively correlated with mobile adoption. Rogers (2003) asserts that earlier adopters have higher social status than later adopters, and adds that earlier adopters have a greater degree of upward social mobility than later adopters. His views in this regard were discussed earlier. For the purposes of this study, it is hypothesised that there is a statistically significant interrelationship between the diffusion of innovation and attitudes towards adoption of digital banking. Furthermore, for this study it is hypothesised that an urban versus rural background will moderate the relationship between diffusion of innovation and the attitudes towards adoption of digital banking constructs (see Figure 4.1 towards the end of this chapter).

4.1.1.5 Income

A review of the literature is consistent in suggesting that income, like other demographic variables, is viewed as a catalyst of innovativeness.

A number of studies have been conducted to profile the internet consumer's demographic characteristics and, as noted, the results of these studies suggest that earlier adopters of innovation have higher social status than later adopters (Rogers, 2003), higher income indicates greater financial ability to afford new products (Wang *et al.*, 2008); and innovators who belong to the high income category are normally initial users of the internet (Flynn & Goldsmith, 1993; Gan *et al.*, 2006; Muzividzi *et al.*, 2013). The similar findings of Yiu *et al.* (2007) were discussed earlier, as were those of Karjaluoto (2002); Clemes *et al.* (2012) and Flavián *et al.* (2006).

However, it was also noted that a study conducted by Munusamy *et al.* (2012) revealed different results (Zainuddin & Othman, 2014). It is hypothesised that there is a statistically significant interrelationship between the diffusion of innovation and attitudes towards adoption of digital banking. Furthermore, for this study it is

hypothesised that income will moderate this relationship (see Figure 4.1 later in this chapter).

4.2 VALUES AND ATTITUDE TOWARD DIGITAL BANKING AND DEMOGRAPHIC CHARACTERISTICS

It is understood in this study that values significantly impact on attitude. Therefore, in order to understand the attitudes towards digital banking in the Mozambique context the researcher considers it is relevant to investigate the extent to which values and culture affect consumer decision-making.

It will be recalled from Section 2.1.1 that Schwartz (1992) defines values as concepts or beliefs about desirable end-states or behaviours which transcend specific situations, guide selection or evaluation of behaviour and events, and are ordered by relative importance (Ungerer & Joubert, 2011).

According to Schwartz (2007), values serve as guiding principles in peoples' daily lives because they are enduring beliefs about desirable end-states. Values play a very important role in consumption activities. They may affect consumers' attitudes and purchase decisions significantly, and serve as a focal point in many cognitive tasks, such as attitude formation (Ungerer & Joubert, 2011).

As Ungerer and Joubert (2011) state, a value is a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of what is desirable, which influences the selection from available modes, means and ends of action, whilst Rose and Shoham (2000) regard values as a learned set of desired outcomes and beliefs that guide attitudes and behaviour. However, Rokeach (in Rose & Shoham 2000) considers values as enduring beliefs that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state (see Ungerer and Joubert, 2011).

The concept of values has been widely used by researchers to explain the behaviour of consumers (Daghfous *et al.*, 1999). The adoption process for innovation varies from one individual to another, according to socio-economic and demographic characteristics, psycho-graphics (personality), and culture (value system). Therefore, Daghfous *et al.* (1999) maintain that an individual's inclination to adopt a new product is also influenced by his or her system of values; and to a certain extent the adoption

of a new product reflects their level of attachment to or rejection of a system of values. As such, the aforementioned scholars regard the advantage of using values to explain innovativeness as being that this variable transcends national, cultural and social boundaries, and the results of their study suggest that individual values have a significant impact on consumers' inclinations to adopt new products. They further assert that one may describe innovation, not as an essentially technological phenomenon, but rather as a phenomenon of a psychological and socio-cultural nature because those are the keys to its success or failure (Daghfous *et al.*, 1999).

Some of the variables highlighted by Daghfous *et al.* (1999) as having significant links with the adoption behaviour of individuals include, amongst others, factors already mentioned: income, education level and age (Adcock *et al.*, 1977; Gilly & Zeithaml, 1985; Hirschman, 1980; Robertson, 1971; Rogers & Shoemaker, 1971; Uhl *et al.*, 1970).

Daghfous *et al.* (1999) argue that the micro-analytical bias in studying the adoption and diffusion of innovations seems to omit values. They point to the following quotation by Kamakura and Novak (1992, p. 119), which according to them, serves to underline the importance of values in explaining and predicting consumption behaviour: "A value refers to a single belief that transcends any particular object, in contrast to an attitude, which refers to beliefs regarding a specific object or situation". Values are more stable and occupy a more central position than attitudes, within a person's cognitive system. Therefore, they are determinants of attitudes and behaviour, and hence, provide a more stable and inner-oriented understanding of consumers (Daghfous *et al.*, 1999).

Sower and Sower (2005) assert that empirical studies of cultural values generally measure individual values and then aggregate those into a measure of cultural values. According to these researchers, among the demographic moderators that have been identified by previous studies on values are gender, age, education, work experience, marital status, race, income, and religiosity. In countries where recent immigrants comprise a significant proportion of the population the demographic moderators of the period which has elapsed since immigration as well as the home country may be important. With immigrants, the national culture that helped shape individuals' values often differs from the national culture in which they live.

Daghfous *et al.*'s (1999) findings on consumers with a stronger predisposition to adopt new products were mentioned above. In their literature review, these scholars identified wide disparities in the research findings of the various authors. Only income, education level, professional status, age, and ethnicity variables seemed to have a significant link with the adoption behaviour of individuals (Adcock *et al.*, 1977; Gilly & Zeithaml, 1985; Hirschman, 1980; Robertson, 1971; Rogers & Shoemaker, 1971; Uhl *et al.*, 1970).

According to Daghfous *et al.* (1999), a value is a permanent belief held by a person. The individual develops such beliefs, either in their own native culture or in the cultures with which they are associated. Values are classified into three groups: (1) hedonistic values (sensation-seeking, pleasure and happiness in life, desire to establish warm relationships with others); (2) empathy values (self-respect, respect by others, search for security, sense of belonging); and (3) values of self-actualisation (personal development, sense of accomplishment) (Kahle, 1983; Kahle *et al.*, 1986).

4.2.1 Gender

The issue of whether or not men and women differ in their values and attitude toward digital banking has been widely debated in the business ethics literature. According to Schwartz (2007), as has been indicated, social role theorists attribute gender differences to the culturally distinctive roles of men and women. These dissimilarities in men's and women's motives and orientations are likely to find expression as different value priorities. In his study, Schwartz (2007) asserts that the usual findings reveal that gender differences in psychological variables are small. The cross-cultural studies conducted by Schwartz and Rubel (2005) were referred to earlier. Explaining cultural variations poses a challenge (Schwartz, 2007). It is hypothesised that values will be positively related to the attitude toward digital banking. Furthermore, it is hypothesised that gender will moderate the relationship between values and attitude toward the digital banking construct (see Figure 4.1 later).

4.2.2 Age

Previous studies linking age to values have yielded mixed findings, although most studies have found a strong relationship in values with age. Schwartz (2007) states that opportunities, demands, and constraints associated with life stages may cause

age differences in values, given that people form values in adolescence which change in adulthood, and it is common to speak of three systematic sources of value change in adulthood: historical events that impact on specific age cohorts (war, depression), physical ageing (loss of strength or memory), and life stage (child rearing, widowhood). Each of these sources affects value-relevant experiences. They determine the opportunities and constraints people face and their ability to cope.

To reiterate, studies have found age to play a significant role in values and attitude toward digital banking. According to Schwartz (2007), younger people will accord greater priority to hedonism, stimulation, self-direction, and possibly, to universalism values, which may drive their attitude toward digital banking, given the need to perform demanding tasks successfully and to obtain social approval.

Although Borkowski and Ugras (1998), in their meta-analysis of 35 studies that included age as a factor, posited that individuals tend to portray positive attitudes and behaviours when they mature in age, in the technology and digital banking sphere, different factors come into play. As the person's strength, energy, cognitive speed, memory, sharpness of the senses and capacities to cope with change decline with age, security values may be more important because a safe, predictable environment is more critical (Ugras, 1998). Conformity and tradition values may also be more important with increasing age because accepted ways of doing things are less demanding and threatening on one hand. Conversely, stimulation values may be less important because novelty and risk are more threatening. Similarly, hedonism values may be less important because dulling of the senses reduces the capacity to enjoy sensual pleasure.

A study conducted by Jaruwachirathanakul and Fink (2005) found that older customers have negative attitudes towards internet banking as they do not fully understand its usefulness. As indicated in Section 2.5.1, Schwartz (2007) summarises by stating that the analyses based on cohort experience, physical ageing and life stages imply positive correlations of age with security, tradition, and conformity values. This implies that younger consumers perceive digital technology to be to their benefit, which positively influences their attitude toward digital banking, whilst older consumers face the technostress caused by coping with digital era; as a result, this negatively affects their attitude toward digital banking.

It is hypothesised that values will be related to attitude toward digital banking. In addition, it is hypothesised that age will moderate the relationship between values and attitude toward digital banking construct (see Figure 4.1 towards the end of this chapter).

4.2.3 Education level

A review of the literature is consistent in suggesting that education level, like other demographic variables, is viewed as influencing the factor of values, as well as of attitude, toward digital banking. Schwartz's views (2007) were mentioned in Section 2.5.1.3: that educational experiences presumably promote the intellectual openness, flexibility, and breadth of perspective essential for self-direction values (Kohn & Schooler 1983).

The study conducted by Muzividzi *et al.* (2013) was also discussed earlier, from which it is evident that education enhances the understanding of new technology. (See also Ong'wen (2012) and Izogo *et al.*'s (2012) studies.)

It is hypothesised that values will be positively related to attitude toward digital banking. Moreover, it is hypothesised that a person's educational level will moderate the relationship between values and attitude toward the digital banking construct (see Figure 4.1 later).

4.2.4 Urban versus rural background

For this study it is hypothesised that, in this regard, there is a statistically significant interrelationship between values and attitudes towards adoption of digital banking. Furthermore, it is hypothesised that an urban versus rural background will moderate the relationship between values and the attitudes towards adoption of digital banking constructs (see Figure 4.1).

4.2.5 Income

Studies by Clemes *et al.* (2012), Flavián *et al.* (2006) and Karjaluo *et al.* (2002) found that, in general, higher income promotes adoption of technology. (See also Rogers (2003; Wang *et al.*, 2008; Stavins, 2001; Daghfous *et al.*, 1999).

It is hypothesised that values will be related to attitude towards digital banking. Furthermore, it is proposed that income will moderate the relationship between values and attitude toward digital banking (see Figure 4.1).

4.3 CULTURE AND ATTITUDE TOWARD DIGITAL BANKING AND DEMOGRAPHIC CHARACTERISTICS

According to Azam and Quaddus (2013), culture is a broad spectrum of behavioural study, where different authors have described it in various different ways. In general, culture can be defined as the values, beliefs, norms, and behavioural patterns of a national group. It may be delineated as a collective programming of the mind that distinguishes the members of one group or category of people from another. Research on the effect of culture in digital adoption is inconclusive, though some researchers hold the view that culture plays an important role in determining adoption of technology and also impacts on the degree to which the latter is accepted and the ways it is used. Digital technology has become an inevitable part of human life in almost every sphere around the world (Azam & Quaddus, 2013). The rapid growth of information technology usage has reshaped the ways of banking and also made changes in the strategies for its organisation; digital technology has become the fastest diffused technological innovation to date.

According to Hofstede (2000), culture is a set of unique values and beliefs that guides the behaviour of people belonging to that culture. It is the means by which people communicate, perpetuate, and develop their knowledge about and attitudes toward life, which include shared values, beliefs, assumptions, expectations, perceptions and behaviour (Hofstede, 2000).

Rogers (1983) asserts that every social system has certain desired qualities such as providing for individuals' basic needs, improving the quality of life, and so on, that are widely acknowledged as functional for individuals and for the system. An innovation that enhances one or more of these desiderata is certainly functional for the system. However, it is difficult to avoid making value judgments as to the desirable versus undesirable consequences of an innovation for individuals and their social system, because, as mentioned, an innovation may be functional for a system, but not functional for certain individuals in it (Rogers, 1983).

Van den Bulte and Stremersch (2004) performed a meta-analysis on the diffusion to national culture. They reported that diffusion of innovation is negatively associated with individualism (individualism means more immunity to social contagion) or positively associated with collectivism. According to them, culture is positively associated with power-distance (a measure of the hierarchical nature of the culture), leading to the assumption that “classes” tend to adopt a new product at a similar time; and is positively associated with masculinity (cultures where there is a clear distinction between gender roles) (Van den Bulte & Stremersch, 2004).

A study conducted by Hofstede, Neuijen, Ohavy and Sanders (1990) established large differences among units in perceptions of daily practices but only modest differences in values, beyond those due to such basic facts as education, gender and age group (Hofstede, 2011). The result of a study conducted by Al-Smadi (2012) revealed that subjective norm and perceived behavioural control have a positive and significant impact on customers' intention toward using electronic banking services, and demonstrated that attitude was a positive and significant influence of attitude on customers' intention to use electronic banking services.

In a culturally diverse world we should be speaking of PsycholoGITAL or Digital-Transculturation of banking or of digital banking acculturation, in the sense that digital banking is imminent in every cultural system, and its acculturation is determined by each culture group (Ortiz, 2003).

It is understood in this study that culture has a significant impact on attitude. Therefore, in order to examine the attitude towards digital banking in the Mozambique context, it is considered relevant to investigate the extent to which culture influences consumer decision-making.

4.3.1 Gender

According to El Badrawy and El Aziz (2011), traditionally, the term culture as formulated by Hofstede (2003) refers to “the collective programming of the mind which distinguishes the members of one group or category of people from another” (El Badrawy & El Aziz, 2011 pp. 12), who are in contact with each other or who have something in common such as gender. It will be recalled that Hofstede’s third dimension is femininity versus masculinity, where masculinity stands for a society in

which social gender roles are clearly distinct, while femininity signifies a society in which social gender roles overlap.

Empirical studies on the relationship between gender and culture and attitude toward digital banking differ in their findings. While discussing the masculinity-femininity dimension of culture, Hofstede (2011) highlighted the fact that studies revealed that women's values differ less among societies than men's values, when addressing the distribution of values between the genders.

Previous studies have revealed that male consumers are more likely to be open to adopting digital banking (Clemes *et al.*, 2012; Izogo *et al.*, 2012; Muzividzi *et al.*, 2013; Sohrabi, 2013; Yiu *et al.*, 2007; Zainuddin & Othman, 2014). However, different societies will differ on the attitude toward digital banking. For instance, Gao and Owolabi (2008) found that in Nigeria female respondents are more likely to adopt internet banking than males. Lichtenstein and Williamson (2006)'s similar findings have already been discussed, as has Karjaluoto's (2002) study which indicated that both males and females use internet banking.

It is therefore hypothesised that culture will be related to attitude toward digital banking. Furthermore, it is hypothesised that gender will moderate the relationship between culture and attitude toward digital banking constructs (see Figure 4.1).

4.3.2 Age

A synthesis of relevant literature indicates that age is a variable for which results vary across studies. These were referred to earlier, and included Munusamy *et al.* (2012); (in Zainuddin & Othman, 2014); Muzividzi *et al.* (2013); Clemes *et al.* (2012); Sohail and Shanmugham (2003).

It is hypothesised that age will be related to attitude toward digital banking. Moreover, it is hypothesised that age will moderate the relationship between culture and attitude toward digital banking constructs (see Figure 4.1).

4.3.3 Education level

Education level has been used in other empirical studies as a control variable (Brown *et al.*, 2005; Mayer, Aquino, Greenbaum, & Kuezi, 2012). Although with some differences, educational level is a variable for which empirical results across studies

converge in suggesting that, like other demographics, it may be viewed as an influencing factor of culture and attitude toward digital banking.

El Badrawy and El Aziz (2011; see Section 2.5.1.3) found significant connections between usage of digital technology and level of education. They also identified significant relationships between both the levels of education and the type of device owned by users. As noted, Karjaluoto *et al.* (2002) reported that the Finnish adopters of internet banking are highly educated. Expressing a different view, results of a study conducted by Laforet and Li (2005) revealed that education does not affect the adoption of M-banking in China.

Therefore, it is hypothesised that education level will be positively related to attitude toward digital banking. It is also hypothesised that educational level will moderate the relationship between culture and attitude towards digital banking constructs (see Figure 4.1).

4.3.4 Urban versus rural background

According to Daghfous *et al.* (1999), in cosmopolitan markets where the cultural heterogeneity of the population produces diverse value systems, the existence of various ethnic groups in such settings suggests the operation of different enculturation and acculturation processes. This happens mainly in urban settings. However, since the factor of an urban versus rural background is a variable that has attracted little research in previous studies, the researcher believes that this study will make a contribution in this regard.

For the purposes of this study, it is hypothesised that there is a statistically significant interrelationship between urban vs rural background and attitudes towards adoption of digital banking. Furthermore, it is hypothesised that one's background will moderate the relationship between culture and the attitudes towards adoption of digital banking constructs (see Figure 4.1).

4.3.5 Income

A review of the literature demonstrates some consistency with regard to the relationship between income and attitude towards digital banking. However, it is not very specific with regard to the relation between income and culture. It is therefore believed that the present study offers a contribution in this sphere.

According to Muzividzi *et al.* (2013), a number of studies have been conducted to profile the internet consumer's demographic characteristics. The results suggest that innovators who belong to the high income category are normally initial users of the internet (Flynn & Goldsmith, 1993; Gan *et al.*, 2006). It was noted that research by Munusamy *et al.* (2012, in Zainuddin & Othman, 2014), Yiu *et al.* (2007), and Karjaluo *et al.* (2002) arrived at similar findings.

It is hypothesised that income will be related to attitude toward digital banking. Furthermore, it is hypothesised that income will moderate the relationship between culture and attitude toward digital banking constructs (see Figure 4.1).

4.4 TECHNOLOGY ACCEPTANCE AND ATTITUDE TOWARD DIGITAL BANKING AND DEMOGRAPHICAL CHARACTERISTICS

A study by AlSouf and Ali (2014) indicates that the intention to adopt digital banking is mainly affected by PU and PEOU. The results of a study by Takele and Sira (2013) also demonstrate that attitude, subjective norm, perceived behavioural control, PU, PEOU and perceived risk were significant in affecting users' intention to use e-banking service channels. Furthermore, the results of the study by Al-Smadi (2012) revealed that PU and PEOU have a positive and significant impact on customers' attitude toward electronic banking services. Al-Smadi (2012) found that uncertainty avoidance has a positive and significant impact on PEOU and PU. Perceived risk has the stronger impact on customers' attitude, which in turn influences their intention to use electronic banking services.

A study by Nor *et al.* (2011) indicated that customers who are comfortable with innovations, who are computer literate, and confident with using the internet are more likely to adopt digital banking services. The results of research by Lee (2009) on factors influencing the adoption of internet banking, revealed that there is a strong correlation between PU, PEOU and attitude in predicting intention to use internet banking. Cheng *et al.*'s (2006) research, based on TAM, suggests that PU has the greatest influence on customer intention to adopt internet banking. PEOU, however, does not have a direct impact on intention to use, although it affects the customers' PU, which in turn leads to acceptance of internet banking.

Similar findings were obtained by Pikkarainen *et al.* (2004) and Chan and Lu (2004), who investigated acceptance of internet banking in Finland and Hong Kong, respectively. Although conducted in two different geographies but coincidentally in the same year (2004), both studies reached the same conclusion: that PU is more influential than PEOU in explaining the technology acceptance of internet banking.

Digital technology anxiety was found to have a strong negative effect on PU and behavioural intentions while PU was reported to have positive effects on attitudes, behavioural intentions and user acceptance of digital technology (Teo, 2001). The results of a study conducted by Clemes *et al.* (2012) show that consumers of different genders, ages, with different qualifications, and annual incomes, attribute different amounts of importance to the factors influencing digital banking adoption.

4.4.1 Gender

Gender is a variable for which empirical results generally differ across the different studies. The results of various studies by scholars, such as Clemes *et al.* (2012), Muzividzi *et al.* (2013), Sohrabi (2013), Zainuddin and Othman (2014), Gao and Owolabi (2008), Lichtenstein and Williamson (2006), Izogo *et al.* (2012), Yiu *et al.* (2007), and Karjaluoto (2002), were discussed earlier.

It is hypothesised that technology acceptance conceptualised in terms of PEOU and PU will be positively related to attitude towards digital banking. Furthermore, it is hypothesised that gender will moderate the relationship between technology acceptance and attitude towards digital banking constructs (see Figure 4.1).

4.4.2 Age

Previous studies linking age to attitude towards digital banking have yielded mixed findings, although most studies have found a strong relationship between age and attitude towards digital banking. The results of research by Clemes *et al.* (2012, Jaruwachirathanakul and Fink (2005), and Munusamy *et al.* (2012, in Zainuddin & Othman, 2014) were previously discussed in this thesis. It is evident that despite some inconsistencies, the theoretical consensus appears to suggest that age does influence attitude towards digital banking.

It is hypothesised that technology acceptance, conceptualised in terms of PEOU and PU, will be related to attitude towards digital banking. In addition, it is hypothesised

that age will moderate the relationship between technology acceptance and this attitude (see Figure 4.1).

4.4.3 Education

Educational level is a variable for which empirical results generally converge across the different studies, as shown in studies by Clemes *et al.* (2012), Yiu *et al.* (2007), and Gerrard *et al.* (2006).

Therefore, it is hypothesised that technology acceptance, in terms of PEOU and PU, will be positively related to attitude towards digital banking. It is also hypothesised that educational level will moderate the relationship between technology acceptance and attitude towards digital banking constructs (see Figure 4.1).

4.4.4 Urban versus rural background

This factor was considered earlier. For this study it is hypothesised that there is a statistically significant interrelationship between technology acceptance conceptualised by PEOU and PU and attitudes towards adoption of digital banking. Furthermore, it is hypothesised that urban versus rural background will moderate the relationship between technology acceptance conceptualised by PEOU and PU and the attitudes towards adoption of digital banking constructs (see Figure 4.1).

4.4.5 Income

As discussed earlier, the literature mostly indicates that income has an influence on attitude towards digital banking adoption (see Clemes *et al.*, 2012; Flavián *et al.*, 2006; Stavins, 2001; and Rogers, 1983).

It is hypothesised that technology acceptance conceptualised in terms of PEOU and PU will be related to attitude towards digital banking. Furthermore, it is proposed that income will moderate the relationship between technology acceptance and attitude towards digital banking constructs (see Figure 4.1).

4.5 PROPOSED THEORETICAL FRAMEWORK EXPLAINING ATTITUDE TOWARDS DIGITAL BANKING

According to Bordenave (1976), Third World nations must overcome, what the scholar called, a “mental compulsion” to perceive their own reality through foreign concepts

and ideologies, and must look at the adoption of innovation from their own perspective. One of the reasons that diffusion research is particularly subject to criticism in developing nations, when compared to other fields of behavioural science, can be attributed to the fact that it received significant attention in non-third world geographies, with a large number of diffusion studies conducted in this scientific field. Hence the critical questioning with regards to its cultural appropriateness (Rogers, 1983).

The following quotation casts some light on this factor:

To get the bad habits of a nation or society changed and replace with new ones, though better introduced, it is necessary first to remove the prejudices of the people, enlighten their ignorance, and convince them that their interests will be promoted by the proposed changes; and this is not the work of a day (Benjamin Franklin, 1781 in Rogers, 1983).

The previous studies show a common behavioural pattern with regards to the attitudes towards digital banking. The variables from the diffusion of innovation theory, as well as technology acceptance, are positively and significantly related to the attitude towards digital banking. However, these studies were conducted in different settings, with different cultural backgrounds.

Both diffusion of innovation and technology acceptance are the independent variables that are used in this study. Both frameworks have been developed and were scientifically tested in other cultural environments. Given the need to expand digital banking as a response to rapid technological advances, it becomes obvious that there is a need, as well as a gap, to validate them in other cultural backgrounds, such as Mozambique.

The objective of this study is to examine the adoption of digital banking in Mozambique, through the moderating effect of the relationship between variables. A research framework was consequently developed. The framework in Figure 4.1 represents the theoretical model of values, culture, diffusion of innovation, technology acceptance, attitude towards digital banking and demographic variables.

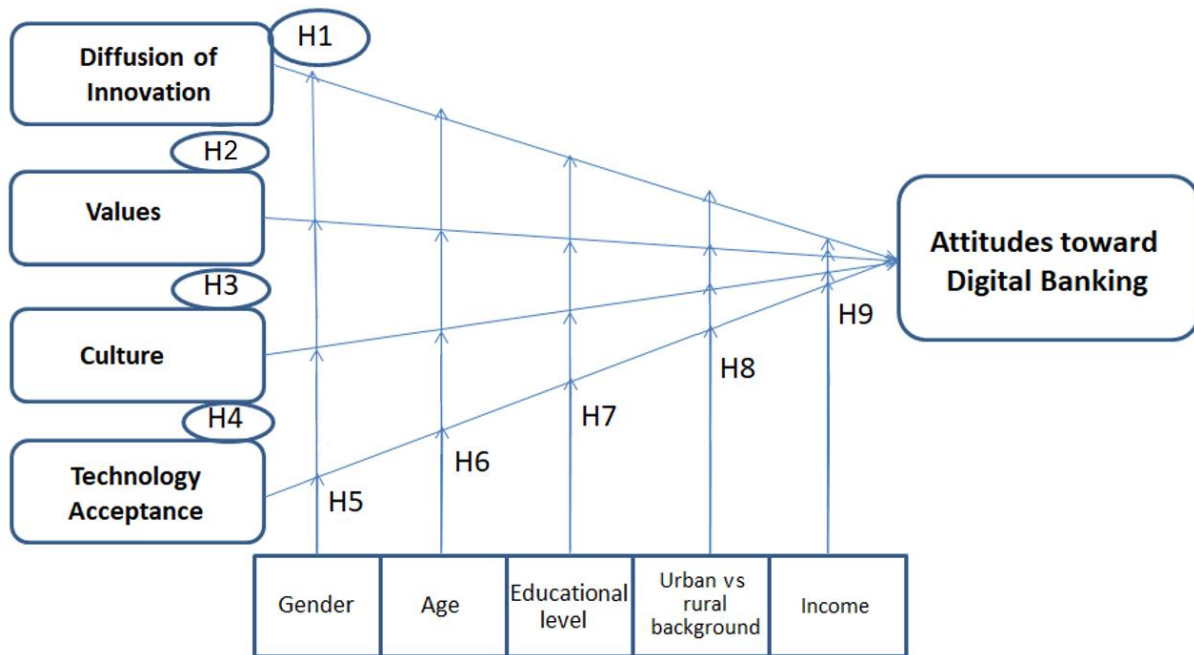


Figure 4.1
Conceptual framework for attitude towards digital banking

Source: Researcher's own compilation

In this framework, diffusion of innovation, values, culture, and technology acceptance (all as previously defined) are independent variables, while attitude towards digital banking is correspondingly a dependent variable. The demographic factors are moderating variables that will be analysed to see to what extent they influence the independent variables and the dependent variable. To reiterate, the ultimate goal of this research is to develop and test a theoretical model of the effect of system characteristics on user adoption of digital banking technology.

4.6 CHAPTER SUMMARY

Chapter 4 addressed the fourth literature review aim, namely, to construct a theoretical framework of the relationship between value, culture, diffusion of innovation, technology acceptance and attitude toward digital banking and the demographical characteristics (gender, age, educational level, urban vs rural background and income).

Therefore, research aim four has been achieved.

Chapter 5 presents the research methodology employed in the empirical phase of the current study.

CHAPTER 5: RESEARCH METHODOLOGY AND HYPOTHESES

This chapter addresses the empirical study and the statistical procedures used for testing the research hypotheses. Firstly, an overview of the study's population and sample is presented. The measuring instruments are discussed and the choice and discussion of each is justified, followed by the administration, the scoring of the data-collection instrument, and a description of the data gathering and statistical processing methods. The formulation of the research hypotheses is stated, and the chapter concludes with a summary.

This study employed a descriptive research design and a quantitative research approach. The empirical research phase consisted of the following nine steps:

- Step 1 Determination and description of the sample
- Step 2 Choice and discussion of the questionnaire (data collection instrument)
- Step 3 Administration of the questionnaire
- Step 4 Scoring of the questionnaire
- Step 5 Formulation of the research hypotheses
- Step 6 Statistical processing of the data
- Step 7 Reporting and interpreting of the results
- Step 8 Integration of the research findings; and
- Step 9 Formulation of research conclusions, limitations and recommendations

Steps 1-6 are addressed in this chapter, while steps 7-9 are discussed in Chapters 7 and 8.

5.1 INSTRUMENTS

In line with the literature review, the four measuring instruments (DIQ, TAMQ, CQ, PVQ) and demographic characteristics were presented in an integrated manner. The psychometric instruments were chosen in relation to the relevant models and theories applicable to the study. The instrument's validity and reliability were considered. An applicable psychometric instrument was used to explain certain behaviours which were described in categories or scores (Tabachnick & Fidell, 2014).

In order to minimise the issues related to self-reported data or measure, which implicitly carry along the common method biases that could potentially have an effect on the research findings, the research procedure was carefully designed prior to data collection with a view to ensure that the respondents' items, such as protection of anonymity, reduction of evaluation apprehension and careful calibration of time lag were observed. Statistical remedy was applied after data collection with the application of structural equation modelling (SEM). This approach addresses the issue of common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff. 2003; Tehseen, Ramayah, & Sajilan, 2017).

The measuring instruments and a biographical questionnaire used to ascertain the data are discussed below. (Please see Appendix B and C for the Questionnaire in English and Portuguese, respectively.)

5.1.1 Measuring of demographic information

A demographic questionnaire was used to gather and ascertain personal characteristic data from bankable customers, namely, information about the participant's age, gender, educational level, income and urban versus rural background (Table 5.1).

The profile of the sample was described according to the given demographic variables. As noted, the influence of the said variables is of paramount importance.

5.1.2 Diffusion of innovation variables

The discussion (rationale for and purpose, dimensions, administration, interpretation, reliability and validity) and the motivation for choosing the measuring instruments are presented below.

5.1.2.1 The Diffusion of Innovation Questionnaire (DIQ)

Rationale for and purpose of DIQ

The Diffusion of Innovation Questionnaire (DIQ), adapted from that of Ntemana and Olatokun (2012), is a self-rating measure, consisting of five sub-dimensions, namely, relative advantage, compatibility, trialability, observability, and complexity. The purpose of the instrument is to measure the influence of the five constructs of diffusion of innovation theory on the adoption and use of an innovation (that is, digital banking in the case of the present study).

Dimensions of the DIQ

The questionnaire consists of 36 items and measures five dimensions (perceived relative advantage, perceived compatibility, perceived trialability, perceived observability, and perceived complexity). The intention to use and attitude towards digital banking were also incorporated in the diffusion of innovation questionnaire. Each of these dimensions has a number of items or structured questions which are used to measure it. The following offers a detailed description.

- Relative advantage (5 items): The degree to which an innovation is perceived as providing more benefits, or as being better, than the idea it supersedes.
- Compatibility (5 items): The extent to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters.
- Trialability (5 items): The degree to which an innovation may be experimented with, on a limited basis.
- Observability (4 items): The degree to which the results of an innovation are visible to others.
- Complexity (5 items): The degree to which an innovation is perceived as relatively difficult to understand and use.
- Intention to use digital banking (9 items): This dimension is self-explanatory.
- Attitude towards digital banking (3 items): This dimension is also self-explanatory.

Administration of the DIQ

The DIQ is a self-administered questionnaire. Respondents receive clear instructions regarding how to complete it, and the questionnaire takes about 10 minutes to complete. Respondents rate the statements on a five-point Likert type scale based on their perceived diffusion of innovation dimension. The scores for relative advantage, compatibility, trialability, complexity, and observability are added together to provide a total overall score for the construct of diffusion of innovation (Rogers, 2003; Ntemana & Olatokun, 2012), and the intention to use dimension is added in the questionnaire.

Interpretation of the DIQ

Each subscale (relative advantage, compatibility, trialability, complexity, and observability of innovation) is measured separately and reflects the participants' perception of diffusion of innovation on these dimensions. Thus, it is possible to determine which dimensions are perceived to be true for the respondent and which are not. The higher the score, the truer the statement is for the respondent. A response of 1 = strongly disagree, whereas 5 = strongly agree.

Reliability and validity of the DIQ

Research findings on the internal consistency of this questionnaire indicate that it is a reliable instrument for measuring diffusion of innovation (Ntemana & Olatokun, 2012). An exploratory factor analysis indicated that the DIQ items not only satisfied the psychometric criteria of both convergent and discriminant validity, but also that the content was appropriate to the theoretical constructs which were considered (Ntemana & Olatokun, 2012). The study conducted by these authors used the Cronbach's alpha reliability coefficient to determine the internal consistency of the instrument; the reliability of the multiple item scales ranged between 0.71 and 0.97.

Motivation for using the DIQ

The said questionnaire (Ntemana & Olatokun, 2012) was chosen for this study because of the conceptual congruence with the explication of the construct of diffusion of innovation and its high degree of validity and reliability.

5.1.2.2 The Technology Acceptance Model Questionnaire (TAMQ)

Rationale for and purpose of the TAMQ

The TAM questionnaire (TAMQ, adapted from Davis, 1989) is a self-rating measure, consisting of tracking the impact of external factors on internal beliefs, attitude, and behaviour (Davis *et al.*, 1989). This measuring instrument is used to determine individuals' perceptions of new information technology based on two primary antecedent variables: PU and PEOU.

Dimensions of the TAMQ

The questionnaire consists of 28 items and measures two dimensions (PU and PEOU). Each of these has a number of items or structured questions that are used to measure it.

The following describes these two dimensions:

- PU (14 items): The degree to which a person believes that using a particular system would enhance his or her banking performance.
- PEOU (14 items): The degree to which a person believes that using a particular system would be free of effort.

Administration of the TAMQ

The TAMQ is a self-administered questionnaire and takes about 10 minutes to complete. Clear instructions for its completion are provided. The items are structured in a statement format, with a five-point Likert-type rating scale for each statement. Respondents rate the statements on the basis of their PU and PEOU. The scores for PU and PEOU are then added together to compute a total, overall score for the construct of TAM (Davis, 1989).

Interpretation of the TAMQ

Each subscale is measured separately and reflects the participant's perception of technology and these dimensions. It is therefore possible to determine which dimensions are perceived to be true for the respondent and which are not. The higher the score, the truer the statement is for the respondent. A response of 1 = strongly disagree while 5 = strongly agree.

Reliability and validity of the TAMQ

Research findings on the reliability of this questionnaire indicate that it is a reliable instrument for measuring TAM (Davis, 1989). An exploratory factor analysis indicated that the TAMQ items not only satisfied the psychometric criteria of both convergent and discriminant validity, but also that the content was appropriate to the theoretical constructs which were considered (Davis, 1989).

During a study conducted by Davis (1989), the definitions of PU and PEOU were refined and streamlined, resulting in two six-item scales with reliabilities of .98 for

usefulness and .94 for ease of use. The scales exhibited high convergent discriminant, and factorial, validity. PU was significantly correlated with both self-reported current usage ($r=.63$, study 1) and self-predicted future usage ($r=.85$, study 2). PEOU was also significantly correlated with current usage ($r=.45$, study 1) and future usage ($r=.59$, study 2).

Motivation for using the TAMQ

The TAMQ (Davis, 1989) was chosen for this study because of the conceptual congruence with the explication of the construct of TAM and its high degree of validity and reliability.

5.1.2.3 The Culture Questionnaire (CQ)

Rationale for and purpose of the CQ

The CQ (adapted from Al-Smadi, 2012) is a self-rating measure, consisting of power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, and long-term/ short-term orientation, subjective norm, perceived behaviour control, and risk. The measuring instrument is used to determine individuals' needs, attitudes, and beliefs, their social norms and leadership structure with respect to the effect of culture attributes on attitudes towards the use of digital banking. The items in the questionnaire were adapted from the prior related studies to ensure content validity. The questionnaires were presented to a number of academics in the banking and e-banking field. They were asked to critically evaluate the items of the questionnaire with regards to its objective, content, clarity and ease of completion, and assisted in translating and validating these (Al-Smadi, 2012)

Dimensions of the CQ

The questionnaire consists of 29 items and measures five dimensions of culture (power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, long-term/ short-term orientation), plus three dimensions of attitude, (subjective norm, perceived behaviour control and Intention to use), and perceived risk. Each of these dimensions has a number of items or structured questions which are used to measure it. The following is a detailed description of the dimensions.

- *Power distance (3 items)*: The extent to which the less powerful members of organisations within a country expect and accept that power is distributed unequally - the different solutions to the basic problem of human inequality.
- *Uncertainty avoidance (3 items)*: The extent to which the members of a culture feel threatened by uncertain or unknown situations - the level of stress in a society in the face of an unknown future.
- *Individualism-collectivism (3 items)*: The extent to which the individual interests prevail over the group interests, versus societies in which the group interests prevail over the individual interest - the integration of individuals into primary groups.
- *Masculinity-femininity (3 items)*: These exist where masculinity stands for a society in which social gender roles are clearly distinct, while femininity stands for a society in which social gender roles overlap - the division of emotional roles between women and men.
- *Long-term/ short-term orientation (3 items)*: The choice of focus for people's efforts: the future or the present and past.
- *Subjective norm (3 items)*: The perceived social pressure to perform or not to perform the behaviour.
- *Perceived behaviour control (3 items)*: The perceived capability and capacity to perform a behaviour.
- *Perceived risk (5 items)*: Refers to the degree of perceived risks in using an innovation.
- *Intention to use (3 items)*: This dimension is self-explanatory.

Administration of the CQ

The CQ is a self-administered questionnaire and takes about 10 minutes to complete. Clear instructions for its completion are provided. The items are structured in a statement format, with a five-point Likert-type rating scale for each statement. Respondents rate the statements on the basis of perceiving their culture. The scores for power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, long-term/ short-term orientation, subjective norm, perceived behaviour control, perceived risk and intention to use) are then added together to compute a

total, overall score for the construct of culture and of attitude towards digital banking (Al-Smadi, 2012).

Interpretation of the CQ

Each subscale is measured separately and reflects the participants' perceptions of culture and attitude dimensions. Thus, it is possible to determine which dimensions are perceived to be true for the respondent and which are not. The higher the score, the truer the statement is for the respondent. The responses are measured according to a five-point Likert-type scale, in which 1 = strongly disagree and 5 = strongly agree.

Reliability and validity of the CQ

Research on internal consistency of this questionnaire indicates that it is a reliable instrument for measuring culture (Al-Smadi, 2012). In a study conducted by Al-Smadi (2012), the reliability of the research questionnaire was assessed by using Cronbach's alpha coefficient; the reliability coefficients of all research variables were above the cut-off point, which is 0.6. The reliability coefficient for all variables ranged from 0.660 to 0.840 (Al-Smadi, 2012).

Motivation for using the CQ

The CQ (Al-Smadi, 2012) was chosen for this study because of the conceptual congruence with the explication of the construct of culture and its high degree of validity and reliability.

5.1.2.4 The Portrait Values Questionnaire (PVQ)

Rationale for and purpose of the PVQ

The PVQ (adapted from Schwartz, 2003) is a self-rating measure of the ten basic values (Schwartz, 2012): benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition. The measuring instrument is used to explain the motivational bases of attitudes and behaviour.

Dimensions of the PVQ

The questionnaire consists of 40 items and measures ten dimensions (Schwartz, 2012). Each of these dimensions has a number of items or structured questions which are used to measure it. The following provides a detailed description.

- *Benevolence (4 items)*: Refers to preserving and enhancing the welfare of those with whom one is in frequent personal contact.
- *Universalism (6 items)*: Refers to understanding, appreciation, tolerance, and protection for the welfare of all people and for nature.
- *Self-Direction (4 items)*: Encompasses independence of thought and action - choosing, creating, exploring.
- *Stimulation (3 items)*: Refers to excitement, novelty, and challenge in life.
- *Hedonism (3 items)*: Deals with pleasure or sensuous gratification for oneself.
- *Achievement (4 items)*: Refers to personal success through demonstration of competence according to social standards.
- *Power (3 items)*: Deals with social status and prestige, control or dominance over people and resources.
- *Security (5 items)*: Refers to safety, harmony, and stability of society, of relationships, and of self.
- *Conformity (4 items)*: Encompasses restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms.
- *Tradition (4 items)*: Covers respect for, commitment to, and acceptance of the customs and ideas that one's culture or religion provides.

Administration of the PVQ

The PVQ is a self-administered questionnaire and takes about 10 minutes to complete. Clear instructions for its completion are provided. The items are structured in a statement format, with a six-point Likert-type rating scale for each statement. Respondents rate the statements on the basis of perceiving their values. The scores for benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity, and tradition are then added together to compute a total, overall score for the construct of values (Schwartz, 2003).

Interpretation of the PVQ

Each subscale is measured separately and reflects the participants' perceptions of values and these dimensions. Thus, it is possible to determine which dimensions are perceived to be true for the respondent and which are not. The higher the score, the

truer the statement is for the respondent. The responses are measured according to a six-point Likert-type scale, in which 1 = Not like me at all; 2 = Not like me; 3 = a little like me; 4 = Somewhat like me; 5 = Like me; and 6 = Very much like me.

Reliability and validity of the PVQ

Studies have assessed the test-retest reliability of the ten values, as measured by the PVQ. The respondents completed the PVQ twice, separated by an interval of two weeks; the test-retest reliabilities were moderate to high: power .84 & .77, security .88 & .70, conformity .86 & .72, tradition .81 & .80, benevolence .82 & .62, universalism .83 & .75, self-direction .66 & .70, stimulation .74 & .76, hedonism .84 & .65, achievement .83 & .82.

Previous research reveals that the PVQ demonstrates reasonable meaning equivalence across cultures and considerable predictive validity (Schwartz, 2008; Schwartz, 2005b).

Motivation for using the PVQ

The PVQ (Schwartz, 2003) was chosen for this study because of the conceptual congruence with the explication of the construct of values and its high degree of validity and reliability. In studies across more than 60 countries, Schwartz and Bardi (2001) identified a high level of pan-cultural agreement regarding the hierarchy of importance of the ten values. They argue that this hierarchy reflects the social and psychological functions of the different values. Characteristics of each sample (for example, distributions of age, occupation, religion, and family size, as well as unique economic, social, technological and historical experiences) cause variations from the pan-cultural value hierarchy (Schwartz, 2008).

5.1.2.5 The Self-Assessment Manikin (SAM)

The SAM was originally invented by Lang (1980; Hodes *et al.*, 1985), using a picture-oriented instrument, to directly assess the associated pleasure, arousal, and dominance in response to events or objects (Bradley & Lang, 1994), and further improved on by Bradley and Lang in the 1980s (Morris, Bradley, Waive, & Lang, 1993), who aimed to obtain the self-assessment ratings of the primary emotions experienced on the dimensions of affective valence or pleasure, arousal and dominance.

Rationale for and purpose of the SAM

The rationale for, and the purpose of, SAM is to understand and assess the attitude towards digital banking. This framework was found to be practical for this research to address the attitude given its focus on emotions. The use of SAM was explained earlier, namely it is a more cognitive non-verbal manikin, psychophysiological in essence, designed to explore more sub-conscious behavioural responses that are revealed in the emotional context and that drive the attitude towards digital banking (Landowska, 2018; Bekker *et al.*, 2014; Russell & Mehrabian, 1997; Bradley & Lang, 1994). The SAM methodology helps one to comprehend the relationship between the pleasure, arousal and dominance dimensions of affective domains. Through the SAM participants express the emotional content associated with general feelings in them. This informs their attitude or particular emotive predisposition, which serves as an indication of how favourable or unfavourable the individual's attitude towards DBC might be (Landowska, 2018; Bekker *et al.*, 2014).

Dimensions of the SAM

The SAM is aligned with the Semantic Differential Scale devised by Mehrabian and Russell (1974): a widely used instrument for assessing the three-dimensional structure of objects, events, and situations. It consists of a set of 18 bipolar adjective pairs that are each rated along a 9-point scale.

Figure 5.1 below is an illustration of the SAM model consisting of the manikin 9-point rating scale, which was administered to participants as a component of the questionnaire.

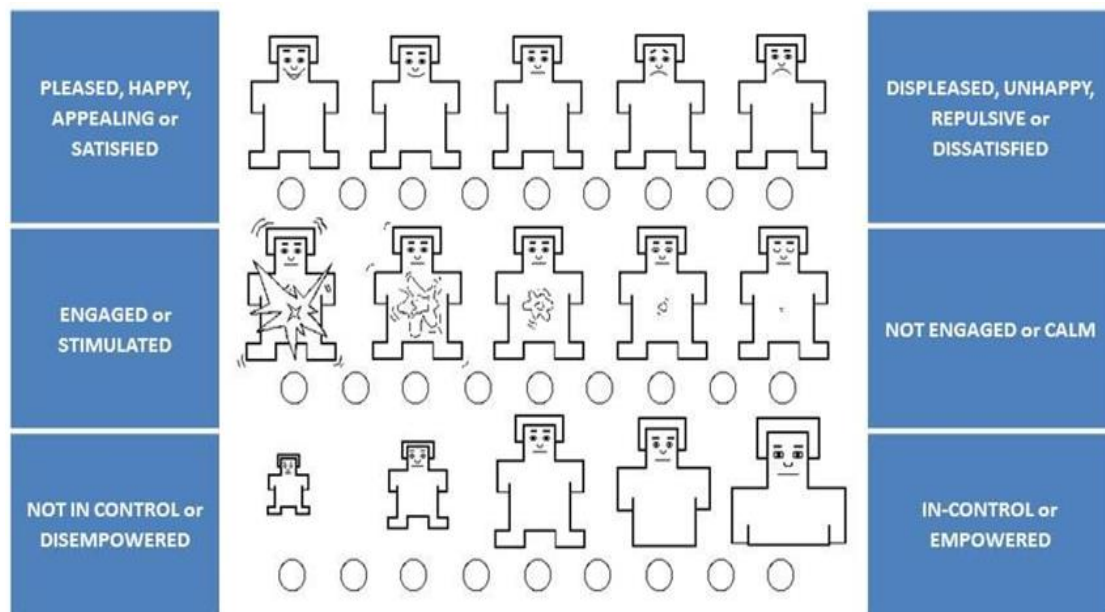


Figure 5.1
Measuring emotion: the SAM and the semantic differential

Source: Bakker *et al.*, 2014; Bradley & Lang, 1994

Factor analyses of the resulting 18 ratings generated scores on the dimensions of pleasure, arousal, and dominance, which form three clusters; these can be displayed in a 9-box structure.

Cluster 1: High pleasure (7-9) and arousal in various degrees produces the top cluster of emotions, where low arousal (1-3), moderate arousal (4-6) and high arousal (7-9) are translated into comfortable, warmed and enthusiastic segments (Joubert, 2019).

Cluster 2: Moderate pleasure (4-6) and arousal in various degrees (1-9) produces the middle cluster of emotions, where low arousal (1-3), moderate arousal (4-6) and high arousal (7-9) translate into indifferent, ambivalent and apprehensive segments (Joubert, 2019).

Cluster 3: Low pleasure (1-3) and arousal in various degrees (1-9) produces the bottom cluster of emotions, where low arousal (1-3), moderate arousal (4-6) and high arousal (7-9) translate into sullen, troubled and alarmed segments (Joubert, 2019).

Pleasure	High	9	Comfortable Relaxed			Warmed Capable			Enthusiastic Victorious		
		8	Secure Untroubled			Confident Carefree			Energetic Alive		
		7	Leisurely Respectful			Responsible Secure			Exuberant Triumphant		
	Moderate	6	Indifferent Uninterested			Ambivalent Sheltered			Apprehensive Activist		
		5	Unemotional Aloof			Sensitive Embattled			Anxious Defiant		
		4	Unimpressed Subdued			Repentant Conforming			Startled Radical		
	Low	3	Sullen Unresponsive			Troubled Helpless			Alarmed Aggravated		
		2	Unconcerned Apathetic			Insecure Rejected			Terrified Afraid		
		1	Uncaring Bored			Depressed Discouraged			Stressed Fearful		
			1	2	3	4	5	6	7	8	9
		Low			Moderate			High			
		Arousal									

Figure 5.2
The emotions clusters and sub-clusters

Source: Joubert, 2019

The dimensions which were analysed are: pleasure, arousal and dominance. However, in contrast to previous PAD discussion, this study focuses on the pleasure and arousal dimensions. As noted, previous researchers have applied the pleasure and arousal dimension extensively in various studies, as it was found that there is a strong relationship between dominance and arousal (Bakker *et al.*, 2014; Hall *et al.*, 2018; Joubert, 2019). This point is elaborated on below.

Administration of the SAM

Depending on individual performance, the subjects can complete ratings on the SAM scales in less than 15 seconds. The SAM allows numerous stimuli to be tested in a short amount of time, while causing less respondent constraint or fatigue than the verbal assessment instruments (Morris, 1995). Previous studies indicated that subjects have expressed greater interest in SAM ratings versus verbal measurements,

and have categorised SAM as being more likely to hold their attention (Bakker *et al.*, 2014; Lang, 1985). The other advantage is that both children and adults readily identify with the SAM images and easily understand the emotional dimensions they represent (Lang, 1985).

Interpretation of the SAM

To assess the attitude towards the different banking channels, as discussed earlier, the PAD (pleasure, arousal and dominance) framework was employed to gauge participants' emotional responses. The principles underlying it suggest that these three dimensions can be employed for capturing the affective quality of the experience of human emotions (Geethanjali *et al.*, 2017; Caicedo & Beuzekom, 2006). However, given the strong relationship between arousal and dominance, scholars arrived at the convention of using the pleasure and arousal dimensions for analysis, as it is believed that the two dimensions still provide valid and reliable results (Morris *et al.*, 1993; Morris, 2002; Joubert, 2018).

The interpretation of SAM is addressed by the following method:

[Comfortable + Warmed + Enthusiastic + Apprehensive + ½ Ambivalent] – [Indifferent + Sullen + Troubled + Alarmed + ½ Ambivalent] = Net Emotional Valence (NEV) (J.P.R. Joubert, personal communication, 16 January 2019).

An example of application of the above method in this study is the pleasure/ arousal or valence, or what the researcher will term “Net Emotional Valence (NEV)” for ATM channel as follows:

$$[62.3+7.9+9.7+1.5+(5.5/2)]-[0.5+0.2+4.7+7.7+(5.5/2)]=68\%$$

Reliability and validity of the SAM

The SAM is a culture-free, language-free measurement, suitable to be administered in different countries and cultures (Bradley, Greenwald, & Hamm, 1994; Morris Bradley, & Wei, 1994), and is a self-administered instrument. It has been used in numerous studies. The relationship between scores using SAM and the semantic differential procedure for pleasure was .94, arousal .94 and dominance .66 (Lang, 1985; Morris & Bradley, 1994; Morris, 1995).

Motivation for using the SAM

The SAM is an instrument ready for immediate application, a useful, easy-to-implement tool for measuring affective responses (Morris, 1995). Given its visual nature and graphic character scales, it addresses the limitations associated with verbal and nonverbal measures. SAM is also a useful tool for assessing and determining subjective manifestation of emotions associated with stimuli processing, and given its features can easily be applied to diverse segments of individuals in different settings, languages and cultures, and allows rapid structural assessment of emotional and affective dimensions (Bradley & Lang, 1994).

5.1.3 Limitations of the instruments

Self-reporting instruments have several disadvantages. According to Berry *et al.* (2012), self-reports focus on individuals' verbalisations of their feelings towards themselves or others. Individual customers may find it difficult to reveal aspects of or feelings about themselves (Tabachnick & Fidell, 2014). For instance, according to (Schwartz, 2008), the PVQ is likely to suffer from one or more of the following limitations: a) The meanings of single phrases are more likely to be understood differently by different people; b) Many of the single phrases are basically abstract concepts; c) The items require a response scale of importance that is problematic for some respondents (Schwartz, 2008). In addition, the experience with elderly and less educated respondents is that some have difficulty translating their sense of their own values into a point on an importance scale. If numbers are used, they have difficulty translating ideas into numbers. However, even if phrases are used, they are not at ease with reporting importance ratings (Schwartz, 2008).

In everyday life, few people spend time thinking about what is and is not important to themselves. Some can do so in response to questionnaires, but others find this a difficult task. First, they really do not have clear answers, so responses are not especially accurate. Second, if they think hard, they may be puzzled or disturbed by what they conclude about what is more and less important to them. Consequently, problems of self-presentation arise in response to direct questions about importance to self (Schwartz, 2008).

The self-perception method is also associated with potential problems concerning validity, and may bear little relationship to reality as perceived by the respondents or

others. Another disadvantage of self-reports is the eventual probability of faking and not providing the level of detail or use of the concepts in which the researcher is interested (Tabachnick & Fidell, 2014). When using self-perception measures, the results might be biased because of the tendency of respondents to be dishonest and may also be affected by their ability to respond to certain constructs. In addition, the nature of the instruments may eventually present limitations in terms of the nature of the methods used to determine their validity and compare them with other instruments (Hair *et al.*, 2014).

The four instruments, the DIQ, TAMQ, CQ, and PVQ, were selected after an in-depth review of several instruments designed to measure the said variables. The motivation for choosing these instruments was the ability to use statistical correlation analysis to determine the level of the relationship between the different variables used in this study. However, the limitations of the four instruments will be considered during the interpretation of the results deriving from the findings.

5.2 DETERMINATION AND DESCRIPTION OF THE SAMPLE

According to Babbie (2015), one of the first steps in designing a research project involves a clarification of the unit of analysis which is the object of attention. Such units are those the researcher examines in order to create summary descriptions of all such units and to explain differences among them. Any variety of individuals may comprise the unit of analysis for social scientific research (Babbie, 2015). Tabachnick and Fidell (2014) describe the population as a set of objects or cluster of people that forms part of the purpose of the research and about which the researcher would like to isolate certain characteristics. A sample is a subset of the population and refers to a constellation of the entire population that has been drawn, and in which the researcher is interested (Tabachnick & Fidell, 2014).

The population for this study consisted of Maputo's bankable population. The determining factor when making a decision concerning the sample size is the degree to which the sample will be representative of the entire population. According to Whitley and Kite (2013), sampling is the process of selecting items, objects or elements from the population, so that by understanding the properties or

characteristics of the subjects, the researcher is able to generalise these to the larger population (Tabachnick & Fidell, 2014).

As Hair, Hult, Ringle and Sarstedt (2016) point out, there are two categories of sampling, namely probability and non-probability. In the former, the researcher decides in advance that each element of the population will be represented in the sample. In the latter, the researcher has no way of guaranteeing that each element of the sample will be represented in the sample; as was the case of the present study, which employed non-probability sampling, as well as a specific method called purposive sampling, which forms part of the non-probability method (Hair, Black, Babin & Anderson, 2014). The purposive sampling method allows the researcher to collect the data in a purposive manner from a ready and available population. Non-probability samples are used when researchers face difficulties in terms of the cost involved and limitations relating to experimental manipulation or the types of measures that the researcher can employ (Babbie, 2015).

A quantitative survey with a convenience sample ($n = 403$) of bankable individuals (male and female) between the ages of 21 and 60 years old was conducted from 2017 to 2018.

For the present study, the target population consisted of 81 000 bankable consumers from six districts in Maputo, Mozambique (three rural and three urban). The targeted sample was $n = 800$, which was not achieved due to the availability and willingness of people to participate, and errors encountered in some questionnaires which were not utilised as a result of missing data. A total of 403 questionnaires were identified as usable for the purpose of the study ($n = 403$). A response rate of 53.37% was thus achieved.

The profile of the sample is defined according to the following demographic variables: Gender, age, educational level, rural versus urban background, and income. The choice and inclusion of these variables were based on the identification of the variables that influence the relationship between values, culture, diffusion of innovation, technology acceptance and attitude towards digital banking adoption; as these were presented in the literature review.

Table 5.1
Profile of the sample

Category		Frequency	Percentage
Gender	Male	250	62.0%
	Female	153	38.0%
Age	Less than 25	123	30.5%
	25 - 35	141	35.0%
	35 - 44	100	24.8%
	45 - 54	26	6.5%
	55 - 64	10	2.5%
	65 and older	3	0.7%
	Educational level	Basic level	97
Grade 12		131	32.5%
Honours		158	39.2%
Masters		15	3.7%
Doctorate		2	0.5%
Income	< 10.000	162	40.2%
	10.000-20.000	123	30.5%
	20.000-50.000	64	15.9%
	50.000-100.000	31	7.7%
	100.000-250.000	20	5.0%
	250.000-500.000	2	0.5%
	> 500.000	1	0.2%
Urban vs rural	Urban	266	66.0%
	Rural	137	34.0%

Table 5.1 above presents the demographic profile distribution of the participants included in the sample.

5.2.1 Composition of the sample ($n = 403$)

The composition of the sample is discussed according to the different demographic categories as in Table 5.1 above.

With regards to gender groups, there were 62% male and 38% female participants. With regards to age groups, participants aged 25 years and younger comprised 35.5% of the sample, those in the age group of 25-34 years comprised 35%; those aged

35-44 years 24.8%, those aged 45-54 years 6.5%, and those aged 55-64 years 2.5%, whereas those who were 65 and older comprised 0.7% of the total sample.

With regards to educational level, the distribution of the participants in the sample composition indicate that the majority of the participants had attained an Honours degree or equivalent (39.2%), followed by those with Grade 12 or equivalent (32.5%), which was then followed by those who had reached the basic level of education (24.1%). Only 3.7% of the participants possessed a Master's degree or equivalent, while (0.5%) had gained a Doctoral degree or equivalent.

With regards to income, the sample composition was measured according to categories of monthly income in MZN (MZN represents Metical, the Mozambique currency, and during the data-collection period 1 MZN was equivalent to about 5 ZAR). The categories ranged from MZN10 000 p.m. and below; from 10 000 to 20 000 p.m.; from 20 000 to 50 000 p.m.; from 50 000 to 100 000 p.m.; from 100 000 to 250 000 p.m.; from 250 000 to 500 000 p.m.; and over MZN500 000 p.m.

Table 5.1 above indicates that the frequencies seemed to be concentrated around the category of less than 10 000, and up to 20 000 (40.2% and 30.2% respectively). Of the participants, 40.2% fell in the category 10 000 and below; 30.2% in the category 10 000 to 20 000; 15.9% in the category 50 000 to 100 000; 5.0% in the category 100 000 to 250 000; 0.5% in the category 250 000 to 500 000; while those earning 500 000 and above, comprised 0.2% of the sample ($n = 403$).

With regards to urban versus rural background groups, Table 5.1 above indicates that 66% of the participants in the sample came from an urban area, while 34% of the participants came from a rural background.

5.3 DATA-COLLECTION

Permission to conduct research was obtained from the University Research Ethics Committee at UNISA (Appendix A). In addition, the researcher obtained consent from the proposed participants to voluntarily take part in the study. She explained and discussed the intention to conduct the research with the identified bankable customers and requested their cooperation and collaboration.

The translations of the DIQ, TAMQ, CQ and PVQ from English into Portuguese, and translation back from Portuguese into English, were carried out by linguistics experts from the Eduardo Mondlane University in Mozambique. The four instruments (as discussed above) were compiled in a booklet. This also contained an introduction to the project, evidence of the University's permission to conduct the research and a form of informed consent to be signed by each participant. Six fieldworkers were trained by the researcher. Their participation meant that they distributed the booklets to a sample of the 500 potential participants by hand, inviting them to participate in the study. The data gathering was carried out between May and June 2018.

Participants who agreed to participate in the study were then handed the four questionnaires and a demographic questionnaire containing questions on the variables to fill in during their spare time and return within two hours. The fieldworkers subsequently collected the completed booklets and handed them back to the researcher. All participants were assured of anonymity and confidentiality. In terms of anonymity, they were not asked to identify or provide their names or surnames. The fieldworkers informed participants that they should report any unethical issues or rights violations to the UNISA research ethics committee.

5.4 STATISTICAL PROCESSING OF THE DATA

Responses to each of the instrument measures were firstly captured from the hard copies to a Microsoft Excel spreadsheet, where each row was a participant and each column was a question. The completed questionnaires were computed by an independent statistician. All the data was imported and analysed using statistical software, specifically, the Statistical Package for Social Sciences (SPSS) Version 25.0 for the Microsoft Windows platform (SPSS Inc., 2019), AMOS 26 (Arbuckle, 1995; 2019), and R Program of Statistical Analysis.

The statistical analyses consisted of three phases, each containing different steps of statistical analysis, namely, descriptive statistical analyses, correlational analyses, and inferential (multivariate) statistical analyses (Hair *et al.*, 2010; Tabachnick & Fidell, 2014).

Figure 5.3 below outlines the data analysis process.

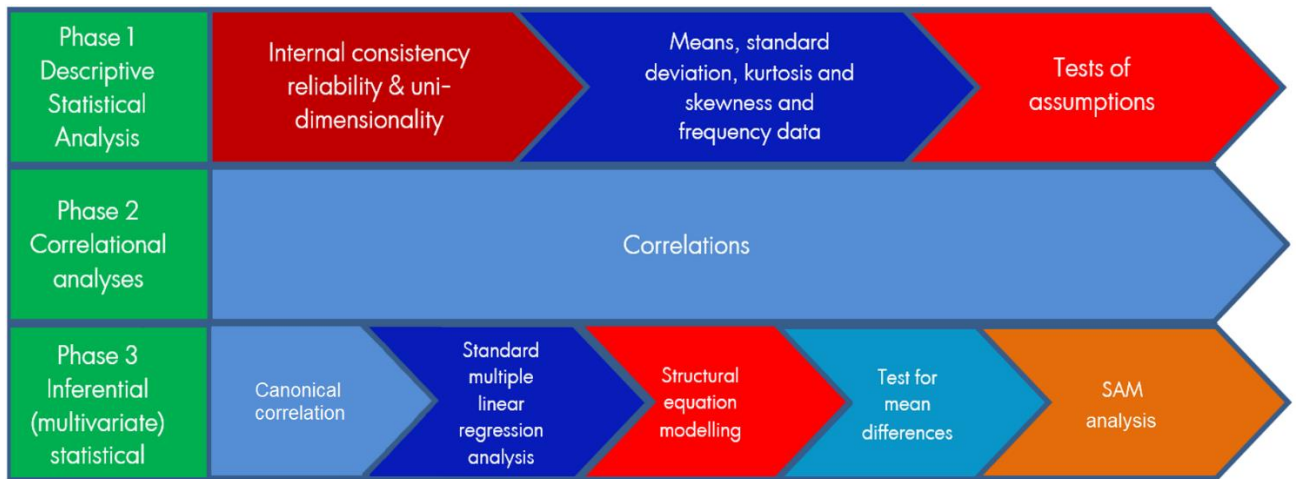


Figure 5.3
Data analysis process

The tests for assumptions were conducted prior to the descriptive statistics, correlational analysis and inferential (multivariate) statistical analysis.

5.4.1 Tests for assumptions

Essentially, the objective of any research is to make valid inferences from a sample of data drawn from the population. Nevertheless, the random samples from a larger population may or not provide exact values that are applicable to the whole population (Tabachnick & Fidell, 2014).

For the purpose of this study, statistical methods were used to make it possible to determine the level of confidence with which such inferences can easily be made. Tabachnick and Fidell (2014) suggest six assumptions that researchers may use to determine the confidence level and to make valid inferences. The following assumptions underlying multivariate procedures and tests for significant mean differences are addressed in this study.

- The accuracy of data entered into the data file and missing values;
- The ratio of cases to independent variables;
- The outliers (univariate and multivariate);
- Normality, linearity and homoscedasticity;
- Multi-collinearity and singularity; and
- Levene's test of equality of variance.

The accuracy of data entered into the data file and missing values

To ensure the accuracy of the data, screening was conducted for possible miscoding. Frequency statistics for each item were requested (SPSS 25, frequency procedure) and these were inspected with the minimum and maximum values, along with means and standard deviations. The minimum and maximum values of each variable had to be checked to ensure that all values in each variable were valid (Tabachnick & Fidell, 2014). A variable that is measured according to a five-point Likert-type scale should not have a value of 6 or 7 and more (Tabachnick & Fidell, 2014). Ignoring such a process may definitively affect the predictive power of any analysis outcome, which is why it is emphasised that, in order to achieve consistency and accuracy in any analysis, data screening is one of the key processes to be accorded special attention (Hartas, 2015; Tabachnick & Fidell, 2014).

Furthermore, it is important for the researcher to deal with the missing values. Pallant (2016) posits that if the researcher finds that there are a lot of missing values in the same specific variables, a decision can be made to exclude those variables from the analyses. If the missing values for several cases occur with different variables, then it is probable that these cases will not be excluded, because of the necessary information that may be lost (Pallant, 2016). A mean value can also be calculated for each variable with a lot of missing values by means of the SPSS. In such cases, Pallant (2016) indicates that the t-test can also be calculated for each variable by differentiating groups (that is the group with missing values versus the group without missing values). Pallant (2016) argues that this should be kept in mind when interpreting findings, in order to ensure that there are no over-generalisations. In the case of the present research, the missing data was negligible (Tabachnick & Fidell, 2019).

The ratio of cases to independent variables

The achievement of an efficient statistical power is subject to a proper determination of the sample size. According to Tabachnick and Fidell (2015), the determination of a sample size is important for the achievement of an adequate statistical power. It is usually vital, before defining an adequate sample size for the testing of a multiple correlation coefficient, to use the formula of $N \geq 50 + 8m$ (where m is the number of independent variables) (Pallant, 2016). In this formula, the standard conventional

alpha level and medium-sized relationships between the independent and dependent variable were assumed ($p = .05$ and $\beta = .20$): based on the above formula, the required sample is $n = 74$.

The sample size of ($n = 403$) obtained in the present study was considered to be satisfactory for achieving an adequate statistical power for identifying the effects by means of the correlation and regression analyses to be performed (Pallant, 2016).

Outliers (univariate and multivariate)

An outlier is perceived as a case with an extreme value on one variable (univariate) or such an extraordinary combination of scores on two or more variables (multivariate) that it unjustifiably influences the statistics (Rosenblad, 2015). An outlier is an observation that seems to deviate noticeably from other observations in the distribution (Rosenblad, 2015). It is defined as a value that has a standard deviation which is three times above or below the mean (Rosenblad, 2015). According to Tabachnick and Fidell (2014), an outlier can have a dramatic effect on the correlation coefficient, particularly in small samples. In other circumstances, outliers can make the r -value much higher than it should be, and may also result in an underestimation of the true relationship (Pallant, 2016). In this study, outliers were detected by carefully examining the values that were sitting out on their own in the scatterplots (Pallant, 2016); and such values were treated as outliers.

Normality, linearity and homoscedasticity

Tabachnick and Fidell (2014) point out that a test for normality can be performed to determine whether the data set is well modelled by the normal distribution. Hair *et al.* (2010) explain multivariate normality as the assumption that each variable (and all linear combination of the variables) is normally distributed. In the case of the present study, the Kolmogorov-Smirnov test could be used to establish the equality of continuous, one-dimensional probability distribution that the researcher can use to compare a sample with a reference probability (Tabachnick & Fidell, 2014).

Cohen *et al.* (2013) point out that the Kolmogorov-Smirnov test quantifies the distance between the empirical distribution function of the sample and the cumulative distribution function of the reference distribution, or among empirical distribution and two samples. The assumption from the null hypothesis is that the samples are drawn

from the same distribution (in a two-sample case) or that the sample is drawn from the reference distribution (in a one-sample case) (Tabachnick & Fidell, 2014). In this case, the distributions measured under the null hypothesis are continuous but otherwise unrestricted (Tabachnick & Fidell, 2014). The Kolmogorov-Smirnov test is considered to be the most commonly used nonparametric method for comparing two samples. This test is sensitive to differences in both the location and the shape of the empirical cumulative distribution functions of the two samples (Rosenblad, 2015).

According to Tabachnick and Fidell (2014), the multivariate analysis requires other assumptions when testing linearity or homoscedasticity. When testing the former, the assumption is that the relationship between metric variables is linear: in other words, the straight line relationship between variables is fitted to the X and Y values on the bivariate scatterplot (Tabachnick & Fidell, 2014). This assumption was tested in the present study by visually scrutinising bivariate scatterplots. A stronger linear relationship is indicated when data points that are created outline an ellipse, where the longer axis slopes upwards from left to right (Tabachnick & Fidell, 2014).

The assumption of homoscedasticity for ungrouped data assumes that the variability of scores for one continuous variable is more or less the same at all values of another continuous variable. This assumption is closely related to the assumption of normality, in that when the normality assumption is met, the relationship between variables can be seen as homoscedastic (Hair *et al.*, 2010; Tabachnick & Fidell, 2014). The assumption of homoscedasticity occurs when the variance of the error terms (e) appears to be constant over a range of predictor variables, so that the data is said to be homoscedastic. This assumption is also described as an assumption of equal variance of the population error E (where E is estimated from e), which is critical to the proper application of many multivariate techniques (Tabachnick & Fidell, 2014). According to Tabachnick and Fidell (2014), the homoscedasticity assumption is based on the fact that the residuals are approximately equal for all predicted dependent scores, or that the variability in scores for the independent variables is the same at all values of the dependent variables. Homoscedasticity is frequently seen through a cluster of points that is wider as the values for the predicted dependent variable become larger (Hair *et al.*, 2010).

Multi-collinearity and singularity

According to Rosenblad (2016), multi-collinearity refers to the relationship among the independent variables. It occurs when the independent variables are highly correlated ($r = .90$ and above). The presence of such high correlations indicates that the independent variables do not hold any additional information needed in the analysis (Rosenblad, 2015), whereas singularity occurs when one independent variable is actually a combination of other independent variables (i.e. when both subscale scores and the total score of a scale are included) (Pallant, 2016). Multi-collinearity has been determined between the independent variables in this study using Pearson's correlation to examine the correlation coefficient between the variables. This was conducted before hypothesis testing, with the aim of determining the extent to which the variables were related (Rosenblad, 2015). The values of Pearson's correlation that were $.90$ and above were considered to be problematic (Rosenblad, 2015).

Pallant (2016) proposed that when two independent variables are highly correlated, the researcher should consider omitting one variable or forming a composite variable from the scores of the two highly correlated variables.

The present study made use of tolerance, VIF (variance inflation factor) eigen-values and condition indices, in order to test the multicollinearity and singularity assumption. The rule of thumb for VIF above 10 and tolerance values that are less than $.10$ indicates a potential multicollinearity problem (Rosenblad, 2015).

Levene's test of equality of variance

Levene's (1960) test is used to check whether samples have equal variances across subgroups on non-parametric variables; these variances are known as homogeneity of variance. Statistical tests such as analysis of variance assume that variances are equal across the normally or non-normally distributed data (Pallant, 2016). Levene's test can be used to verify that assumption. According to Pallant (2016), if Levene's test is significant ($p \leq .05$), the two variances are significantly different. If it is not significant ($p \geq .05$), this indicates that the two variances are not significantly different, and they are therefore considered to be approximately equal (Pallant, 2016).

The present study made use of the non-parametric Levene's test, as the data was non-parametric (Rosenblad, 2015).

5.4.2 Descriptive statistical analysis

Descriptive statistics are procedures used to organise and summarise data in a meaningful way (Rosenblad, 2015). These describe the characteristics of the sample in the form of numerical data in the selected constructs, as well as socio-demographic variables (Rosenblad, 2015). In the present study, the descriptive statistics consisted of the following stages: (1) Determining the internal consistency reliability of the measuring instruments by means of Cronbach's alpha coefficients; (2) Determining the means and standard deviations, kurtosis and skewness of the categorical and frequency data.

5.4.2.1 Means and standard deviations

The means and standard deviations for all dimensions of values, culture, diffusion of innovation and technology acceptance were determined in the empirical study (Rosenblad, 2015). The mean (M) is defined as the sum of scores divided by the number of scores across the distribution (Tabachnick & Fidell, 2014; Treiman, 2014). The intended mean is used to compute the score averages that are obtained in the different dimensions of the instruments (Tabachnick & Fidell, 2014). According to Rosenblad (2016), standard deviations (SD) and minimum and maximum values are used to describe the results. A standard deviation is the positive square root of variance that measures the average of the deviations of each score from the mean, and also measures the average distance of all of the scores in the distribution from the mean or central point of the distribution (Treiman, 2014).

5.4.2.2 Kurtosis and skewness

Additionally, skewness and kurtosis were used. Skewness refers to a measure of symmetry or lack of symmetry (Rosenblad, 2015). A set of data is categorised as symmetrical if its centremost point is lying in the middle of the distribution, and the distributions of scores to the left and the right of the centremost point are mirror images of each other (Treiman, 2014). Asymmetrical distribution may be positively or negatively skewed. The distribution is positively skewed if the majority of the sample scores are in the lower range of the variable. Conversely, it is negatively skewed if the majority of the scores are in the upper range of the variable (Rosenblad, 2015). Kurtosis is a measure of whether the data is peaked or flat in relation to a normal

distribution. Skewness and kurtosis values ranging between the -1 and +1 normal range are recommended for conducting parametric tests (Rosenblad, 2015).

5.4.2.3 Internal consistency reliability

The reliability of an instrument can be perceived as the internal consistency or stability of test or measure scores. Reliability is the internal consistency with which each item in a scale correlates with each other item, ensuring that a test measures the same thing over time. According to Dunn *et al.* (2014), a range between .80 and .95 would indicate a desirable and reliable coefficient, particularly for individual measures, whereas Nunnally and Bernstein (2010) indicate that a range between .70 and .80 is desirable. However, Cohen *et al.* (2011) add that even reliability coefficients as low as .60 and .50 can be regarded as acceptable for broad group measures.

The Cronbach's Alpha coefficient was used in this study to determine the internal consistency reliability of the seven instruments. These coefficients range from 0, which signifies that there is no internal consistency, to 1, which is indicative of maximum internal consistency; the higher the alpha, the more reliable the instrument will be (Mitoga-Monga, 2015).

5.4.3 Correlational analyses

According to Rosenblad (2016) and Tabachnick and Fidell (2014), correlation statistics test the direction of the strength of the relationship between two or more variables, and the strength of this relationship is represented by a correlation coefficient. The Pearson product moment (r) is classically used to describe the strength of the linear relationship between the diffusion of innovation, technology acceptance, culture, values and attitude towards digital banking adoption (Tabachnick & Fidell, 2014). Pearson (r) correlation has values that range from -1.00 to +1.00. The sign of r provides information about the direction of the relationship between variables (Tabachnick & Fidell, 2014). A positive correlation of +1.00 indicates that as scores for the dependent (X) variable increase, scores for the independent (Y) variable also tend to increase, whereas a negative correlation of -1.00 indicates that as scores for the dependent (X) variable increase, scores for the independent (Y) variable tend to decrease (Tabachnick & Fidell, 2014).

In the present study, the Pearson-product moment correlations coefficient was used to test for the statistically significant interrelationship between the variables, with specific reference to the positive or negative relationship that exists between the scores of DIQ, TAMQ, CQ, and PVQ.

Hypothesis Ha1: *There is a statistically significant interrelationship between the values, culture, diffusion of innovation and technology acceptance, and attitudes towards the adoption of digital banking, as was tested in this regard.*

5.4.4 Inferential and multivariate statistical analysis

Inferential statistics were performed to permit the researcher to make inferences about the data. Such statistics are used to reach conclusions that are beyond the direct data, which entails making inferences from the data obtained and applying them to more broad-spectrum conditions (Rosenblad, 2015). The inferential multivariate statistics consisted of five steps, as follows:

1. Conducting canonical correlation analysis to empirically investigate the overall statistical relationship between culture, values, diffusion of innovation, technology acceptance and attitudes towards digital banking, in order to test hypothesis Ha2.
2. Conducting standard multiple regression analysis to empirically investigate whether the values, culture, diffusion of innovation, and technology acceptance positively and significantly predict the attitudes towards digital banking adoption, so as to test hypothesis Ha3.
3. Conducting structural equation modelling (SEM) to determine the elements of the empirically manifested structural model and assess the fit between the empirically manifested structural model and the canonical measurement model, in order to test hypothesis Ha4.
4. Performing hierarchical moderated regression analysis to empirically investigate whether the demographic variables significantly moderate the relationship between the values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking adoption, in order to test hypothesis Ha5.
5. Conducting tests for significant mean differences to empirically investigate whether significant differences exist between the demographic variables that

act as significant moderators between the values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking adoption, as manifested in the sample of respondents, so as to test hypothesis Ha6.

6. A SAM analysis was performed to measure individuals' attitudes towards digital banking based on the emotions displayed against each of the presented banking channels (branch, ATM, Internet Banking, Mobile banking, MPESA - a mobile phone-based money transfer, financing and microfinancing service, and USSD). Hypothesis Ha7 was tested in this respect.

5.4.4.1 Standard multiple linear regression analysis

Multiple regressions were performed in this study in order to determine the proportion of variance that is explained by the independent variables of values, culture, diffusion of innovation and technology acceptance in the scores of the dependent attitudes towards digital banking adoption.

According to Rosenblad (2016), multiple regression analysis is one of the multivariate methods used to investigate the collective contributions of the explanatory (independent variables) to the variance of the explained (dependent) variables. The analysis procedure is used to shape models for explaining scores of the dependent variable in relation to the scores of the independent variables (Rosenblad, 2015). Multiple regression analysis results emphasise two important elements. Firstly, the R² values indicate how well the independent variable explains the dependent variable, while secondly, the regression results measure the direction and size (magnitude) of the effect of each variable on a dependent variable (Rosenblad, 2015). By using multiple regression analysis, the researcher should be able to test the models and indicate which set of variables is affecting the attitudes towards digital banking adoption, by highlighting the direction and size of the effect of the independent variables on the dependent variables (Rosenblad, 2015).

Research hypothesis Ha3 was tested by conducting multiple regression analyses: The values, culture, diffusion of innovation and technology acceptance positively and significantly predict the attitudes towards digital banking adoption.

5.4.4.2 Structural equation modelling (SEM)

Structural equation modelling (SEM) is defined as a statistical procedure that tests the theoretical models containing hypothesised sets of variables to define constructs and hypothesised relationships between these constructs (Kline, 2012). SEM as a multivariate instrument uses various types of models to arrive at a parsimonious summary of the interrelationships between the observed variables and achieve the basic goal of providing a quantitative test of the theoretical model hypothesised by the researcher (Rosenblad, 2015).

SEM includes observed variables and latent variables, which may be independent, dependent or moderating. In this study, the latent variables of attitudes towards digital banking adoption were hypothesised to be dependent on the independent latent variables of values, culture, diffusion of innovation, and technology acceptance. This basic relationship has been hypothesised to be moderated by the socio-demographic variables of age, gender, educational level, income, and urban versus rural background.

SEM, as a multivariate procedure that combines multiple regression, path analysis and factor analysis, examines a pattern of relationships among a set of variables (Whitley & Kite, 2013; Rosenblad, 2015). According to Whitley *et al.* (2013), SEM is divided into two different parts. Firstly, the measurement model that deals with the relationship between the measured and latent variables. Secondly, the structural model that deals with the relationship between the latent variables (Whitley *et al.*, 2013).

For the purposes of this study, the empirically resulting canonical correlation model was presumed to be the measurement model. The SEM was used to validate the canonical correlation model. SEM analysis was performed with the objective of validating the relationship among the independent variables and the dependent variable (Rosenblad, 2015).

According to Rosenblad (2015), SEM is distinct from other relational modelling such as multiple regression analysis because of its ability to distinguish between the direct and indirect relationships between variables, as well as its ability to analyse the relationship between latent variables without random error. SEM as a confirmatory approach hypothesises a model on the basis of theory and empirical evidence from previous research (Rosenblad, 2015).

The SEM process emphasises the validation of the measurement and hypothesised model by obtaining estimates of the parameters of the model and by determining whether or not the model itself provides a good fit to the data (Rosenblad, 2015). Components such as regression models, path models, confirmatory factor models, and reliability and correlation analysis are considered to be essential for the SEM process (Rosenblad, 2015).

Regression model

A regression model consists of observed variables, where a single dependent observed variable is predicted or explained by one or more independent observed variables (Tabachnick & Fidell, 2014).

Path model

A path model is specified with observed variables, but flexibility allows for multiple independent observed variables. A path model tests more complex models than regression models are able to do. Garson (2009) indicates that path analysis is a statistical technique used to examine the comparative strength of direct and indirect relationships among variables. Since path analysis assesses the comparative strength of different effects on an outcome, the relationships between variables in the path model are expressed in terms of correlations and represent hypotheses proposed by the researcher (Rosenblad, 2015).

Confirmatory factor analysis model

A confirmatory factor analysis model consists of observed variables which are hypothesised to measure one or more latent variables (independent and/or dependent). Confirmatory factor analysis (CFA) plays a crucial role in SEM, as it may be used to confirm that the indicators sort themselves into factors corresponding to how the researcher has linked the indicators to the latent variable. CFA models are used to evaluate the role of measurement error in the model, validate a multifactorial model, and determine group effects on the factors (Tabachnick & Fidell, 2014).

Reliability, known as Cronbach's Alpha, is, as mentioned, a frequently used coefficient that tests the extent to which multiple indicators for latent variables belong together. This coefficient varies from 0 to 1.0. The rule of thumb is that good indicators should

have a Cronbach's Alpha of .70 and more to be considered reliable (Tabachnick & Fidell, 2014).

Correlation analysis

The Pearson product moment correlation coefficient measures the degree of linear relationship between two variables (Rosenblad, 2015). The emphasis in correlation is placed on the degree to which a linear model may describe the relationship between two variables in terms of direction or strength. According to Rosenblad (2016), a correlation coefficient may take on any value between 1 and -1; the closer the coefficient is to either of these points, the stronger the relationship is between variables. A correlation value between 0 and .3 indicates a weak linear relationship; a correlation value between .3 and .7 indicates a moderate linear relationship; while a correlation value of .7 and 1.0 indicates a strong one (Rosenblad, 2015).

SEM has become an important tool that is widely used and accepted in social sciences (Rosenblad, 2015). There are various advantages to using it:

- It offers a greater recognition of the validity and reliability of observed scores obtained from measurement instruments. Measurement error has become a huge issue in many disciplines (Rosenblad, 2015).
- SEM has the ability to take the analysis of complicated and advanced theoretical models into account, which increases the ability to analyse complex theoretical models that include mediations and moderation (Rosenblad, 2015).
- It allows for more flexible assumptions, as well as the attraction of SEM's graphical modelling interface and the ability to test models with multiple dependents. In addition, SEM helps one to compare alternative models in order to determine relative model fit (Rosenblad, 2015).
- SEM software programs are user-friendly (Rosenblad, 2015).

SEM was performed in this study with the help of AMOS 26 (Arbuckle, 1995; 2019).

5.4.4.3 Hierarchical moderated regression analyses

Hierarchical moderated regression analyses are used to empirically detect how a variable moderates or influences the nature of a relationship between variables (Pallant, 2016). Such a regression analysis enables the relationships between

independent and dependent variables to be linked to other independent variables (that is, to moderate them). The moderating effect occurs when the level of the third variable (age, gender, educational level, income and urban versus rural background) influences or affects the relationship between the values, culture, diffusion of innovation and TAM independent variables, and attitudes towards digital banking, as dependent variables.

Hierarchical moderated regression analyses are important statistical tools, which have been judged to be appropriate for testing interactions (Pallant, 2016). Gaol, Kadry, Taylor and Li (2014) suggest that in order to test moderating effects, hierarchical moderated regression analysis should be used.

In this study, this analysis was performed to determine whether or not the socio-demographic variables significantly moderate the relationship between the culture, values, diffusion of innovation, and technology acceptance variables and the attitudes towards digital banking adoption.

Research hypothesis H05 was tested by conducting hierarchical moderated regression analyses. This hypothesis states the following: The demographical variables do not significantly and positively moderate the relationship between the independent variables and the attitudes towards digital banking dependent variable.

5.4.4.4 Tests of differences between mean scores

The Mann-Whitney U test and the Kruskal-Wallis test (for non-parametric data) (Pallant, 2016) were conducted to identify significant differences between gender, age, educational level, income and urban versus rural background that were shown to be the variables which acted as moderators between the culture, values, diffusion of innovation and technology acceptance, and the attitudes towards digital banking adoption.

The concept behind the Mann-Whitney U test and the Kruskal-Wallis test is to rank the data for each condition and see how different the two or more groups' rank totals are (Pallant, 2016; Rosenblad, 2015). If there is a systemic difference between two or more groups' conditions, then most of the high ranks in between belong to one condition and the low ranks to other ones. The Mann-Whitney test statistic U refers to

differences between two ranks' totals while the Kruskal-Wallis test reflects the differences between more ranks' totals (Pallant, 2016; Rosenblad, 2015).

Research hypothesis Ha6 was tested by conducting the Mann-Whitney U test and the Kruskal-Wallis test (Rosenblad, 2015).

5.4.5 Level of significance

The level of significance expresses statistical significance in terms of specific probability (Rosenblad, 2015). Hypothetically, the most frequently used statistical level of significance is based on $p \leq .05$ as a rule of thumb, therefore providing 95% confidence in the results being accepted as standard when applied in other research contexts (Rosenblad, 2015). In other words, if a researcher observes the relationship to be occurring 95 times out of 100, that is, 5% of the difference, then he/she could say with some confidence that there seems to be a high degree of association between the variables (Rosenblad, 2015). Nevertheless, the researcher may make two types of errors (Type I and Type II errors). Firstly, a Type I error occurs when the researcher misleadingly rejects a null hypothesis, by stating that a relationship exists when in fact there is no relationship. Secondly, a Type II error occurs when the researcher misleadingly accepts a null hypothesis by stating that a relationship exists, when there is no such relationship between the variables (Rosenblad, 2015).

5.4.5.1 Statistical significance of Pearson product moment correlations

Pearson product moment correlations will be interpreted according to the guidelines provided by Cohen (1992) (Mitonga-Monga, 2015):

$r \geq .10$ (small practical effect);

$r \geq .30$ (medium practical effect); and

$r \geq .50$ (large practical effect).

The significance level of $p \leq .05$ and $r \geq .30$ was chosen as the cut-off point for rejecting the null hypotheses (Rosenblad, 2015).

5.4.5.2 Statistical significance of canonical correlation analysis

In terms of the statistical significance of canonical correlation, the level that is considered to be the minimum which is acceptable for interpretation is $p \leq .05$, which

(with the $p \leq .01$ level) has become the generally accepted level for considering a correlation coefficient to be statistically significant. Multivariate tests of all canonical roots are used to assess the significance of discriminant functions, together with Wilks' Lambda, Hotelling's trace, Pillai's trace and Roy's greatest characteristic root (gcr) (Tabachnick & Fidell, 2014). The significance levels of canonical functions represented by the size of the canonical correlations are considered when deciding which functions to interpret. Usually, the R_c loading $\geq .30$ guideline is set and considered as a suitable size for canonical correlations (Tabachnick & Fidell, 2014).

Nevertheless, the decision is usually based on the contribution of the results to a better understanding of the research problem being investigated. According to Tabachnick and Fidell (2014), the redundancy index of the canonical variate (the percentage of variance explained by its own set of variables, multiplied by the squared canonical correlation for the pair of variates) should also be considered when interpreting the practical significance of the canonical results. The higher the redundancy index, the more practically significant the results are (Tabachnick & Fidell, 2014).

Canonical correlation was deemed appropriate and useful for the purpose of this study, given that the statistical analysis involved investigating the strength of the relationship between two sets of variables (independent and dependent), and they were performed to investigate the overall statistical relationships, and it is considered that canonical correlation analysis may better reflect the reality of this research. According to Hair et al., (2010), canonical correlation analysis offers several advantages for researcher, given that it limits the probability of committing Type I errors, and the risk of such an error relates to the likelihood of finding a statistically significant result when it does not exist. This type of analysis helps to determine the relationship between two sets of variables (independent and dependent) in a single relationship, and can detect two or more unique relationships, if they exist (Hair et al., 2010).

Canonical correlation analysis was thus, conducted to determine the overall relationship between the set of variables: values, culture, diffusion innovation, technology acceptance (independent) and intention, subjective norms and perceived behavioural control - attitudes (dependent). This canonical correlation analysis also tested research hypothesis Ha2: The (independent variables) of values, culture,

diffusion innovation, technology acceptance positively and significantly predict (dependent variable) attitudes towards digital banking (described as intention, subjective norms and perceived behavioural control)

5.4.5.3 Statistical significance of multiple regression analysis

In terms of the statistical significance of the multiple regression the following rule of thumb were observed (Tabachnick & Fidell, 2014)

Firstly, the correlations of the independent variables were below (0.9) which indicate that there is no multicollinearity concern (Hair et al., 2010). Other common measures included the tolerance value and its inverse – the variance inflation factor (VIF). Hair et al. (2010) recommend that a very small tolerance value (0.10 or above) or a large VIF value (of 10 or above), indicate high collinearity. For the purpose of this study, a cut-off value of $F(p) \leq .005$ and the adjusted $R^2 \leq .12$ (small practical effect size); $R^2 \geq .13 \leq .25$ (moderate practical effect size); $R^2 \geq .25$ (large practical effect size) will be considered when interpreting the magnitude of the practical significance of the results (Cohen, 1992).

5.4.5.4 Statistical level of significance: SEM

The purpose of SEM, as noted, is to test the theories and determine the statistical significance of the hypothesised theoretical model that has practical and substantive importance. When analysing the statistical significance and substantive meaning of the hypothesised model, the researcher should consider the following approximate fit indices: the Chi Square (X^2); Goodness of Fit Index (GFI); Normed Fit Index (NFI); Comparative Fit Index (CFI); Tucker-Lewis Index (TLI); Root Mean Square Error of Approximation (RMSEA); and Standardised Root Mean Square Residual (SRMR) (Geiser, Keller, & Lockhart, 2013).

Chi Square (X^2)

The chi square (X^2) is a traditional measure used to test the closeness of the fit between the unrestricted sample covariance matrix and restricted covariance matrix (Kline, 2016). It tests the null hypothesis that the covariance matrix and mean vector in the population are equal to the model-implied covariance matrix and mean vector (test of exact model fit). A significant chi-square value leads to the elimination of the null hypothesis that the model fits exactly in the population. The degrees of freedom

are calculated as the difference between the number of pieces of available information (variances, covariances and means of the manifested variables) minus the number of estimated model parameters (Kline, 2016).

The chi-square statistic is in essence a statistical significance test, as it is sensitive to the size of the sample, which means that it nearly always rejects the model when large samples are involved (Kline, 2016); however, where smaller samples are used, the chi-square statistic lacks power, and because of this, one may not be able to discriminate between good fitting models and poor fitting models (Cohen *et al.*, 2011). Due to the restrictiveness of the model chi-square, researchers have found alternative indices to assess model fit. One of the statistics that minimises the impact of the sample size on the model is that of Byrne (2013) and Wheaton, Muthen, Alwin and Summers' (1977) relative/normed chi-square (χ^2/df). According to Kline (2015), there is no consensus concerning an acceptable ratio for the chi-square. Wheaton *et al.* (1977) recommend a ratio from as high as 5.0, to as low as 2.0.

Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI)

The GFI is an absolute fit index that estimates the proportion of covariances in the sample data matrix explained by the model (Kline, 2016). The GFI is the extent to which the hypothesised model reproduces the covariance structure between the variables in the sample. By observing the variances and covariances accounted for by the model, the GFI can demonstrate how closely the model comes to replicating the observed covariance matrix. The AGFI differs from the GFI only in the sense that it adjusts for the number of degrees of freedom in the specified model. As such, it also addresses the issue of parsimony by incorporating a penalty for the inclusion of additional parameters (Kline, 2016; Mustofa, 2018).

The GFI and AGFI are considered as absolute indices of fit because they basically compare the hypothesised model with no model at all. Both indices range from zero to 1.0, with values close to 1.0 being indicative of a good fit (Kline, 2016). In addition, AGFI indices tend to increase along with a larger sample size. It is commonly accepted that values of .90 or greater indicate well-fitting models (Kline, 2016).

Root Mean Square Error of Approximation (RMSEA)

The RMSEA is viewed as a badness-of fit index, where a value of zero indicates the best fit. It is also perceived as a parsimony-adjusted index that does not approximate

a central chi-square distribution (Mustofa, 2018). Alternatively, the RMSEA follows a non-centrally chi-square distribution, where the non-centrality parameter allows for discrepancies between model-implied and sample co-variances (Mustofa, 2018). The cut-off point recommended for RMSEA has been reviewed systematically over the past fifteen years. Up until the early nineties, an RMSEA in the range of .05 to .10 was considered to be an indication of a fair fit whereas values above .10 indicated a poor fit (Kline, 2016). An RMSEA of .08 to .10 was considered to be a mediocre fit and below .08 a good fit.

It is now commonly reported in relation to the RMSEA that in a well-fitting model, the lower limit is closer to .0, while the upper limit should be less than .08. An RMSEA value of .05 and less indicates an exact and close approximation, while values of up to .08 suggest a reasonable fit model in the sample (Kline, 2016; Mustofa, 2018). It is commonly believed that there is a good model fit if the RMSEA is less than .05, and an adequate fit if the RMSEA is less than or equal to (about) .08 (Kline, 2016).

One of the advantages of the RMSEA is its ability to allow the confidence interval to be calculated around its value. This is possible due to the known distribution values of the statistic, and subsequently allows for the hypothesis (poor fit) to be tested more accurately (Kline, 2016). RMSEA attempts to measure the error of approximation in the sample apart from the error of estimation due to sampling errors. The RMSEA is robust under conditions of data non-normality (Kline, 2016; Mustofa, 2018).

Root-Mean Square Residual (RMR) and Standardised Root Mean Square Residual (SRMR)

The RMR and the SRMR are a square root of the difference between the residuals of the sample covariance matrix and hypothesised covariance model (Mustofa, 2018). Both coefficients of the RMR and SRMR are a standardised measure for the evaluation of the model residuals (sample minus model-implied co-variances, and means). The range of the RMR is calculated based upon the scales of each indicator; therefore, if the questionnaire contains items with varying levels, the RMR can become difficult to interpret (Mustofa, 2018). The SRMR resolves this problem and is therefore more meaningful to interpret. Conventionally, small SRMR values indicate that the observed variance, covariance and means are well reproduced by the model on average (Mustofa, 2018). Nevertheless, values as high as .08 are deemed acceptable

(Hu & Kline, 1999; Mustofa, 2018). SRMR values of below .05 are usually seen as an indication of a good fit (Mustofa, 2018).

Incremental fit indices calculate the proportionate improvement in the fit by comparing a target model with a more restricted, nested baseline model. The commonly used incremental fit indices are: the CFI, NFI and NNFI, and the TLI (Mustofa, 2018).

Comparative Fit Index (CFI)

The CFI compares the fit of the target model to the fit of a baseline or independent model, which assumes that the population covariance matrix of the observed variable is a diagonal matrix (Mustofa, 2018). This means that the observed variables are allowed to have different variances, but not zero covariance (Mustofa, 2018).

The CFI (Bentler, 1990) is a revised form of the NFI, which takes into consideration the sample size that performs well, even when the sample size is small (Mustofa, 2018). Like the NFI, this statistic assumes that all latent variables are uncorrelated (null/independence model) and compares the sample covariance matrix with this null model (Mustofa, 2018). As with the NFI, values of this statistic range from 0.0 to 1.0, with values closer to 1.0 indicating a very good fit. Generally, the CFI should be equal to or greater than (about) .90 in order to accept the model. However, Mustofa (2018) and Kline (2016) argue for .95 being the cut-off point.

Normed Fit Index (NFI) and Non-Normed Fit Index (NNF)

The NFI assesses the model by comparing the X^2 value of the model to the X^2 of the null model (Mustofa, 2018). The null/independence model is the poorest case scenario, as it specifies that all measured variables are uncorrelated (Mustofa, 2018). Values for this statistic range from 0 to 1, with Bentler and Bonnet (1980) suggesting that values greater than .90 indicate a good fit.

According to Mustofa (2018), the cut-off criterion should be $NFI \geq .95$. However, the major drawback to this index is that it is sensitive to the sample size, thereby underestimating the fit for samples smaller than 200 (Kline, 2016). This problem can be resolved by the NNFI (also known as the TLI), an index that favours simpler models. Nonetheless, in a situation where the researcher uses a small sample, the value of NNFI may indicate a poor fit, regardless of other statistics pointing towards a good fit (Kline, 2016; Mustofa, 2018).

Another problem with the NNFI is that because of its non-normed nature, values can rise above 1.0 and thus be difficult to interpret (Mustofa, 2018). In general, values as low as .80 as a cut-off point have been preferred, however, $NNFI \geq .95$ was suggested as being indicative of a good fit (Hu & Bentler, 1999; Mustofa, 2018).

5.5 FORMULATION OF RESEARCH HYPOTHESES

A hypothesis is a clear statement in which something is predicted (Tabachnick & Fidell, 2014). It clearly describes what the researcher expects or predicts will happen in the research study. With regard to the literature review chapters, the central hypothesis is that a significant relationships between values, culture, diffusion of innovation, technology acceptance, attitudes towards digital banking and demographics exists.

The following research hypotheses were formulated in order to achieve the empirical objective of this study. Table 5.2, below, reiterates the research hypotheses.

Table 5.2
Research hypotheses

EMPIRICAL RESEARCH QUESTIONS	EMPIRICAL RESEARCH AIMS	RESEARCH HYPOTHESIS	STATISTICAL PROCEDURE
<p>Research question 1: What is the nature of the statistical interrelationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking?</p>	<p>Research aim 1: To empirically investigate the nature of the statistical interrelationship between values, culture, diffusion of innovation, technology acceptance and attitudes towards digital banking</p>	<p>H01: There is no statistically significant interrelationship between the values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.</p> <p>Ha1: There is a statistically significant interrelationship between the values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.</p>	<p>Correlation analysis</p>
<p>Research question 2: What is the nature of the overall statistical relationship between the independent latent variables (values, culture, diffusion of innovation, and technology acceptance) and dependent variable (attitude towards digital banking)?</p>	<p>Research aim 2: To empirically assess the nature of the overall statistical relationship between the independent latent variables (values, culture, diffusion of innovation, technology acceptance), and dependent variable (attitudes towards digital banking).</p>	<p>H02: The values, culture, diffusion of innovation, and technology acceptance, as a composite set of independent latent variables are not significantly and positively related to attitudes towards digital banking as dependent latent variable.</p> <p>Ha2: The values, culture, diffusion of innovation, and technology acceptance, as a composite set of independent latent variables are significantly and positively related to attitudes towards digital banking as dependent latent variable.</p>	<p>Canonical correlation analysis</p>
<p>Research question 3: Do the variables of values, culture, diffusion of innovation, and technology acceptance positively and significantly predict the attitudes towards digital banking?</p>	<p>Research aim 3: to empirically determine whether the variable of values, culture diffusion of innovation, and technology acceptance, positively and significantly predict the attitudes towards digital banking.</p>	<p>H03: The values, culture, diffusion of innovation, and technology acceptance, do not positively and significantly predict the attitudes towards digital banking.</p> <p>Ha3: The values, culture, diffusion of innovation, and technology acceptance, do positively and</p>	<p>Regression analysis</p>

EMPIRICAL RESEARCH QUESTIONS	EMPIRICAL RESEARCH AIMS	RESEARCH HYPOTHESIS	STATISTICAL PROCEDURE
<p>Research question 4: Based on the overall statistical relationship between values, culture, diffusion of innovation, and technology acceptance, and attitudes towards digital banking, is there a good fit between the elements of the empirically manifested structural model and the theoretical model?</p>	<p>Research aim 4: Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking, to empirically assess the fit between the elements of the empirically manifested structural model and the theoretical model.</p>	<p>significantly predict the attitude towards digital banking.</p> <p>H04: Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking, the elements of the empirically manifested structural model and the theoretically hypothesised model do not show a good fit.</p> <p>Ha4: Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking, the elements of the empirically manifested structural model and the theoretically hypothesised model show a good fit.</p>	<p>Structural equation modelling</p>
<p>Research question 5: Do the demographical variables (gender, age, educational level, income and urban versus rural background) significantly moderate the relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking?</p>	<p>Research aim 5: To empirically assess whether the demographical variables (gender, age, educational level, income and urban vs. rural background) significantly moderate the relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.</p>	<p>H05: The demographical variables (gender, age, educational level, income and urban vs. rural background) do not significantly and positively moderate the relationship between the independent variables (values, culture, diffusion of innovation, technology acceptance,) and the (attitudes towards digital banking) dependent variable.</p> <p>Ha5: The demographical variables (gender, age, educational level, urban vs. rural background, income) do significantly and positively moderate the relationship between the independent variables (values, culture, diffusion of innovation, technology acceptance) and the (attitudes towards digital banking) dependent variable.</p>	<p>Hierarchical moderated regression analysis</p>

EMPIRICAL RESEARCH QUESTIONS	EMPIRICAL RESEARCH AIMS	RESEARCH HYPOTHESIS	STATISTICAL PROCEDURE
<p>Research question 6: Do significant differences exist between the demographical variables (gender, age, educational level, income, urban vs. rural background) that will act as significant moderators between the values, culture, diffusion of innovation, technology acceptance variables, and attitudes towards digital banking?</p>	<p>Research aim 6: To empirically assess whether significant differences exist between the demographical variables (gender, age, educational level, income, urban vs. rural background) that will act as significant moderators between values, culture, diffusion of innovation, technology acceptance, variables and attitudes towards digital banking.</p>	<p>H06: Individuals from various demographical variables (gender, age, educational level, income, urban vs. rural background) do not differ significantly regarding the variables manifested in the best fit model.</p> <p>Ha6: Individuals from various demographic variables (gender, age, educational level, income, urban vs. rural background) do differ significantly regarding the variables manifested in the best fit model.</p>	<p>Test for significant mean differences</p>
<p>Research question 7: Based on SAM, do individuals of different demographic variables (gender, age, educational level, income, urban versus rural background,) differ as regards their attitude towards banking channels?</p>	<p>Research aim 7: To empirically assess with the use of SAM whether individuals of different demographic variables (gender, age, educational level, income, urban versus rural background,) differ with regards to their attitude towards banking channels.</p>	<p>H07: Based on SAM, individuals of different demographical variables (gender, age, educational level, income, urban versus rural background,) do not differ as regards their attitude towards banking channels.</p> <p>Ha7: Based on SAM, individuals of different demographical variables (gender, age, educational level, income, urban versus rural background,) do differ with regard to their attitude towards banking channels.</p>	<p>Significant differences</p>

5.6 CHAPTER SUMMARY

This chapter addressed the first steps of the empirical investigation, which included the determination and description of the sample, choice of data-collection instrument, administration and scoring of the data-collection instrument, formulation of the research hypotheses, and the statistical procedures that were followed for the processing of the data, as well as for determining whether or not the content is appropriate.

Chapter 6 addresses empirical research aims 1–6 as defined in Table 5.6, and thoroughly presents and discusses the outcome of each aim with the recourse of the statistical procedure aligned to attaining each aim, as well as the testing of the formulation of each research hypothesis.

CHAPTER 6: THE RESEARCH RESULTS

This chapter discusses the various statistical analysis results that were applied in order to test the current research's formulated hypotheses. The chapter addresses steps 7 and 8 of the empirical investigation. The statistical results of the empirical research will be presented by means of tables as well as in figures. The empirical research findings are integrated with the literature review, research aims and the objectives. The chapter outlines descriptive statistics, followed by discussions on the correlation analysis and inferential (multivariate) methods. It ends with decisions regarding the research hypotheses, and a chapter summary indicating the achieved research aims.

6.1 DESCRIPTIVE STATISTICS

This section discusses the three steps relevant to the descriptive statistics in this study, namely, determining (1) the internal consistency reliability of the measuring instruments by means of the Cronbach's Alpha coefficient of the DIQ, the TAMQ, the CQ, the PVQ and intention to use (ITU) measuring instruments, (2) the confirmatory factor analysis (CFA) of the instruments, which was measured by structural equation modelling (SEM), and (3) the means and standard deviations, kurtosis and skewness of the categorical data and frequency data.

6.1.1 Instruments' reliabilities: Cronbach's alpha coefficients of the measures

This section reports on the internal consistency and item reliability of the following measurement instruments and sub-scales: the Scale for the DIQ (Ntemana & Olatokun, 2012), the TAMQ (Davies, 1989), the CQ (Al-Smadi, 2012), the PVQ (Schwartz, 2003), and intention to use (ITU) (Ntemana & Olatokun, 2012), as well as the Self-Assessment Manikin, (SAM) (Bradley & Lang, 1994) measuring instruments.

Some scholars are still divided about the determination of the desirable Cronbach's alpha coefficient. Some set a very high cut-off point of .80 and .95 as an indication of a desirable and reliable Cronbach's alpha coefficient (Dunn, Baguley, & Brunsden, 2014). Another high coefficient was set by Nunnally and Bernstein (2010), who set it

at .70 to .80. Cohen *et al.* (2011) are more accommodating when stating that .60 and .50 can be regarded as acceptable for broad group measures (Mitonga-Monga, 2015).

For this study, it is believed that applying the Cohen *et al.* (2011) cut-off points of .60 and .50 can be regarded as acceptable for broad group measures, given the following: (i) sample size; (ii) target population, and (iii) the fact that instrument was administered for the first time and in a version translated from the original language.

The conceptual model was tested for (i) internal consistency, and (ii) construct reliability. Given the need to assess whether items on a test and the sub-dimensions of composite tests, that are intended to measure the same construct, produce consistent scores, internal consistency of the test (DIQ, PVQ, CQ, TAMQ, ITUQ) was performed (Tang, Cui, & Babenko, 2014). The results revealed strong internal consistency, with constructs displaying a Cronbach's alpha of above .70 and .80.

With the exception of the Benevolence value, which displayed no internal consistency, the PVQ displayed strong internal consistency with values such as Universalism scoring 0.837, Security 0.789, Power 0.763, Conformity 0.761, and Achievement, 0.746. The TAMQ PU displayed a score of 0.792, and PEOU displayed 0.725. On ITUQ, the highlight was on subjective norms that scored 0.877, followed by PBC with a score of 0.799, and Intention to use with 0.753 and 0.720. With the Self-Assessment Manikin (SAM), the results for attitude towards the different banking channels, MPESA displayed strong internal consistency, with a Cronbach's alpha score of 0.716, followed by internet banking with a score of 0.701.

The DIQ (diffusion of innovation) Items and CQ (Hofstede culture dimensions) results did not reveal strong internal consistency. This may suggest that for the specific audience, the way the instrument is currently designed does not present internal consistency. As a result, the participants did not answer the items contained in these instruments in the same way, resulting in a high variance rate, which reflected in a low offer, given the high dispersion rate. This finding may have also be an indication that there is a need to re-assess these instruments.

It is important to note that both diffusion of innovation (DIQ) and Hofstede culture (CQ) instrument are verbal scales and they require a high level of thinking. It is therefore suggested that future research must consider alternative non-verbal ways to assess these constructs. It is also important to highlight that this is the first time these

instruments were administered in the Mozambican market, at least for the purpose of researching the attitude towards digital banking.

It is relevant to note that PVQ, TAMQ and ITUQ address aspects linked to the emotional and attitudinal component, whilst DIQ and CQ address aspects related to norms. The same applies to the Benevolence dimension of the PVQ. These findings may suggest that individuals are more prone to respond with consistency aspects related to their own emotions and attitudes endogenously, rather than those aspects that impact these exogenously, such as culture.

6.1.2 Reporting on the means, standard deviation, skewness and kurtosis

This section deliberates on the overall results for the means, standard deviations, skewness and the kurtosis of the DIQ, TAMQ, CQ, PVQ and ITUQ instruments. The results are summarised and discussed in table format.

In re-running the statistics and eliminating some of the items that revealed a higher level of dispersion from DIQ and CQ, it was possible to get some internal consistency and reliability for Diffusion of Innovation and Culture. Table 6.1 below illustrates a strong and acceptable Cronbach's alpha score for both variables.

Table 6.1
Summary of the mean scores, standard deviation, and the Cronbach's Alpha coefficients of the scales

VARIABLES	MEAN	STD. DEVIATIONS	CRONBACH ALPHA COEFFICIENTS
Diffusion Innovation	3.81	0.30	0.77
Intention to use digital banking	4.08	0.40	0.73
Technology acceptance	4.06	0.37	0.84
PU	4.13	0.45	0.80
PEOU	3.99	0.41	0.71
Culture attributes	3.83	0.27	0.61
Values attributes	4.65	0.47	0.90
Benevolence	4.98	0.68	0.61
Universalism	4.91	0.78	0.84
Self-direction	4.97	0.69	0.65
Stimulation	4.68	0.82	0.61
Hedonism	4.61	0.88	0.64
Achievement	4.39	0.99	0.74
Security	5.09	0.66	0.79
Conformity	4.80	0.81	0.77
Tradition	4.68	0.77	0.66
Power	2.71	1.20	0.77
Subjective norm	3.70	1.01	0.88
Perceived behaviour control	4.07	0.74	0.80

6.1.2.1 The scale for diffusion of Innovation Questionnaire (DIQ)

Table 6.1 above shows that the diffusion of innovation scored (M=3.81; SD=0.30). This indicates that participants perceive the innovation as being beneficial, consistent and user friendly (Rogers, 2003).

6.1.2.2 The Technology Acceptance Model Questionnaire (TAMQ)

Table 6.1 above indicates that on the TAMQ, the overall sample score for TAM was (M = 4.06; SD = 0.37), and the sub-dimension's sample scored the highest as regards to the PU variable (M = 4.13; 0.45), followed by the PEOU (M = 3.99; SD = 0.41). This

indicates that participants perceive the digital banking channels and services to be freeing them from effort and to be enhancing their banking experience, as useful and easy to use (Lai, 2017).

6.1.2.3 The Culture Questionnaire (CQ)

Table 6.1 above also indicates that the sample obtained the highest scores on the overall culture attributes ($M=3.88$; $SD =0.27$) variable. This demonstrates that participants perceive digital banking to be culturally fit and aligned with their values expectations (Hofstede, 2000; Schwartz, 2012).

6.1.2.4 The Portrait Values Questionnaire (PVQ)

Table 6.1 above furthermore indicates that the sample scored the highest PVQ on the variable of security ($M = 5.09$; $SD = 0.66$), followed by benevolence ($M = 4.98$; $SD = 0.68$) which suggests that perceived risk, a neutral environment, stability of self and relationships, harmony and wellbeing, at family, social and macro-level, is critical, in as much as altruism, by being helpful, giving, and caring unconditionally, is also critical (Organ *et al.*, 2006; Schwartz, 2012).

Self-direction ($M = 4.97$; $SD = 0.69$) and universalism ($M = 4.91$; $SD = 0.68$) scored relatively high. This indicates that self-mastery and autonomy, as well as conscientiousness, and protection for the welfare of all humans, natural resources and the environment, are critical (Organ *et al.*, 2006; Schwartz, 2012).

The participants also scored high on conformity ($M = 4.80$; $SD = 0.81$), followed by stimulation ($M = 4.68$; $SD = 0.82$). This indicates that emotional and social intelligence are being handled properly (Organ *et al.*, 2006; Schwartz, 2012), and there is a state of arousal that triggers innovation, creativity and challenge in life, in order to maintain an optimal, positive, rather than threatening, level of activation (Schwartz, 2012).

Participants, similarly scored high on the overall values attribute ($M = 4.65$; $SD = 0.47$), hedonism ($M = 4.61$; $SD = 0.88$) and achievement ($M = 4.39$; $SD = 0.99$) variables. This implies that pleasure and self-fulfilment are critical while aligning with the capability to adhere to social and prevailing cultural standards, thereby obtaining social approval (Schwartz, 2012).

The participants scored low on power ($M = 2.71$; $SD = 1.20$) which suggests that they did not perceive dominance or a position of control over situations to be critical, nor status and prestige (Schwartz, 2012).

6.1.2.5 Mean and standard deviations of the intention to use (ITU)

Table 6.1 above shows that the sample scored the highest intention on the ITU digital banking ($M = 4.08$; $SD = 0.40$) followed by the perceived behavioural control ($M = 4.07$; $SD = 0.74$), which implies that the perceived ease or difficulty of using digital banking based on past experience, as well as anticipated impediments and obstacles, influenced the intention to use digital banking (Nguyen *et al.*, 2018).

The participants scored the lowest on the subjective norms ($M = 3.70$; $SD = 1.01$). This suggests that the perceived social pressure to use digital banking, or the perceived influences that others may have on the individual, are low (Fishbein & Ajzen, 1975; Nguyen *et al.*, 2018; Taherdoost, 2018).

6.2 CORRELATION

This section discusses the nature of the interrelationships between the variables in relation to research hypothesis Ha1. The strength and the direction of the relationships between each of the variables of each instrument are identified and discussed.

6.2.1 Pearson Product-moment correlation coefficients

This section reports on the Pearson Product-moment correlation coefficients, namely, DIQ, TAMQ, CQ, PVQ and ITU. The table below illustrates the correlation coefficient between the variables as well.

Table 6.2 below shows the statistical nature of the investigated relationships between the DIQ, TAMQ, CQ, PVQ and ITUQ.

Table 6.2
Correlation coefficients between DIQ, TAMQ, CQ, PVQ, SN, PBC and ITUQ

Variables	Diffusion innovation	Intention to use digital banking	Technology acceptance	Perceived usefulness	Perceived ease of use	Culture	Subjective norm	Perceived behaviour control	Values	Benevolence	Universalism	Self-direction	Stimulation	Hedonism	Achievement	Power	Security	Conformity	Tradition
Diffusion innovation	1																		
Intention to use Digital Banking	0.77** *	1																	
Technology acceptance	0.58** *	0.57***	1																
PU	0.47**	0.55***	0.89***	1															
PEOU	0.54** *	0.44**	0.86***	0.52***	1														
Culture attribute	0.35**	0.42**	0.53***	0.42**	0.54***	1													
Subjective norm	0.19*	0.29*	0.36**	0.35**	0.43**	0.53***	1												
Perceived behaviour control	0.27*	0.35**	0.46**	0.43**	0.86***	0.51**	0.38**	1											
Values attributes	0.11*	0.03	0.11*	0.11*	0.52*	0.09	-0.01	0.08	1										
Benevolence	-0.00	-0.01	0.11*	0.11*	0.12*	0.09	-0.05	0.10*	0.62***	1									
Universalism	0.07	-0.03	0.08	0.06	0.51***	0.06	-0.07	0.05	0.75***	0.52***	1								
Self-direction	-0.02	-0.09	0.05	0.03	0.26*	0.10*	-0.12*	0.13*	0.70***	0.42**	0.57***	1							
Stimulation	0.14*	0.04	0.15*	0.11*	0.38**	0.21*	-0.02	0.07	0.48**	0.30**	0.26*	0.39**	1						

Variables	Diffusion innovation	Intention to use digital banking	Technology acceptance	Perceived usefulness	Perceived ease of use	Culture	Subjective norm	Perceived behaviour control	Values	Benevolence	Universalism	Self-direction	Stimulation	Hedonism	Achievement	Power	Security	Conformity	Tradition
Hedonism	0.05	0.00	0.05	0.10	0.08	0.07	-0.11*	-0.06	0.48**	0.31**	0.24*	0.28*	0.38**	1					
Achievement	0.16*	0.17*	0.16*	0.16*	0.07	0.07	0.19*	0.14*	0.51***	0.10*	0.16*	0.22*	0.12*	0.07	1				
Power	-0.03	0.06	-0.06	0.03	0.09	-0.09	0.24*	0.03	0.14*	-0.07	-0.11*	-0.10*	-0.14*	0.03	0.26*	1			
Security	-0.00	-0.07	-0.04	-0.02	-0.05	-0.03	-0.17*	-0.00	0.75***	0.42**	0.58***	0.59***	0.27*	0.27*	0.28*	-0.10*	1		
Conformity	0.12*	0.01	0.06	0.05	0.06	0.03	-0.06	-0.02	0.74***	0.40**	0.59***	0.49**	0.24*	0.25*	0.29*	-0.07	0.58***	1	
Tradition	0.13*	0.07	0.09	0.05	0.12*	0.08	0.02	-0.01	0.65***	0.37**	0.45**	0.32**	0.27*	0.24*	0.23*	-0.05	0.46**	0.52***	1

*** $p \leq .001$

** $p \leq .01$

* $p \leq .05$ (two-tailed); + $r \leq .29$ (small practical effect size) ++ $r \geq .30 \leq .49$ (medium practical effect size); +++ $r \geq .50$ (large practical effect size)

Significant relationships were observed between the DIQ, TAMQ, CQ, PVQ and ITUQ variables, as follows:

With regards to perception of diffusion of innovation, the results revealed a significant relationship with Intention to use digital banking ($r = .77$; large practical effect size; $p \leq .001$). This means that diffusion of innovation has a significant relationship with intention to use digital banking. The results also reveal that diffusion of innovation is significantly related to technology acceptance ($r = .58$; large practical effect size; $p \leq .001$ -as consolidated model) and the technology acceptance dimension of PU ($r = .47$; medium practical effect size; $p \leq .001$) is moderately related. In addition the technology acceptance dimension of PEOU ($r = .54$; large practical effect size; $p \leq .001$) is significantly related to DI.

This may mean that diffusion of innovation and technology acceptance are strongly related in explaining the attitude towards digital banking, and therefore the use of both in the construction of a model to explain the attitude towards digital banking is a good combination of independent variables.

With regards to the relationship between DI and Culture attributes the results reveal a moderate relationship ($r = .47$; medium practical effect size; $p \leq .001$). The Values attributes display low effect ($r = .11$; small practical effect size; $p \leq .01$), whilst the value dimensions display small effect. In terms of the relationship between DI and Values dimensions: Stimulation ($r = .14$; small practical effect size; $p \leq .01$), Achievement ($r = .16$; small practical effect size; $p \leq .01$), Conformity ($r = .12$; small practical effect size; $p \leq .01$); Tradition ($r = .11$; small practical effect size; $p \leq .01$), Subjective norms ($r = .12$; small practical effect size; $p \leq .01$), and Perceived behavioural control ($r = .27$; small practical effect size; $p \leq .01$).

This may be an indication that although both may form part of the same model, they individually influence the attitude towards digital banking in different domains and do not necessarily impact each other in their influence on attitude towards digital banking.

Perception of intention to use digital banking revealed a significant relationship with technology acceptance ($r = .57$; large practical effect size; $p \leq .001$), PU ($r = .55$; large practical effect size; $p \leq .001$); PEOU ($r = .44$; medium practical effect size; $p \leq .001$). This by itself explains the strong relationship of technology acceptance, as an independent variable, in explaining the intention to use digital banking, with the

dependent variables of Culture attributes ($r = .42$; medium practical effect size; $p \leq .001$), Achievement ($r = .17$; small practical effect size; $p \leq .01$); Subjective norms ($r = .29$; small practical effect size; $p \leq .01$), and Perceived behavioural control ($r = .35$; medium practical effect size; $p \leq .001$). Dimensions of Culture have moderate significant relationships and align with subjective norms, as well as perceived behavioural control.

Technology acceptance revealed a significant relationship with PU ($r = .89$; large practical effect size; $p \leq .001$), PEOU ($r = .86$; large practical effect size; $p \leq .001$). This is just a confirmation of the significance of technology acceptance dimensions of PU and PEOU, and their relevance in explaining technology acceptance, and in the case of this study, the attitude towards digital banking.

Technology acceptance has significant relationship with Culture attributes ($r = .53$; large practical effect size; $p \leq .001$), which means that culture is important in explaining the technology acceptance and Values attributes ($r = .11$; small practical effect size; $p \leq .01$), Benevolence ($r = .11$; small practical effect size; $p \leq .01$), Stimulation ($r = .15$; small practical effect size; $p \leq .01$), while Achievement ($r = .16$; small practical effect size; $p \leq .01$) are not significantly related to technology acceptance. Subjective norms ($r = .36$; medium practical effect size; $p \leq .001$) and Perceived behavioural control ($r = .46$; medium practical effect size; $p \leq .001$) have a moderate relationship with technology acceptance.

PU revealed a significant relationship with PEOU ($r = .52$; large practical effect size; $p \leq .001$) and these are both dimensions of technology acceptance, confirming the significance of technology acceptance. However, Culture attributes ($r = .42$; medium practical effect size; $p \leq .001$), and Values attributes ($r = .11$; small practical effect size; $p \leq .01$), Benevolence ($r = .11$; small practical effect size; $p \leq .01$), Stimulation ($r = .11$; small practical effect size; $p \leq .01$), Achievement ($r = .16$; small practical effect size; $p \leq .01$), as well as Subjective norms ($r = .35$; medium practical effect size; $p \leq .001$), and Perceived behavioural control ($r = .43$; medium practical effect size; $p \leq .001$) displayed a moderate to small relationship with PU.

PEOU revealed a significant relationship with Culture attributes ($r = .54$; large practical effect size; $p \leq .001$), as well as with Values attributes ($r = .52$; large practical effect size; $p \leq .01$), meaning that these variables are strongly related to each other, which

simultaneously may influence the attitude towards digital banking, and help build a strong model. Benevolence ($r = .12$; small practical effect size; $p \leq .01$), Universalism ($r = .51$; large practical effect size; $p \leq .001$), Self-direction ($r = .10$; small practical effect size; $p \leq .01$), Stimulation ($r = .21$; small practical effect size; $p \leq .01$), Subjective norms ($r = .43$; medium practical effect size; $p \leq .01$), and Perceived behavioural control ($r = .86$; large practical effect size; $p \leq .001$), suggest that PEOU and PBC are significantly related.

Perception of culture attributes revealed a significant relationship with Self-direction ($r = .10$; small practical effect size; $p \leq .01$), Stimulation ($r = .21$; small practical effect size; $p \leq .01$), Subjective norms ($r = .53$; large practical effect size; $p \leq .001$), Perceived behavioural control ($r = .51$; large practical effect size; $p \leq .001$). This may be interpreted that culture influenced the subjective norm and perceived behavioural control variables.

Perception of subjective norms revealed a significant relationship with Perceived behavioural control ($r = .38$; medium practical effect size; $p \leq .001$), Hedonism ($r = .11$; small practical effect size; $p \leq .01$), Achievement ($r = .19$; small practical effect size; $p \leq .01$), Power ($r = .24$; small practical effect size; $p \leq .01$), Security ($r = .17$; small practical effect size; $p \leq .01$). Perception of perceived behavioural control revealed a significant relationship with Benevolence ($r = .10$; small practical effect size; $p \leq .01$), Self-direction ($r = .31$; medium practical effect size; $p \leq .001$), Achievement ($r = .21$; small practical effect size; $p \leq .01$), revealing a less significant relationship.

Perception of values attributes revealed a significant relationship with Benevolence ($r = .62$; large practical effect size; $p \leq .001$), Universalism ($r = .75$; large practical effect size; $p \leq .001$), Self-direction ($r = .70$; large practical effect size; $p \leq .001$), Stimulation ($r = .48$; medium practical effect size; $p \leq .001$), Hedonism ($r = .48$; medium practical effect size; $p \leq .001$), Achievement ($r = .51$; large practical effect size; $p \leq .001$), Power ($r = .14$; small practical effect size; $p \leq .01$), Security ($r = .75$; large practical effect size; $p \leq .001$), Conformity ($r = .74$; large practical effect size; $p \leq .001$), and Tradition ($r = .65$; large practical effect size; $p \leq .01$). This suggests that Values attributes and how they relate to each other reveal there is a strong connection between the values ecosystem.

Perception of benevolence revealed a significant relationship with Universalism ($r = .52$; large practical effect size; $p \leq .001$), Self-direction ($r = .42$; medium practical effect size; $p \leq .001$), Stimulation ($r = .30$; medium practical effect size; $p \leq .001$), Hedonism ($r = .31$; medium practical effect size; $p \leq .001$), Achievement ($r = .10$; small practical effect size; $p \leq .01$), Security ($r = .42$; medium practical effect size; $p \leq .001$), Conformity ($r = .40$; medium practical effect size; $p \leq .01$), and Tradition ($r = .37$; medium practical effect size; $p \leq .01$). This suggests that given the significant relationship between the benevolence and universalism dimensions, enhancement of others and transcendence of selfish interest is displayed.

Perception of universalism revealed a significant relationship with Self-direction ($r = .57$; large practical effect size; $p \leq .001$), displaying reliance upon one's own judgment and comfort with the diversity of existence. Stimulation ($r = .26$; small practical effect size; $p \leq .01$), Hedonism ($r = .24$; small practical effect size; $p \leq .01$), Achievement ($r = .16$; small practical effect size; $p \leq .01$), Power ($r = .16$; small practical effect size; $p \leq .01$), Security ($r = .58$; large practical effect size; $p \leq .001$), Conformity ($r = .59$; large practical effect size; $p \leq .01$), and Tradition ($r = .45$; medium practical effect size; $p \leq .01$). The significant relationship between universalism, security, conformity and tradition, may represent preservation behaviour, meaning, order, self-restriction, preservation of the past and resistance to change.

Perception of self-direction revealed a relationship with Stimulation ($r = .39$; medium practical effect size; $p \leq .001$), suggesting openness to change, intrinsic interest in novelty and mastery, freedom of thought, action, feelings and readiness to change. Hedonism ($r = .28$; small practical effect size; $p \leq .01$), Achievement ($r = .22$; small practical effect size; $p \leq .01$), Power ($r = .10$; small practical effect size; $p \leq .01$), and Security ($r = .59$; large practical effect size; $p \leq .001$) reveal a balance between openness and resistance to change. Conformity ($r = .49$; medium practical effect size; $p \leq .01$), suggests a combination between openness to change and conservation and Tradition ($r = .32$; medium practical effect size; $p \leq .001$) may reveal that there is balance in the values ecosystem which is explained by significant relationship between openness and the resistance to change dimensions.

Perception of stimulation revealed a relationship with Hedonism ($r = .38$; medium practical effect size; $p \leq .001$) revealing openness to change and self-enhancement,

or a desire for affectivity pleasant arousal, Achievement ($r = .12$; small practical effect size; $p \leq .01$), Power ($r = .14$; small practical effect size; $p \leq .01$), Security ($r = .27$; small practical effect size; $p \leq .01$), Conformity ($r = .24$; small practical effect size; $p \leq .01$), and Tradition ($r = .27$; small practical effect size; $p \leq .01$). The results reveal openness to change as well as desire for affectivity which may impact favourably on attitudes towards digital banking

Perception of hedonism revealed a relationship with Security ($r = .27$; small practical effect size; $p \leq .01$), Conformity ($r = .25$; small practical effect size; $p \leq .01$), Tradition ($r = .24$; small practical effect size; $p \leq .01$). Perception of achievement revealed a significant relationship with Power ($r = .26$; small practical effect size; $p \leq .01$), Security ($r = .28$; small practical effect size; $p \leq .01$), Conformity ($r = .29$; small practical effect size; $p \leq .01$), and Tradition ($r = .23$; small practical effect size; $p \leq .01$), suggesting a less significant relationship.

Perception of power revealed a significant relationship with Security ($r = .28$; small practical effect size; $p \leq .001$). Perception of security revealed a significant relationship with Conformity ($r = .58$; large practical effect size; $p \leq .001$), which is an indication of protection of order and harmony in relations or conservation, which may result on resistance to change. Perception of conformity revealed a significant relationship with Tradition ($r = .46$; medium practical effect size; $p \leq .001$). This relationship points to resistance to change and subordination of self in favour of socially imposed expectations.

6.3 INFERENCE (MULTIVARIATE) STATISTICS

This section discusses the five steps of inferential statistics reporting and interpretations: (1) canonical correlation analyses; (2) standard multiple regression analyses; (3) structuration equation modelling; (4) hierarchical moderated regression analyses, and (5) tests for significant mean differences.

6.3.1 Canonical correlation

The canonical correlation analysis was conducted to determine the overall relationship between the set of independent variables and dependent variables of values, culture, diffusion innovation, technology acceptance and intention, subjective norms and perceived behavioural control. This canonical correlation analysis also tested

hypothesis Ha2: The (independent variables) of values, culture, diffusion innovation, technology acceptance positively and significantly predict (dependent variable) attitudes towards digital banking (described as intention, subjective norms and perceived behavioural control).

In Table 6.3 below, the practical magnitude and significance of the canonical functions are represented by the size of the canonical correlation variate, prior to deciding on which functions had to be interpreted. Furthermore, a multivariate test of all the canonical roots was evaluated to determine the significance of the determinant functions, including, Wilkis' Lambada, Hotelling's trace, Pilai's trace and Roy's greatest characteristic root (gcr). The significance levels of $p \leq .05$ and $rc \leq .30$ were considered as the cut-off point for rejecting the null hypothesis. The higher the redundancy index, the more practical the result (Tabachnick & Fidell, 2014).

Table 6.3 below presents a canonical correlation analysis: overall model fit statistics relating to the independent variables values, culture, diffusion innovation, and TAM and the dependent variables, intention to use digital banking, subjective norms and behavioural control.

Table 6.3
Canonical correlation analysis values, culture, diffusion innovation, TAM and intention, subjective norms and perceived behavioural control model fit statistics

Measures of overall model fit for canonical correlation analysis					
Canonical function	Overall canonical correlation (Rc)	Overall squared canonical correlation (Rc ²)	F statistics	Probability (p)	
1	0.69		0.67	9.32	<.0001
2	0.34		0.30	3.03	<.0001
3	0.23		0.19	1.96	0.030
Multivariate tests of significance					
Statistic	Value		Approximate F statistic	Probability(p)	
Wilks' Lambda	0.44		9.32	<.0001***	
Pillai's Trace	0.64		8.13	<.0001***	
Hotelling-Lawley Trace	1.08		10.67	<.0001***	
Roy's Greatest Root	0.89		26.62	<.0001***	

Notes: N = 409. ***p ≤ .001 **p ≤ .01 *p ≤ .05

Table 6.4 below analyses and displays the cross-loadings that the values, culture, diffusion innovation, and technology acceptance variables contributed the most, in explaining the variance in the intention to use digital banking, subjective norms and perceived behavioural control canonical variables.

It depicts the standardised canonical results for the first canonical function variable. The model adequacy statistically evaluated the goodness of fit that measures and determines whether the model should be accepted or rejected (Tabachnick & Fidell, 2014)

Table 6.4
Standardised canonical correlation analysis results for the first canonical function variable

Variate/Variables	Canonical coefficient (weight)	Structure coefficient (canonical loading) (Rc)	Canonical cross-loadings (Rc)	Squared multiple correlation (Rc ²)
Values, culture, diffusion innovation, technology acceptance canonical variate (independent variables)				
PU	.69	.89	.62	.38
PEOU	.34	.72	.49	.24
Values attributes	247.73	.06	.04	.00
Benevolence	-35.44	.01	.01	.00
Universalism	-61.08	-.04	-.03	.00
Self-direction	-36.16	-.09	-.06	.00
Stimulation	-32.26	.06	.04	.00
Hedonism	-34.81	-.08	-.05	.00
Achievement	-51.83	.32	.22	.05
Power	-46.80	.19	.13	.02
Security	-43.07	-.15	-.10	.01
Conformity	-42.21	-.03	-.02	.00
Tradition	-40.19	.08	.05	.00
Percentage of overall variance of variables explained by their own canonical variables: .53				
Intention to use digital banking, subjective norms and perceived behavioural control. (dependent variables)				

Intention to use digital banking	.65	.86	.59	.35
Subjective norms	.35	.66	.45	.20
Perceived behaviour control	.31	.67	.46	.21

Percentage of overall variance of variables explained by their own canonical variables: .29

Overall model fit measures (function 1):

Overall $Rc^2 = .67$ (percentage of overall variance in the diffusion of innovation, technology acceptance, values and culture canonical construct variables accounted for by the Intention to use digital banking, subjective norms and behavioural control canonical construct variables)

$F(p) = 9.32$ ($p < .0001$); $df = (39; 1146.7)$

Wilk's lambda (λ) = 0.44

r^2 type effect size: $1 - .\lambda = 0.56$ (large effect)

Overall proportion: 0.29

Redundancy index (overall variance of the Intention to use digital banking, subjective norms and behavioural control explained or predicted by the attitudes towards digital banking variables): proportion = 0.07

Note: $N = 409$. *** $p \leq 0.001$ ** $p \leq 0.01$ * $p \leq 0.05$

+ $Rc^2 \leq 0.12$ (small practical effect size)

++ $Rc^2 \geq 0.13 \leq 0.25$ (moderate practical effect size)

+++ $Rc^2 \geq 0.26$ (large practical effect size)

The following overall percentage variance of the variables was explained by their own canonical variables:

Overall, the model fit measures (function 1): overall $Rc^2 = .67$ (percentage of overall variance in the diffusion of innovation, technology acceptance, values and culture canonical construct variables accounted for by the intention to use digital banking, subjective norms and perceived behavioural control canonical construct variables):

$F(p) = 9.32$ ($p < .0001$); $df = (39; 1146.7)$

Wilk's lambda (λ) = 0.44

r^2 type effect size: $1 - .\lambda = 0.56$ (large effect)

Redundancy index (overall variance of the diffusion of innovation, technology acceptance, values and culture variables explained or predicted intention to use digital banking, subjective norms and perceived behavioural control explained or predicted

by the diffusion of innovation, technology acceptance, values and culture variables):
proportion = .29.

The overall squared canonical correlation (R_c^2) explains the proportion of variance in the dependent canonical construct variable intention to use digital banking, subjective norms and perceived behavioural control accounted for by the independent canonical construct variate (values, culture, diffusion of innovation and technology acceptance (see Table 6.4).

This indicates that the diffusion of innovation, technology acceptance, values, culture construct canonical variate explains 67% ($R_c^2 = 67\%$; large practical effect) of the variance in the intention to use digital banking, subjective norms and perceived behavioural control construct canonical variate.

In terms of the practical significance, the magnitude of the association between the two canonical construct variates is measured by the redundancy index. Ideally, the higher the redundancy, the higher the percentage of variance accounted for by the independent variate in the dependent set of original variables, and vice versa.

Table 6.4 above indicates that the values, culture, diffusion of innovation, technology acceptance construct variate was able to predict 53% (large practical effect) of variance in the intention to use digital banking, subjective norms and perceived behavioural control. The intention to use digital banking, subjective norms and perceived behavioural control canonical construct variates were able to predict 29% (small practical effect) of the variance in the values, culture, diffusion of innovation, technology acceptance variables, meaning that these independent variables influence the dependent variables that are concepts describing attitude towards digital banking. The two canonical variates were found to be good predictors of the opposite canonical construct variate.

Overall, it can be deduced from the canonical loading (structure correlations) that the values, culture, diffusion of innovation, technology acceptance, variables of PU (.89), PEOU (.72), achievement (.32) and power (.19) contributed the most in explaining the variance in the intention to use digital banking, subjective norms and perceived behavioural control canonical variate. The intention to use digital banking (.86), subjective norm (.66) and perceived behavioural control (.67) variables contributed the

most in explaining the variance in the diffusion of innovation, technology acceptance, values, culture canonical variate.

The above-mentioned results demonstrate that the null hypothesis is rejected as there is a close correlation between the independent variables (values, culture, diffusion of innovation, technology acceptance and the dependent variable (intention to use digital banking, subjective norms and perceived behavioural control).

6.3.2 Standard multiple regression analyses

In this section, the standard multiple regressions are conducted in order to test hypothesis Ha3, which is to assess whether the values, culture, diffusion of innovation and technology acceptance construct variables positively predict the attitudes towards digital banking (described as intention to use digital banking, subjective norms and perceived behavioural control) construct variable.

Prior to performing the standard multiple regressions, the collinearity diagnosis was examined to ensure that the zero-order correlations were below the level of multicollinearity concern ($\geq .90$), that the variance inflation factors did not exceed 10, that the condition index was below 15, and that the tolerance values were close to 1.0 (Tabachnick & Fidell, 2014).

In order to counter the probability of a type I error, the significant value was set at the 95% confidence interval level ($F_p \leq .05$).

6.3.2.1 Regression analysis results: diffusion of innovation, technology acceptance, values, culture as predictors of the intention to use digital banking

Table 6.5 below presents the significant results of the multiple regression analyses that were performed to determine whether or not diffusion of innovation, technology acceptance, values, and culture acted as predictors of the intention to use digital banking. This table indicates that one regression model was used.

The model was statistically significant ($F_p \leq .05$) and accounted for 34% ($R^2 = .34$; intention to use digital banking) of variance in the diffusion of innovation, technology acceptance, values, culture. These results are large in practical effect size.

Table 6.5

Significant results of the multiple regression analyses: diffusion of innovation, technology acceptance, values, culture acted as predictors of the intention to use digital banking

Variable	Unstandardised coefficient		Standardised coefficient	T	P	F	R Square	Adjusted R Square	Collinearity	
	B	SE	β	t-test	Significance	F-ratio			Tolerance	VIF
Intention to use digital banking (constant)	1.85	.24		7.68	.0001	18.46	0.362+++	0.343+++		
Perceived_Usefulness (P_U)	.39	.04	.43	8.97	.001				.695	1.438
Perceived_EaseofUse (P_E)	.20	.05	.21	4.14	.001				.661	1.514
BENEVOLENCE (BE)	-.03	.03	-.04	-.89	.377				.653	1.531
UNIVERSALISM (UN)	-.01	.03	-.02	-.38	.702				.470	2.129
SELF_DIRECTION (S_D)	-.07	.03	-.13	-2.25	.025				.517	1.935
STIMULATION	.00	.02	.01	.14	.892				.720	1.389
HEDONISM	-.01	.02	-.01	-.24	.809				.770	1.298
ACHIEVEMENT	.03	.02	.08	1.72	.086				.760	1.316
POWER	.01	.01	.04	.99	.322				.833	1.201
SECURITY	.00	.04	.00	.05	.957				.459	2.179
CONFORMITY	.00	.03	.01	.17	.869				.503	1.989
TRADITION	.04	.03	.07	1.39	.164			.644	1.552	

*** $p \leq 0.001$

** $p \leq 0.01$

* $p \leq 0.05$; + $R^2 \leq 0.12$ (small practical effect size); ++ $R^2 \geq 0.13 \leq 0.25$ (moderate practical effect size); + ++ $R^2 \geq 0.26$ (large practical effect size)

In the above-mentioned model (intention to use digital banking), PU ($\beta = .43$; $p = .001$), PEOU ($\beta = .21$; $p = .00$) and self-direction ($\beta = -.13$; $p = .00$). Except for the self-direction variable, PU and PEOU acted as significant positive predictors of intention to use digital banking, with PU, PEOU and self-direction contributing the most towards explaining the variance in the intention to use digital banking variable.

6.3.2.2 Regression analysis results: diffusion of innovation, technology acceptance, values, culture as predictors of the subjective norms

Table 6.6 below indicates the significant results of the multiple regression analyses that were performed to assess whether or not diffusion of innovation, technology acceptance, values, and culture acted as predictors of the subjective norms.

The table makes it clear that one regression model was used. The model was statistically significant ($F_p \leq .05$). The model accounted for 22% ($R^2 = .22$; subjective norms) of variance in the diffusion of innovation, technology acceptance, values, and culture. The results were large in nature.

Table 6.6

Significant results of the multiple regressions: diffusion of innovation, technology, values, culture as predictors of the subjective norms

Variable	Unstandardised coefficient		Standardise d coefficient	T	P	F	R Square	Adjusted R Square	Collinearity	
	B	SE	β	t-test	significance	F-ratio			Tolerance	VIF
Subjective norms (constant)	0.63	0.66		0.96	0.34	10.56	0.2452+++	0.2220+++	0	.
PU	0.62	0.12	0.28	5.25	<.001				0.28	0.695
PEOU	0.27	0.13	0.11	1.97	0.049				0.11	0.661
BENEVOLENCE	-0.01	0.08	-0.00	-0.09	0.928				-0.00	0.653
UNIVERSALISM	0.04	0.08	0.03	0.47	0.637				0.03	0.470
SELF_DIRECTION	-0.09	0.09	-0.06	-1.01	0.315				-0.06	0.517
STIMULATION	0.04	0.06	0.03	0.65	0.515				0.03	0.719
HEDONISM	-0.14	0.06	-0.12	-2.47	0.014				-0.12	0.770
ACHIEVEMENT	0.13	0.05	0.12	2.44	0.015				0.12	0.760
POWER	0.17	0.04	0.20	4.19	.0001				.833	1.201
SECURITY	-0.24	0.10	-0.16	-2.46	0.015				.459	2.179
CONFORMITY	-0.02	0.08	-0.02	-0.27	0.789				.503	1.989
TRADITION	0.11	0.07	0.09	1.56	0.121				.644	1.552

*** $p \leq 0.001$ ** $p \leq 0.01$ * $p \leq 0.05$, + $R^2 \leq 0.12$ (small practical effect size) ++ $R^2 \geq 0.13 \leq 0.25$ (moderate practical effect size), + + + $R^2 \geq 0.26$ (large practical effect size)

In the above-mentioned model (subjective norms), PU ($\beta = .28$; $p = .001$), power ($\beta = .20$; $p = .00$), achievement ($\beta = .12$; $p = .00$), security ($\beta = -.16$; $p = .00$) and hedonism ($\beta = -.12$; $p = .00$). Except for hedonism and security variables, which acted as negative predictors, PU, power, and achievement variables acted as significant positive predictors of subjective norms, with PU, power, achievement, security and hedonism contributing the most towards explaining the variance in the subjective norms variable.

6.3.2.3 Regression analysis results: diffusion of innovation, technology acceptance, values, culture as predictors of the behavioural control

Table 6.7 below indicates the significant results of the multiple regression analyses that were performed to assess whether or not diffusion of innovation, technology acceptance, values and culture acted as predictors of the perceived behavioural control.

From the table it is evident that one regression model was used. The model was statistically significant ($F_p \leq .05$) and accounted for 25% ($R^2 = .25$; perceived behavioural control) of variance in the diffusion of innovation, technology acceptance, values, culture. The results were large in nature.

Table 6.7

Significant results of the multiple regressions: diffusion of innovation, technology acceptance, values, culture as predictors of the perceived behavioural control

Variable	Unstandardised coefficient		Standardised coefficient	T	P	F	R Square	Adjusted R Square	Collinearity	
	B	SE	β	t-test	Significance	F-ratio			Tolerance	VIF
Perceived behavioural control (constant)	0.059	0.476		0.12	.902	11.92	0.268+++	0.246+++	.	0
PU	0.526	0.085	0.321	6.18	.001				0.695	1.438
Perceived EaseofUse	0.365	0.097	0.201	3.77	.002				0.661	1.513
BENEVOLENCE	0.095	0.058	0.087	1.63	.103				0.653	1.531
UNIVERSALISM	-0.016	0.059	-0.017	-0.27	.789				0.469	2.129
SELF_DIRECTION	0.199	0.064	0.187	3.10	.002				0.517	1.934
STIMULATION	0.006	0.046	0.006	0.12	.906				0.719	1.389
HEDONISM	-0.102	0.041	-0.122	-2.47	.014				0.770	1.298
ACHIEVEMENT	0.048	0.037	0.065	1.31	.191				0.760	1.316
POWER	0.029	0.029	0.047	1.00	.319				0.833	1.201
SECURITY	-0.019	0.072	-0.017	-0.27	.790				0.459	2.179
CONFORMITY	-0.104	0.056	-0.114	-1.86	.064				0.503	1.989
TRADITION	-0.054	0.052	-0.057	-1.05	.295				0.644	1.552

*** $p \leq 0.001$

** $p \leq 0.01$

* $p \leq 0.05$, + $R^2 \leq 0.12$ (small practical effect size) ++ $R^2 \geq 0.13 \leq 0.25$ (moderate practical effect size), + + + $R^2 \geq 0.26$ (large practical effect size)

In the above-mentioned model (perceived behavioural control), PU ($\beta = .32$; $p = 001$), PEOU ($\beta = .20$; $p = 00$), self-direction ($\beta = .19$; $p = 00$), hedonism ($\beta = -.12$; $p = 00$) and conformity ($\beta = -.11$; $p = 00$) acted as positive predictors of perceived behavioural control. Except for the hedonism and conformity variables which acted as negative predictors, PU, PEOU, and self-direction variables acted as significant positive predictors of subjective norms, with PU, PEOU, self-direction, hedonism and conformity contributing the most towards explaining the variance in the perceived behavioural control variable.

Table 6.8 below presents a summary of diffusion of innovation, technology acceptance, values, and culture that acted as significant predictors of the intention to use digital banking, subjective norms and perceived behavioural control.

Table 6.8
Summary of diffusion of innovation, technology acceptance, values, culture as significant predictors of intention to use digital banking, subjective norms and perceived behavioural control

Significant predictor (independent) variables: diffusion of innovation, technology acceptance, values, culture variables	Criterion dependent variables: Intention to use digital banking, subjective norms and perceived behavioural control		
	Intention to use digital banking	Subjective norms	Perceived behavioural control
PU	Positive prediction	Positive prediction	Positive prediction
PEOU	Positive prediction	n/p	Positive prediction
BENEVOLENCE	n/p	n/p	n/p
UNIVERSALISM	n/p	n/p	n/p
SELF_DIRECTION	Negative prediction	n/p	Positive prediction
STIMULATION	n/p	n/p	n/p
HEDONISM	n/p	Negative prediction	Negative prediction
ACHIEVEMENT	n/p	Positive prediction	n/p
POWER	n/p	Positive prediction	n/p
SECURITY	n/p	Negative prediction	n/p
CONFORMITY	n/p	n/p	Negative prediction
TRADITION	n/p	n/p	n/p

Note: n/p = no prediction

The results of the multiple regression provided evidence, and therefore support for hypothesis Ha3: the diffusion of innovation, technology acceptance, values, culture significantly predicted the attitude towards digital banking (described as intention to use digital banking, subjective norms and perceived behavioural control).

6.3.3 Structural equation modelling

Based on the significant relationships specified between the independent and dependent canonical construct variates, and consequently using the results of the canonical correlation analysis as the baseline measurement model, three structural equation models were explored, to test hypothesis H₃. The theoretically hypothesised model on the relationship between diffusion of innovation, technology acceptance, values, culture and intention to use digital banking, subjective norms and perceived behavioural control displays a good fit with the empirically manifested structural model. This is portrayed in Table 6.9 below.

In this study the CFA as an element of the SEM was computed to demonstrate the empirical good fit, by comparing the three hypothesised SEMs. The confirmatory approach, basically, is grounded on theory and previous empirical research results (Tabachnick & Fidell, 2014). As an element of the SEM process the researcher proposed to validate the measurement model by calculating and finding estimates of the parameters of the model; further estimating the model itself provided a good fit to the data (Garson, 2009).

The CFA measures the model adequacy or goodness-of-fit to determine whether the tested model should be accepted or rejected (Kline, 2011). Emphasising the significant associations between the independent variables and the dependent variables, the three confirmatory structural equation models were explored.

The motivation for using the SEM was to empirically validate the diffusion of innovation, technology acceptance, values, and culture variables that emerged from the various analyses of the inter- and overall relationships between diffusion of innovation, technology acceptance values, and culture that were related to intention to use digital banking, subjective norms and perceived behavioural control. The SEM was chosen because it helps to estimate interrelated dependence in a single analysis (Tabachnick & Fidell, 2014).

Table 6.9 below shows that the third model (CFI = .94) indicates a good fit with the model data, yielding a chi-square of 1768.59 (66 df); CMIN/df =26.80; RMSEA =.07; SRMR = .04 and AGFI =.90. As can be observed in Figure 6.1 below, overall the third model provides the best statistical fit.

Table 6.9
Structural equation modelling results: fit statistics

Model	CMIN	df	CMIN/df	p	AGFI	CFI	RMSEA	SRMR	ΔCMIN
1	443.78	86	5.16	.00	.82	.79	.10	.08	-
2	443.85	86	5.10	.00	.87	.80	.10	.08	.01
3	144.71	46	3.15	.00	.90	.94	.07	.05	299.14

Note: CMIN(X^2) = chi-square; df = degree of freedom; p = significance level; AGFI = adjusted goodness of fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation. SRMR = standardised root-mean-square residual.

Figure 6.1 identifies the standardised path coefficient between the diffusion of innovation, technology acceptance, values, culture and intention to use digital banking, subjective norms and perceived behavioural control as per the best-fit model.

The said coefficient estimates between the diffusion of innovation, technology acceptance, values, culture and intention to use digital banking, while subjective norms and perceived behavioural control are also specified. Parallel to the results observed in the canonical correlation analysis, TAQ PEOU (.54), PU (.42) and the values of tradition (.66), benevolence (.65), self-directed (.50), conformity (.45), and security (.40) were the strongest predictors with culture, PEOU, tradition and benevolent contributing the most toward explaining the variance in the technology acceptance, values and culture variables.

The subjective norm (.67), perceived behavioural control (.63) and intention to use digital banking (.52) were the strongest predictors of dependent variables, with subjective norms and perceived behavioural control contributing the most towards explaining the variance in the intention to use digital banking. Overall, the diffusion of innovation, technology acceptance, values, culture variables positively predicted intention to use digital banking, subjective norms and perceived behavioural control.

Note: the above results provide evidence for research hypothesis H3. This is based on the overall relationship between the diffusion of innovation, technology acceptance,

values, culture and the intention to use digital banking, subjective norms and perceived behavioural control; the results empirically assess the statistical fit between the elements of the empirically manifested SEM and the theoretically hypothesised model.

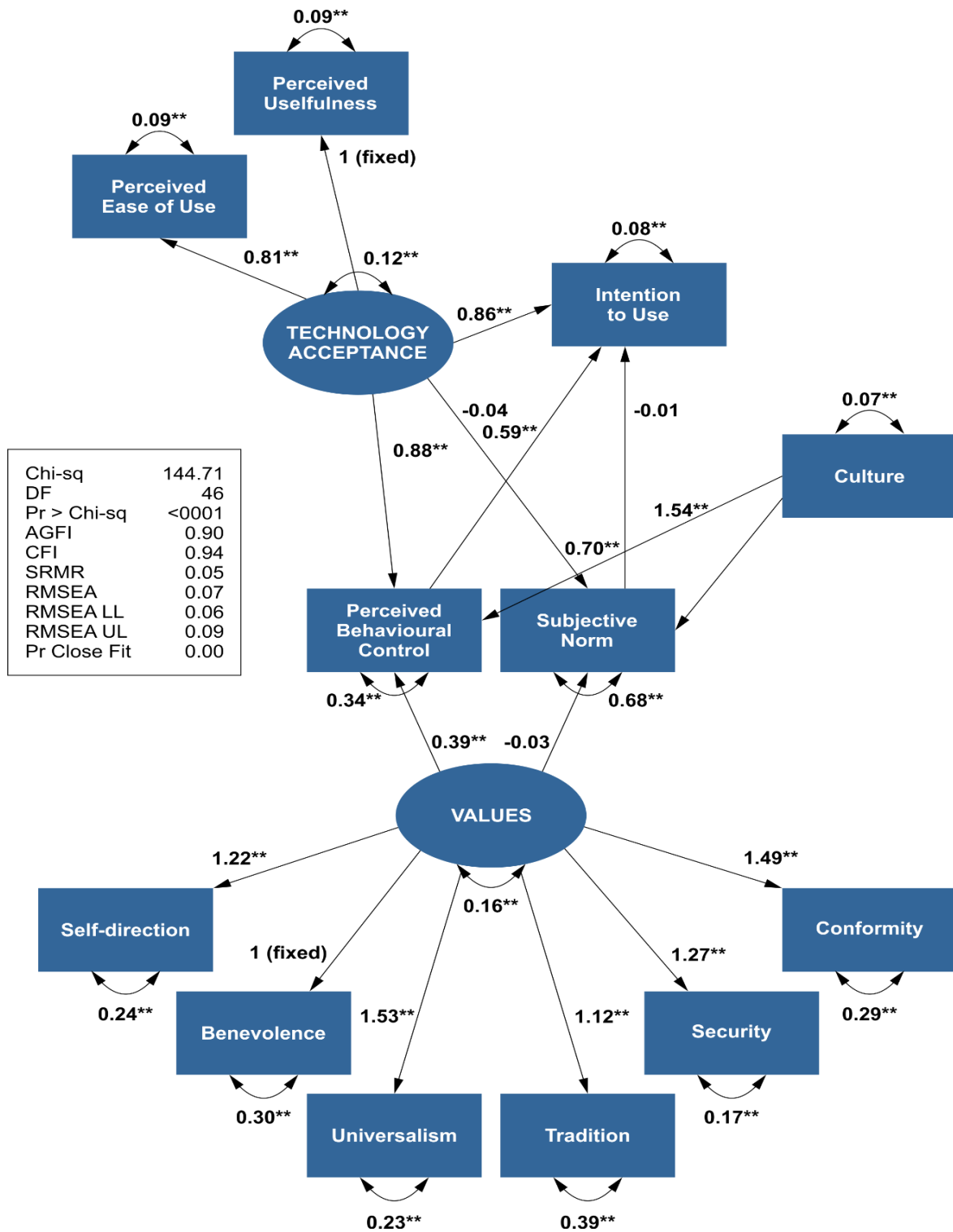


Figure 6.1 Standardised path coefficient between the diffusion of innovation, technology acceptance, values, culture and the intention to use digital banking, subjective norms and perceived behavioural control

6.3.4 Hierarchical moderated regression analysis

Based on the canonical correlations and best fit structural model in Figure 6.1, hierarchical regression analyses were performed in order to determine whether the socio-demographic variables acted as moderators in the association between the diffusion of innovation, technology acceptance, values, culture, and the intention to use digital banking, subjective norms and perceived behavioural control.

The demographics in this study function as homologue moderators in type, given that they influence the strength of the relationship between the independent variables (Value, Culture, Diffusion of Innovation and technology acceptance) and dependent (Attitudes towards digital banking) (Agárdi & Bauer, 2008). In nature, a simple moderation analysis was found appropriate to analyse whether they influence the strength of the relationship between the dependent and independent variable (Memon *et al.*, 2019)..

6.3.4.1 Age as a moderator of the relationship between technology acceptance, culture, values and intention to use digital banking

The hierarchical regression analysis was performed via the conditional Process Macro for SPSS developed by Andrew F. Hayes (2018). Hayes provides various types of model templates which show the moderating effect of a variable M on the relationship between an independent variable X and a dependent variable Y. In the present study, age is a moderator variable, while technology acceptance, culture and values are independent variables, and intention to use digital banking is the dependent variable.

As can be observed in Table 6.10 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models. For the variables, technology acceptance, culture, values, and the intention to use digital banking, the analysis shows no significant moderating effect of age. However, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.10

Hayes' Process Regression Matrix for moderating effect of age on the relationship between technology acceptance, culture and intention to use digital banking (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.60 (.06)	10.33	.00	.48	.72	.57	.32
Age	.02 (.03)	.64	.52	-.05	-.09		
Interaction_1	.01 (.10)	.14	.89	-.16	.19		
Model 2: Culture	.54 (.09)	6.38	.00	.38	.71	.43	.19
Age	.03 (.04)	.87	.39	-.04	.11		
Interaction_1	.22 (.14)	1.59	.11	-.05	.49		
Model 3: Values	-.00(.05)	-.05	.96	-.10	.09		
Age	.03(.04)	.68	.50	-.05	.11		
Interaction_1	.11(.10)	1.13	.26	-.08	.29		

Note: $n = 403$; *** $p \leq .001$; ** $p \leq .01$, * $p \leq .05$: Cohen (1992)

As indicated (model 1) in Table 6.10 above, in terms of the main effects, technology acceptance acted as a significant predictor of intention to use digital banking. ($F(3; 399) = 63.18$; $p \leq .05$), ($B = .60$; $SE_B = .06$; $95\%CI = [.48;.72]$; $p < .05$), denoting that technology acceptance is associated with an increase in the percentage of the intention to use digital banking.

As indicated (model 2) in Table 6.10 above, in terms of the main effects, culture acted as a significant predictor of intention to use digital banking, ($F(3;399) = 30.57$; $p \leq .05$), ($B = .54$; $SE_B = .09$; $95\%CI = [.38;.71]$; $p < .05$), denoting that culture is associated with an increase in the percentage of the intention to use digital banking.

Also as indicated (model 3) in Table 6.10 above, in terms of the main effects, values did not act as a significant predictor of intention to use digital banking. ($F(3;399) =$

1.27; $p = .29$), ($B = .00$; $SE_B = .05$; $95\%CI = [-.10;.09]$; $p = .96$), denoting that values were not associated with an increase in the percentage of the intention to use digital banking

6.3.4.2 Age as a moderator of the relationship between technology acceptance, culture, values and subjective norm

As indicated in Table 6.11, the analysis of the variable technology acceptance, culture and values shows no significant moderating effect of the age variable. Using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models.

Table 6.11

Hayes' Process Regression Matrix for moderating effect of age on the relationship between technology acceptance, values, culture and subjective norm ($n = 403$)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	1.01(.06)	6.06	.00	.68	1.34	.36	.13
Age	-.13(.10)	-1.28	.20	-.32	.07		
Interaction_1	-.10(.26)	-.40	.69	-.60	.40		
Model 2: Culture	1.87(.20)	9.24	.00	1.47	2.27	.53	.28
Age	-.11(.09)	-1.20	.23	-.28	.07		
Interaction_1	.27(.330)	.82	.41	-.37	.91		
Model 3: Values	.03(.12)	.24	.81	-.21	.27	.07	.00
Age	-.11(.11)	-1.03	.30	-.32	.10		
Interaction_1	-.19(.24)	-.80	.42	-.67	.28		

Note: $n = 403$; *** $p \leq .001$; ** $p \leq .01$, * $p \leq .05$: Cohen (1992)

As indicated (model 1) in Table 6.11 above, in terms of the main effects, technology acceptance acted as a significant predictor of the subjective norm ($F(3; 399) = 63.18$; $p \leq .05$), ($B = 1.01$; $SE_B = .06$; $95\%CI = [.68; 1.34]$; $p < .05$), denoting that technology acceptance is associated with an increase in the percentage of the subjective norm.

As indicated (model 2) in Table 6.11 above, in terms of the main effects, culture acted as a significant predictor of the subjective norm. ($F(3; 399) = 52.40; p \leq .05$), ($B = 1.81$, $SE_B = .20$; $95\%CI = [1.47; 2.27]$; $p < .05$), denoting that culture is associated with an increase in the percentage of the subjective norm.

As indicated (model 3) in Table 6.11 above, in terms of the main effects, values did not act as a significant predictor of the subjective norm. ($F(3; 399) = .61; p = .61$), ($B = .03$; $SE_B = .12$; $95\%CI = [-.21; .27]$; $p = .81$), denoting that values did not associate with an increase in the percentage of the subjective norm.

6.3.4.3 Age as a moderator of the relationship between technology acceptance, culture, values and perceived behavioural control

As indicated in Table 6.12 below, the analysis of the variable technology acceptance, culture and values shows no significant moderating effect of the age variable. Using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction termed were entered into the models. For the variable technology acceptance, the analysis shows the significant moderating effect of the age variable.

Table 6.12
Hayes' Process Regression Matrix for moderating effect of age on relationship between technology acceptance, values, culture and perceived behavioural control ($n = 403$)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.77(.11)	6.69	.00	.52	.99	.46	.23
Age	-.07(.07)	-1.00	.32	-.20	.07		
Interaction_1	.36(.18)	2.02	.04	.01	.70		
Model 2: Culture	1.23(.15)	8.30	.00	.94	1.53	.52	.27
Age	-.05(.07)	-.76	.45	-.18	.08		
Interaction_1	.44(.24)	1.84	.07	-.03	.91		
Model 3: Values	.06(.05)	.70	.48		-.11	.24	.10
Age	-.06(.08)	-.79	.43		-.21	.09	
Interaction_1	.21(.17)	1.20			-.13	.55	

Note: $n = 403$; *** $p \leq .001$; ** $p \leq .01$, * $p \leq .05$: Cohen (1992)

Model 1 in Table 6.12 was found to be statistically significant ($F(3; 399) = 38.76; p \leq .05$). Therefore, the main effects and interaction effects were investigated. There is a statistically significant main effect of age and technology acceptance on the perceived behavioural control ($B = .77; SE_B = .11; 95\%CI = [.52; .99]; p < .05$), denoting that a positive value of age and technology acceptance is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 2) in Table 6.12 above, in terms of the main effects, culture acted as a significant predictor of the perceived behavioural control; ($F(3; 399) = 49.76; p \leq .05$), ($B = 1.23; SE_B = .15; 95\%CI = [.94; 1.53]; p < .05$), denoting that culture is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 3) in Table 6.12 above, in terms of the main effects, values did not act as a significant predictor of the perceived behavioural control. ($F(3; 399) = .58; p = .59$), ($B = .06; SE_B = .05; 95\%CI = [-.11; .24]; p = .48$), denoting that values did not associate with an increase in the percentage of the perceived behavioural control.

The interactions were explored using a simple slope test and by graphing the interactions using the value of the moderator at the mean, as well as standard deviations above and below the mean (Cohen *et al.*, 2013).

As illustrated in Figure 6.2, the relationship between technology acceptance and perceived behavioural control was stronger for those who were older than for those who were younger. The older participants who scored high on technology acceptance also achieved significantly higher scores than the younger participants on the perceived behavioural control.

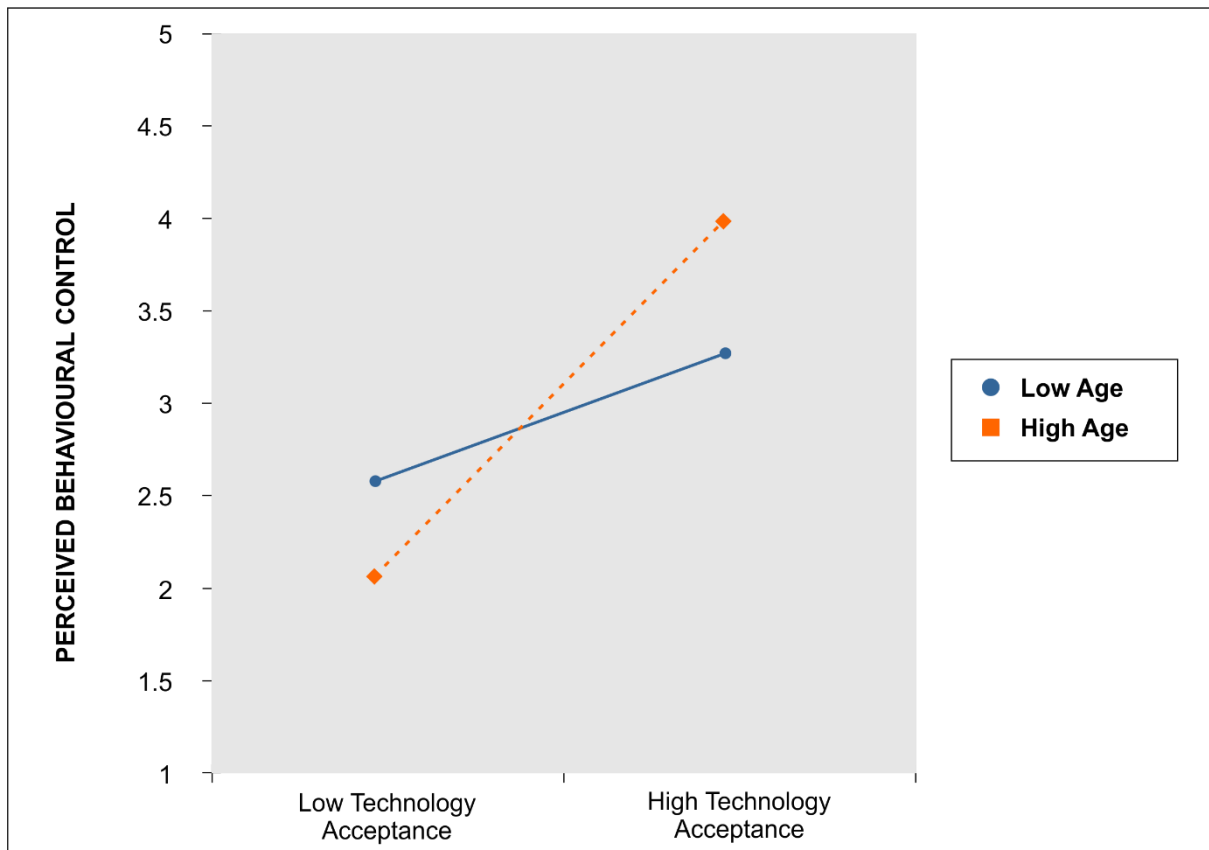


Figure 6.2
Interacting effects between age, technology acceptance and perceived behavioural control

6.3.4.4 Gender as a moderator of the relationship between technology acceptance, culture, values and intention to use digital banking

The hierarchical regression analysis was performed via the conditional Process Macro for SPSS developed by Hayes (2018). The author provides various types of model templates which show the moderating effect of a variable M on the relationship between an independent variable X and a dependent variable Y. In the present study age is a moderator variable, technology acceptance, culture and values are independent variables and intention to use digital banking is the dependent variable.

As can be observed in Table 6.13 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models. For the variable technology acceptance and the intention to use digital banking, the analysis points to significant moderating effects of gender; therefore, the main effects and interaction effects were investigated.

As indicated in Table 6.13 below, for the variables culture, values and the intention to use digital banking, the analysis shows no significant moderating effect of gender. However, in terms of the main effects, the culture variable was found to be statistically significant.

Table 6.13
Hayes' Process Regression Matrix for moderating effect of gender on the relationship between technology acceptance, values, culture and intention to use digital banking (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.46 (.06)	7.10	.00	.35	.58	.59	.34
gender	-.04 (.03)	-1.29	.20	-.11	.02		
Interaction_1	.30 (.09)	3.44	.001	.13	.47		
Model 2: Culture	.61 (.09)	6.73	.00	.43	.78	.43	.18
gender	-.05 (.04)	-1.40	.16	-.13	.02		
Interaction_1	.04 (.13)	.29	.77	-.23	.30		
Model 3: Values	.02 (.03)	.47	.64	-.07	.12	.09	.01
gender	-.08 (.04)	-1.82	.07	-.16	.01		
Interaction_1	.04 (.09)	.38	.70	-.15	.22		

Note: N= 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 1) in Table 6.13 in terms of the main effects, TAM acted as a significant predictor of the intention to use digital banking. (F (3; 399) = 69.66; p ≤ .05), (B = .46; SE_B = .06; 95%CI = [.35; .59]; p < .05), denoting that gender and TAM were associated with an increase in the percentage of the intention to use digital banking.

As indicated (model 2) in Table 6.13 above, in terms of the main effects, culture acted as a significant predictor of the perceived behavioural control; ($F(3; 399) = 30.07; p \leq .05$), ($B = .60$ $SE_B = .09$; $95\%CI = [.43;.78]$; $p < .05$), denoting that culture is associated with an increase in the percentage of the intention to use digital banking.

As indicated (model 3) in Table 6.13 above, in terms of the main effects, values did not act as a significant predictor of the perceived behavioural control. ($F(3; 399) = 1.27; p = .64$), ($B = .02$; $SE_B = .03$; $95\%CI = [-.07;.12]$; $p = .64$), denoting that values did not associate with an increase in the percentage of the intention to use digital banking.

The interactions were explored using a simple slope test and by graphing the interactions using the value of the moderator at the mean, as well as standard deviations above and below the mean (Cohen *et al.*, 2013). As illustrated in Figure 6.4, the relationship between technology acceptance and intention to use digital banking was stronger for males than for females. The male participants who scored high on technology acceptance also achieved significantly higher scores than the female participants on the intention to use digital banking.

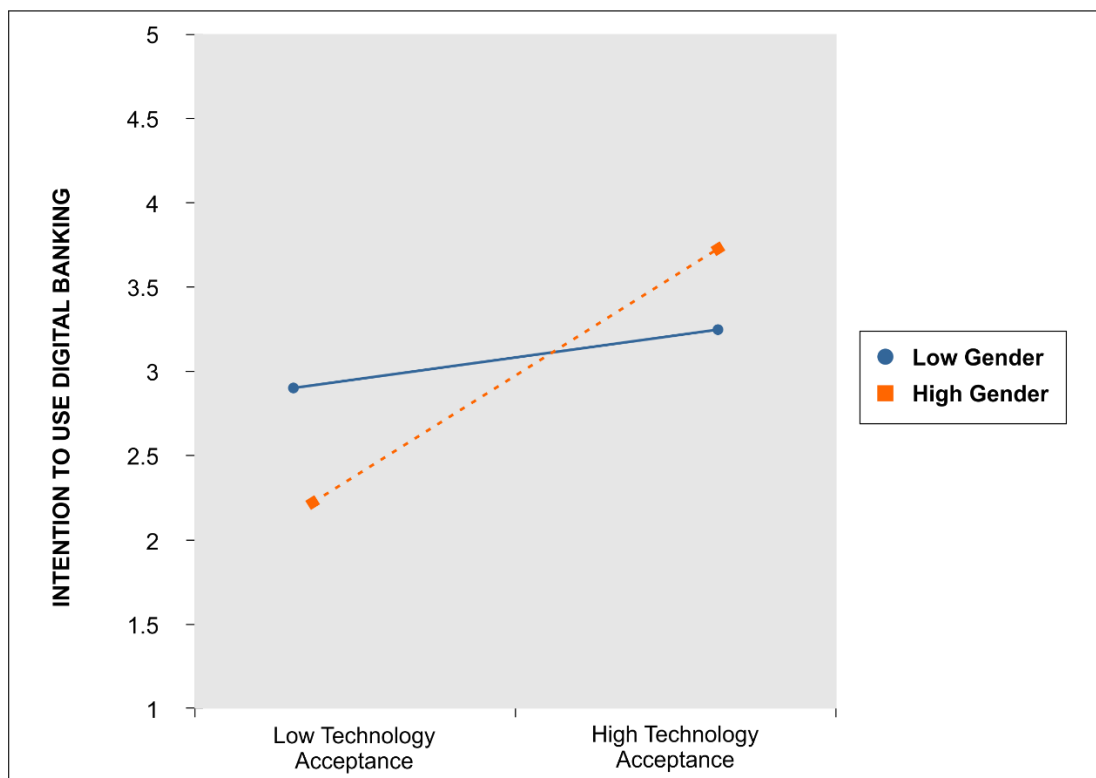


Figure 6.3 Interacting effects between gender, technology acceptance and intention to use digital banking. 1 = males; 2= females

6.3.4.5 Gender as a moderator of the relationship between technology acceptance, culture, values and subjective norm

As can be observed in Table 6.14 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models. For the variables technology acceptance, values and the subjective norm, the analysis shows no significant moderating effect of gender; however, the main effects and interaction effects were investigated.

Table 6.14
Hayes' Process Regression Matrix for moderating effect of gender on the relationship between technology acceptance, values, culture and subjective norm (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	1.06(.17)	6.17	.00	.72	1.39	.37	.13
gender	-.16(.10)	-1.60	.11	-.35	.03		
Interaction_1	-.23(.25)	-.90	.37	-.73	.27		
Model 2: Culture	.81(.21)	8.54	.00	1.40	2.23	.53	.29
gender	-.13(.09)	-1.52	.13	-.31	.04		
Interaction_1	1.81(.21)	8.54	.00	1.40	2.23		
Model 3: Values	.16(.13)	1.27	.21	-.09	.41	.15	0.2
gender	-.18(.10)	-1.72	.08	-.38	.03		
Interaction_1	-.58(.23)	-2.49	.01	-1.04	-.12		

Note: n= 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 1) in Table 6.14 above, in terms of the main effects, technology acceptance acted as a significant predictor of the subjective norm: (F (3; 399) = 20.59; p ≤ .05), (B = 1.06; SEB = .17; 95%CI = [.72; 1.39]; p < .05), denoting that technology acceptance is associated with an increase in the percentage of the subjective norm.

As indicated (model 3) in Table 6.14 above, in terms of the main effects, values did not act as a significant predictor of the subjective norm. (F (3; 399) = 3.27; p = .02), (B

= .16; SEB = .13; 95%CI = [-.09; .41]; p =.21), denoting that gender and values were not associated with an increase in the percentage of the subjective norms.

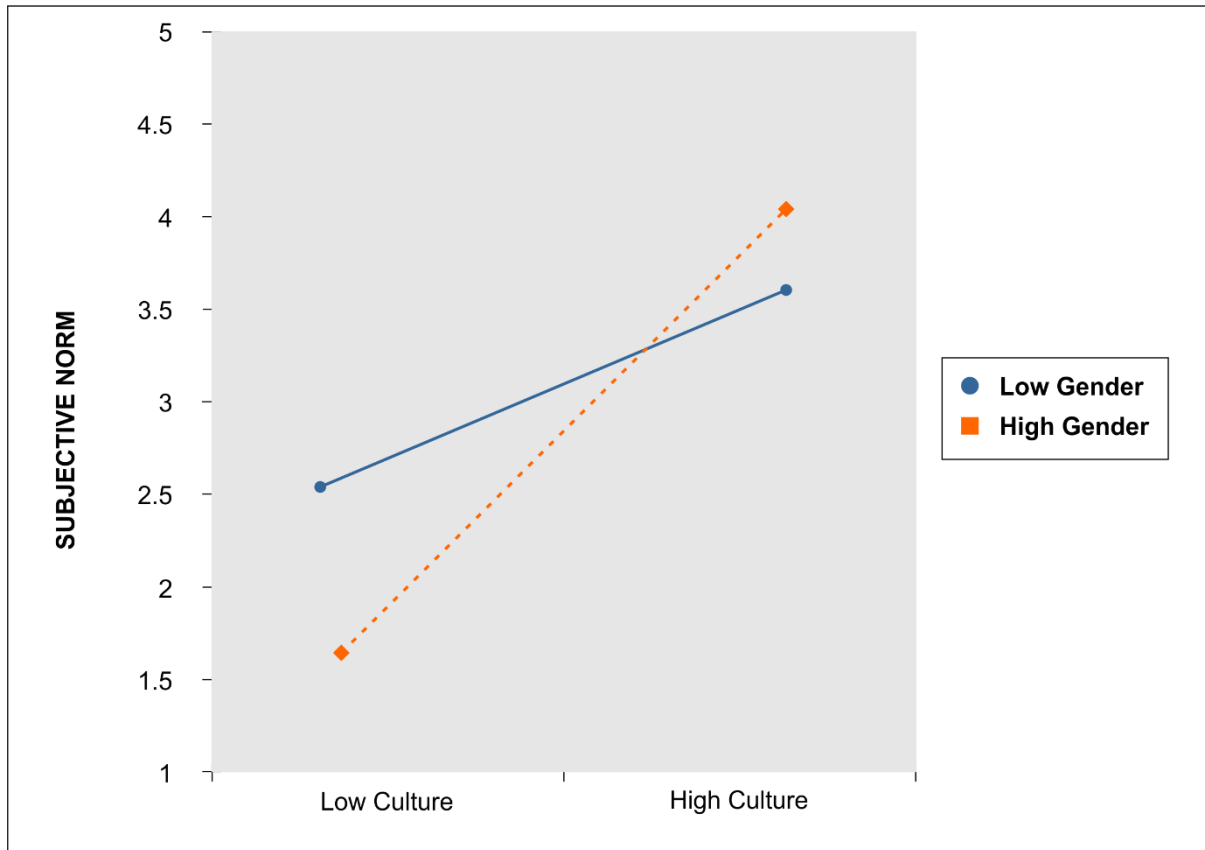


Figure 6.4
Interacting effects between gender, culture and subjective norm. 1 = males; 2= females

However, male participants reveal more stability in regards to subjective norms and culture, whilst female reveal disperse interaction between culture and subjective norms. This may be an indication that female are more prone to adjust to the culture and follow the norms than males, however, they can also be just as negligent with regards to culture than males, on the other extreme.

6.3.4.6 Gender as a moderator of the relationship between technology acceptance, culture, values and perceived behavioural control

As can be observed in Table 6.15 below using Hayes’ Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction termed were entered into the models. For the variables technology acceptance, culture, values, and the perceived behavioural

control, the analysis shows no significant moderating effect of gender. However, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.15

Hayes' Process Regression Matrix for moderating effect of gender on the relationship between technology acceptance, values, culture and perceived behavioural control (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.85(.12)	7.21	.00	.62	1.09	.47	.22
gender	-.11(.08)	-1.69	.09	-.25	.02		
Interaction_1	.12(.18)	.68	.47	-.23	.46		
Model 2: Culture	1.25(.16)	7.97	.00	.94	1.55	.52	.27
gender	-.11(.06)	-1.69	.09	-.24	.02		
Interaction_1	.33(.23)	1.42	.16	-.13	.79		
Model 3: Values	.11(.09)	1.19	.24	-.07	.28	.13	.02
gender	-.17(.08)	-2.21	.03	-.32	-.02		
Interaction_1	.08(.17)	.47	.64	-.25	.42		

Note: n = 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 1) in Table 6.15 above, in terms of the main effects, technology acceptance acted as a significant predictor of perceived behavioural control. (F (3; 399) = 38.04; p ≤ .05), (B = .85; SEB = .12; 95%CI = [.62;1.09]; p < .05), denoting that technology acceptance is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 2) in Table 6.15 above, in terms of the main effects, culture acted as a significant predictor of perceived behavioural control: (F (3; 399) = 50.21; p ≤ .05), (B = 1.25; SEB = .16; 95%CI = [.94;1.55]; p < .05), denoting that culture is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 3) in Table 6.15 above, in terms of the main effects, values did not act as a significant predictor of perceived behavioural control. (F (3;399) = 2.43; p = .06), (B = .11; SEB = .09; 95%CI =[-.07;.28]; p =.24), denoting that values did not associate with an increase in the percentage of the perceived behavioural control.

6.3.4.7 Educational level as a moderator of the relationship between technology acceptance, culture, values and the intention to use digital banking

As can be observed in Table 6.16 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models. For the variables technology acceptance, culture, values, and the intention to use digital banking, the analysis shows no significant moderating effect of the educational level. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.16
Hayes' Process Regression Matrix for moderating effect of gender on the relationship between technology acceptance, values, culture and intention to use digital banking (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.59 (.05)	10.89	.00	.48	.69	.58	.33
Educational level	.08 (.03)	2.38	.02	.01	.14		
Interaction_1	.06 (.09)	.64	.52	-.12	-.12		
Model 2: Culture	.63 (.02)	7.51	.00	.47	.80	.43	.19
Educational level	.07 (.04)	1.90	.06	-.00	.14		
Interaction_1	-.03 (.14)	-.21	.83	-.30	.24		
Model 3: Values	-.08 (-1.47)	-1.47	.14	-.19	.03	.19	.03
Educational level	.09 (.04)	2.26	.02	.01	.17		
Interaction_1	.25 (.08)	2.95	.00	.08	.41		

Note: n = 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 1) in Table 6.16 above, in terms of the main effects, technology acceptance acted as a significant predictor of perceived behavioural control. ($F(3; 399) = 38.04; p \leq .05$), ($B = .59; SEB = .05; 95\%CI = [.48;.69]; p < .05$), denoting that technology acceptance is associated with an increase in the percentage of the intention to use digital banking.

As indicated (model 2) in Table 6.16 above, in terms of the main effects, culture acted as a significant predictor of perceived behavioural control; ($F(3; 399) = 30.72; p \leq .05$), ($B = .63; SEB = .02; 95\%CI = [.47;.80]; p < .05$), denoting that culture is associated with an increase in the percentage of the intention to use digital banking.

As indicated (model 3) in Table 6.16 above, in terms of the main effects, values did not act as a significant predictor of perceived behavioural control. ($F(3;399) = 4.64; p < .05$), ($B = -.08; SEB = 1.47; 95\%CI = [-.19;.03]; p = .24$), denoting that values did not associate with an increase in the percentage of the intention to use digital banking. However, in terms of the interaction effects, educational level acted as a moderator of the relationship between values and intention to use digital banking.

The interactions were explored using a simple slope test and by graphing the interactions using the value of the moderator at the mean, as well as standard deviations above and below the mean (Cohen *et al.*, 2013).

As illustrated in Figure 6.5, the relationship between values and intention to use digital banking was stronger for those with a high level of education than for those with a low level of education. The higher educated participants who scored high on values, also achieved significantly higher scores than those participants with a lower level of education on the intention to use digital banking.

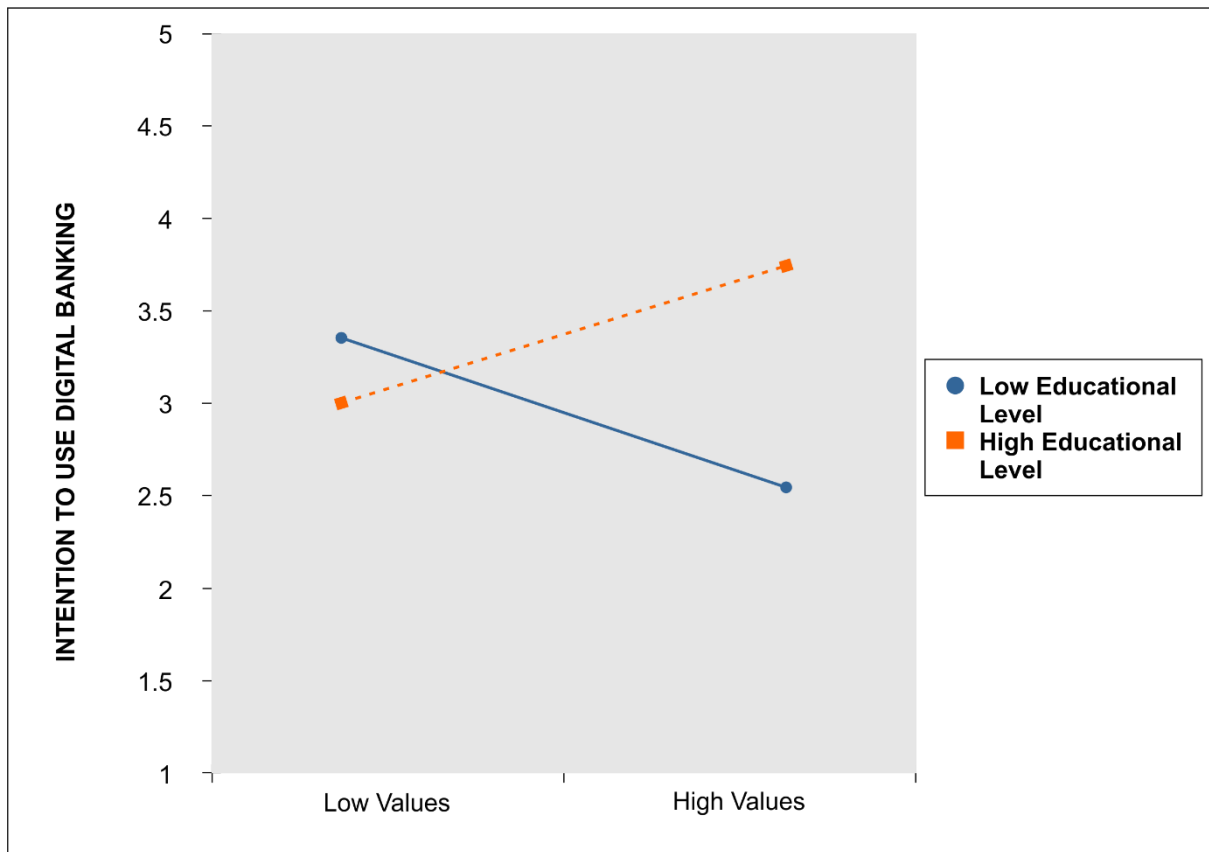


Figure 6.5
Interaction effects between educational level, values and intention to use digital banking

6.3.4.8 Educational level as a moderator of the relationship between technology acceptance, culture, values and the subjective norm

As can be observed in Table 6.17 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models. For the variables technology acceptance, culture, values, and the subjective norm, the analysis shows no significant moderating effect of the educational level. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.17

Hayes' Process Regression Matrix for moderating effect of the educational level on the relationship between technology acceptance, values, culture and subjective norm (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.96 (.15)	6.18	.00	.65	1.26	.36	.13
Educational level	.13 (.09)	1.38	.17	-.06	.32		
Interaction_1	.01 (.27)	.04	.97	-.51	.54		
Model 2: Culture	1.90 (.06)	9.50	.00	1.51	2.29	.53	.28
Educational level	.08 (.09)	.96	.34	-.09	.25		
Interaction_1	.18 (.33)	.55	.59	-.47	.83		
Model 3: Values	.00 (.14)	.03	.98	-.28	.28	.08	.01
Educational level	.15 (.10)	1.46	.14	-.05	.35		
Interaction_1	-.07 (.21)	-.32	.75	-.49	.35		

Note: n = 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 1) in Table 6.17 above, in terms of the main effects, technology acceptance acted as a significant predictor of the subjective norm. (F (3; 399) = 20.05; p ≤ .05), (B = .96; SEB = .15; 95%CI = [.65;1.26]; p < .05), denoting that technology acceptance is associated with an increase in the percentage of the subjective norm.

As indicated (model 2) in Table 6.17 above, in terms of the main effects, culture acted as a significant predictor of the subjective norm: (F (3;399) = 52.00; p <.05), (B = 1.90; SEB = .06; 95%CI = [1.51;2.29]; p <.05), denoting that culture is associated with an increase in the percentage of the subjective norm.

As indicated (model 3) in Table 6.17 above, in terms of the main effects, values did not act as a significant predictor of the subjective norm. (F (3;399) = .77; p <.51), (B =

.00; SEB = .14; 95%CI =[-.28;.28]; p =.98), denoting that values did not associate with an increase in the percentage of the subjective norm.

6.3.4.9 Educational level as a moderator of the relationship between technology acceptance, culture, values and the perceived behavioural control

As can be observed in Table 6.18 below using Hayes’ Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models. For the variables technology acceptance, culture, values, and the perceived behavioural control, the analysis shows no significant moderating effect of the educational level. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.18
Hayes’ Process Regression Matrix for moderating effect of the educational level on the relationship between technology acceptance, values, culture and perceived behavioural control (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.90(.11)	8.37	.00	.69	1.11	.47	.22
Educational level	.08(.07)	1.17	.24	-.05	.21		
Interaction_1	.06(.19)	.31	.76	-.31	.42		
Model 2: Culture	1.46(.15)	9.93	.00	1.17	1.75	.52	.27
Educational level	.05(.06)	.77	.44	-.08	.17		
Interaction_1	-.17(.24)	-.70	.48	-.64	.31		
Model 3: Values	.67(.05)	.64	.53		-.14	.27	.11
Educational level	.09(.07)	1.27	.21		-.05	.24	
Interaction_1	.12(.16)	.76	.45		-.19	.42	

Note: n = 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 1) in Table 6.18, in terms of the main effects, technology acceptance acted as a significant predictor of the perceived behavioural control; ($F(3; 399) = 20.59; p \leq .05$), ($B = 1.06$ SEB = .17; 95%CI = [.72;1.39]; $p < .05$), denoting that technology acceptance is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 2) in Table 6.18 above, in terms of the main effects, culture acted as a significant predictor of the perceived behavioural control. ($F(3; 399) = 48.44; p < .05$), ($B = 1.46$; SEB = .15; 95%CI = [1.17;1.75]; $p < .05$), denoting that culture is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 3) in Table 6.18 above, in terms of the main effects, values did not act as a significant predictor of perceived behavioural control. ($F(3;399) = 1.48; p = .31$), ($B = .67$; SEB = .05; 95%CI = [-.14;.27]; $p = .53$), denoting that values did not associate with an increase in the percentage of the perceived behavioural control.

6.3.4.10 Income as a moderator of the relationship between technology acceptance, culture, values and the intention to use digital banking

As can be observed in Table 6.19 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models.

For the variables technology acceptance, culture, values, and the intention to use digital banking, the analysis shows no significant moderating effect of the income variable. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.19

Hayes' Process Regression Matrix for moderating effect of gender on the relationship between technology acceptance, values, culture and intention to use digital banking (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.56 (.02)	11.12	.00	.46	.65	.58	.33
Income	.05 (.04)	1.31	.19	-.02	.12		
Interaction_1	.21 (.11)	1.95	.05	-.00	.41		
Model 2: Culture	.60 (.08)	7.74	.00	.44	.75	.43	.19
Income	.06 (.04)	1.41	.16	-.02	.13		
Interaction_1	.10 (.16)	.66	.51	-.21	.42		
Model 3: Values	-.06(.05)	-1.22	.22	-.16	.04	.18	.03
Income	.08(.04)	1.75	.08	-.01	.16		
Interaction_1	.28(.09)	3.03	.00	.10	.47		

Note: $n = 403$; *** $p \leq .001$; ** $p \leq .01$, * $p \leq .05$: Cohen (1992)

As indicated (model 1) in Table 6.19 above, in terms of the main effects, technology acceptance acted as a significant predictor of intention to use digital banking. ($F(3; 399) = 65.92$; $p \leq .05$), ($B = .66$; $SEB = .02$; $95\%CI = [.46;.65]$; $p < .05$), denoting that technology acceptance is associated with an increase in the percentage of the intention to use digital banking.

As indicated (model 2) in Table 6.19 above, in terms of the main effects, culture acted as a significant predictor of intention to use digital banking: ($F(3;399) = 30.30$; $p < .05$), ($B = .60$; $SEB = .08$; $95\%CI = [.44;.75]$; $p < .05$), denoting that culture is associated with an increase in the percentage of the intention to use digital banking.

As indicated (model 3) in Table 6.19 above, in terms of the main effects, values did not act as a significant predictor of intention to use digital banking. ($F(3;399) = 4.63$; $p < .05$), ($B = -.06$; $SEB = .05$; $95\%CI = [-.16;.04]$; $p = .22$), denoting that values did not associate with an increase in the percentage of the intention to use digital banking.

6.3.4.11 Income as a moderator of the relationship between technology acceptance, culture, values and the subjective norm

As can be observed in Table 6.20 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models.

For the variables technology acceptance, culture, values, and the subjective norm, the analysis shows no significant moderating effect of the income variable. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.20
Hayes' Process Regression Matrix for moderating effect of age on the relationship between technology acceptance, values, culture and subjective norm (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.92(.14)	6.40	.00	.64	1.20	.36	.13
Income	-.08(.10)	-.79	.43	-.29	.12		
Interaction_1	.22(.300)	.72	.47	-.38	.81		
Model 2: Culture	1.85(.18)	10.17	.00	1.49	2.20	.54	.29
Income	-.14(.09)	-1.44	.15	-.32	.05		
Interaction_1	.62(.37)	1.66	.10	-.11	1.36		
Model 3: Values	-.09(.13)	-.68	.49	-.33	.16	.05	.00
Income	-.02(.11)	-.19	.85	-.24	.20		
Interaction_1	.22(.24)	.92	.36	-.25	.69		

Note: N= 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 1) in Table 6.20 above, in terms of the main effects, technology acceptance acted as a significant predictor of the subjective norm. (F (3; 399) = 19.71; p ≤ .05), (B = .92; SEB = .14; 95%CI = [.64; 1.20]; p < .05), denoting that technology acceptance is associated with an increase in the percentage of the subjective norm.

As indicated (model 2) in Table 6.20 above, in terms of the main effects, culture acted as a significant predictor of the subjective norm; (F (3;399) = 63.46; p <.05), (B = 1.85;

SEB = .18; 95%CI =[1.49;2.20]; $p < .05$), denoting that culture is associated with an increase in the percentage of the subjective norm.

As indicated (model 3) in Table 6.20 above, in terms of the main effects, values did not acted as a significant predictor of the subjective norm. ($F(3;399) = .31$; $p = .82$), ($B = -.09$; SEB = .13; 95%CI =[-.33;.16]; $p = .49$), denoting that values is not associated with an increase in the percentage of the subjective norm.

6.3.4.12 Income as a moderator of the relationship between technology acceptance, culture, values and the perceived behavioural control

As can be observed in Table 6.21 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models.

For the variable technology acceptance, culture, values, and the perceived behavioural control, the analysis shows no significant moderating effect of the income variable. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.21

Hayes' Process Regression Matrix for moderating effect of income on the relationship between technology acceptance, values culture and perceived behavioural control ($n = 403$)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.97(.04)	9.70	.00	.77	1.16	.47	.22
Income	.01(.07)	.10	.92	-.13	.15		
Interaction_1	-.22(.21)	-1.03	.30	-.63	.20		
Model 2: Culture	1.41(.13)	10.45	.00	1.14	1.67	.51	.27
income	-.02(.07)	-.23	.82	-.15	.12		
Interaction_1	.00(.28)	.02	.99	-.54	.55		
Model 2: Values	.04(.04)	.40	.69	-.14	.22	.11	.01
Income	.03(.08)	.41	.68	-.13	.19		
Interaction_1	.28(.17)	1.59	.11	-.07	.62		

Note: $n = 403$; *** $p \leq .001$; ** $p \leq .01$, * $p \leq .05$: Cohen (1992)

As indicated (model 1) in Table 6.21 above, in terms of the main effects, technology acceptance acted as a significant predictor of perceived behavioural control. ($F(3; 399) = 37.06; p \leq .05$), ($B = .97; SEB = .04; 95\%CI = [.77; 1.16]; p < .05$), denoting that technology acceptance is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 2) in Table 6.21 above, in terms of the main effects, culture acted as a significant predictor of the subjective norm; ($F(3; 399) = 47.99; p < .05$), ($B = 1.41; SEB = .13; 95\%CI = [1.14; 1.67]; p < .05$), denoting that culture is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 3) in Table 6.21 above, in terms of the main effects, values did not act as a significant predictor of perceived behavioural control. ($F(3; 399) = 1.73; p = .16$), ($B = .04; SEB = .04; 95\%CI = [-.14; .22]; p = .68$), denoting that values is not associated with an increase in the percentage of the perceived behavioural control.

6.3.4.13 Urban versus rural as a moderator of the relationship between technology acceptance, culture, values and the intention to use digital banking

As can be observed in Table 6.22 below using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models.

For the variable technology acceptance, culture, values, and the intention to use digital banking, the analysis shows no significant moderating effect of the urban versus rural variable. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.22

Hayes' Process Regression Matrix for moderating effect of urban versus rural on the relationship between technology acceptance and culture (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.66(.06)	11.32	.00	.54	.77	.57	.33
Urban versus Rural	-.02(.03)	-.61	.54	-.09	.05		
Interaction_1	-.11(.09)	-1.23	.22	-.29	.07		
Model 2: Culture	.64(.09)	7.17	.00	.47	.82	.42	.18
Urban versus Rural	-.00 (.04)	-.17	.98	-.08	.07		
Interaction_1	-.03 (.14)	-.02	.80	-.30	.23		

Note: n = 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 1) in Figure 6.5 above, in terms of the main effects, technology acceptance acted as a significant predictor of perceived behavioural control. (F (3; 399) = 64.05; p ≤ .05), (B = .66; SEB = .06; 95%CI = [.54;77]; p < .05), denoting that technology acceptance is associated with an increase in the percentage of the perceived behavioural control.

As indicated (model 2) in Figure 6.5 above, in terms of the main effects, culture acted as a significant predictor of the subjective norm; (F (3;399) = 29.19; p <.05), (B = .64; SEB = .09; 95%CI = [47;82]; p <.05), denoting that culture is associated with an increase in the percentage of the perceived behavioural control.

6.3.4.14 Urban versus rural as a moderator of the relationship between technology acceptance, culture, values and the subjective norm

As seen in Table 6.23, using Hayes' Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models. For the variable technology acceptance, culture, values, and the subjective norm, the analysis shows no significant moderating effect of the urban versus rural variable. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

Table 6.23

Hayes' Process Regression Matrix for moderating effect of age on the relationship between technology acceptance, values, culture and subjective norm (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.79(.17)	4.76	.00	.46	1.12	.37	.13
Urban versus Rural	.11(.10)	1.11	.27	-.09	.31		
Interaction_1	.40(.26)	1.57	.12	-.10	.91		
Model 2: Culture	1.69(.05)	8.01	.00	1.27	2.10	.54	.29
Urban versus Rural	.16(.090)	1.74	.08	-.02	.33		
Interaction_1	.66(.320)	2.06	.04	.03	1.28		
Model 3: Values	-.03(.13)	-.20	.84	-.27	.22	.07	.00
Urban versus Rural	.14(.11)	1.29	.20	-.07	.35		
Interaction_1	.01(.24)	.04	.97	-.45	.47		

Note: $n= 403$; *** $p \leq .001$; ** $p \leq .01$, * $p \leq .05$: Cohen (1992)

As indicated (model 1) in Table 6.23, in terms of the main effects, technology acceptance acted as a significant predictor of the subjective norm. ($F(3; 399) = 20.55$; $p \leq .05$), ($B = .79$; $SEB = .17$; $95\%CI = [.46; 1.12]$; $p < .05$), denoting that technology acceptance is associated with an increase in the percentage of the subjective norm.

As indicated (model 2) in Table 6.23 above, in terms of the main effects, culture acted as a significant predictor of the subjective norm ($F(3; 399) = 54.47$; $p \leq .05$), ($B = 1.69$; $SEB = .05$; $95\%CI = [1.27; 2.10]$; $p < .05$), denoting that culture is associated with an increase in the percentage of the subjective norm.

As indicated (model 3) in Table 6.23 above, in terms of the main effects, values did not act as a significant predictor of the subjective norm. ($F(3; 399) = .57$; $p = .63$), ($B = -.03$; $SEB = .13$; $95\%CI = [-.27; .22]$; $p = .84$), denoting that values are not associated with an increase in the percentage of the perceived behavioural control.

The interactions were explored using a simple slope test and by graphing the interactions using the value of the moderator at the mean, as well as standard deviations above and below the mean (Cohen *et al.*, 2013).

As illustrated in Figure 6.6 below, the relationship between culture and subjective norm was stronger for those living in urban areas than for those living in rural ones. The urban participants who scored high on culture also achieved significantly higher scores than the rural participants on the subjective norm.

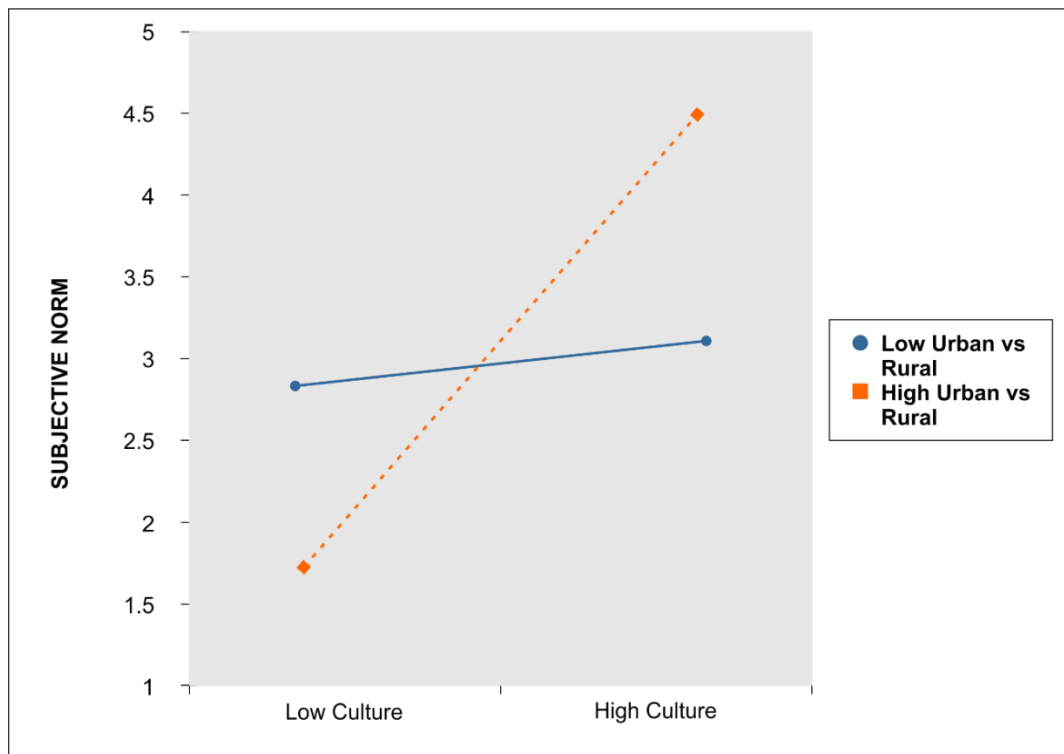


Figure 6.6 Interaction effects between urban versus rural, culture and subjective norm 1=urban; 2= rural

6.3.4.15 Urban versus rural as a moderator of the relationship between technology acceptance, culture, values and perceived behavioural control

As can be observed in Table 6.24 below, using Hayes’ Process Macro in SPSS, the coefficients, standard errors and a 95% confidence interval were calculated. Three independent variables and the interaction terms were entered into the models.

For the variable technology acceptance, culture, values, and the perceived behavioural control, the analysis showed no significant moderating effect of the urban versus rural variable. However, in terms of the main effects, two models (technology acceptance and culture) were found to be statistically significant.

The interactions were explored using a simple slope test and by graphing the interactions using the value of the moderator at the mean, as well as standard deviations above and below the mean (Cohen *et al.*, 2013).

Table 6.24

Hayes' Process Regression Matrix for moderating effect of urban versus rural on the relationship between technology acceptance, values, culture and perceived behavioural control (n = 403)

Variables	B (SE _s)	t	P	95% Confidence Interval		R	R ²
				LLCI	ULCI		
Model 1: technology acceptance	.72(.11)	6.31	.00	.50	.95	.49	.23
Urban versus Rural	-.07(.07)	-.95	.34	-.20	.07		
Interaction_1	.47(.18)	2.69	.01	.13	.82		
Model 2: Culture	1.07(.15)	6.97	.00	.77	1.38	.53	.28
Urban versus Rural	-.02(.07)	-.37	.70	-.15	.11		
Interaction_1	.74(.23)	3.14	.00	.28	1.19		
Model 3: Values	.05(.09)	.52	.61	-.13	.23	.11	.01
Urban versus Rural	-.03(.08)	-.44	.66	-.19	.12		
Interaction_1	.25(.17)	1.44	.15	-.09	.58		

Note: n = 403; ***p ≤ .001; **p ≤ .01, *p ≤ .05: Cohen (1992)

As indicated (model 2) in Table 6.24 above, in terms of the main effects, culture acted as a significant predictor of perceived behavioural control: (F (3; 399) = 52.19; p ≤ .05), (B = 1.07; SEB = .15; 95%CI = [.77;1.38]; p < .05), denoting that culture is associated with an increase in the percentage of the perceived behavioural control.

As illustrated in Figure 6.7 below, the relationship between culture and perceived behavioural control was stronger for those living in urban areas than for those living in rural ones. The urban participants who scored high on TAM also achieved significantly higher scores than the rural participants on the perceived behavioural control.

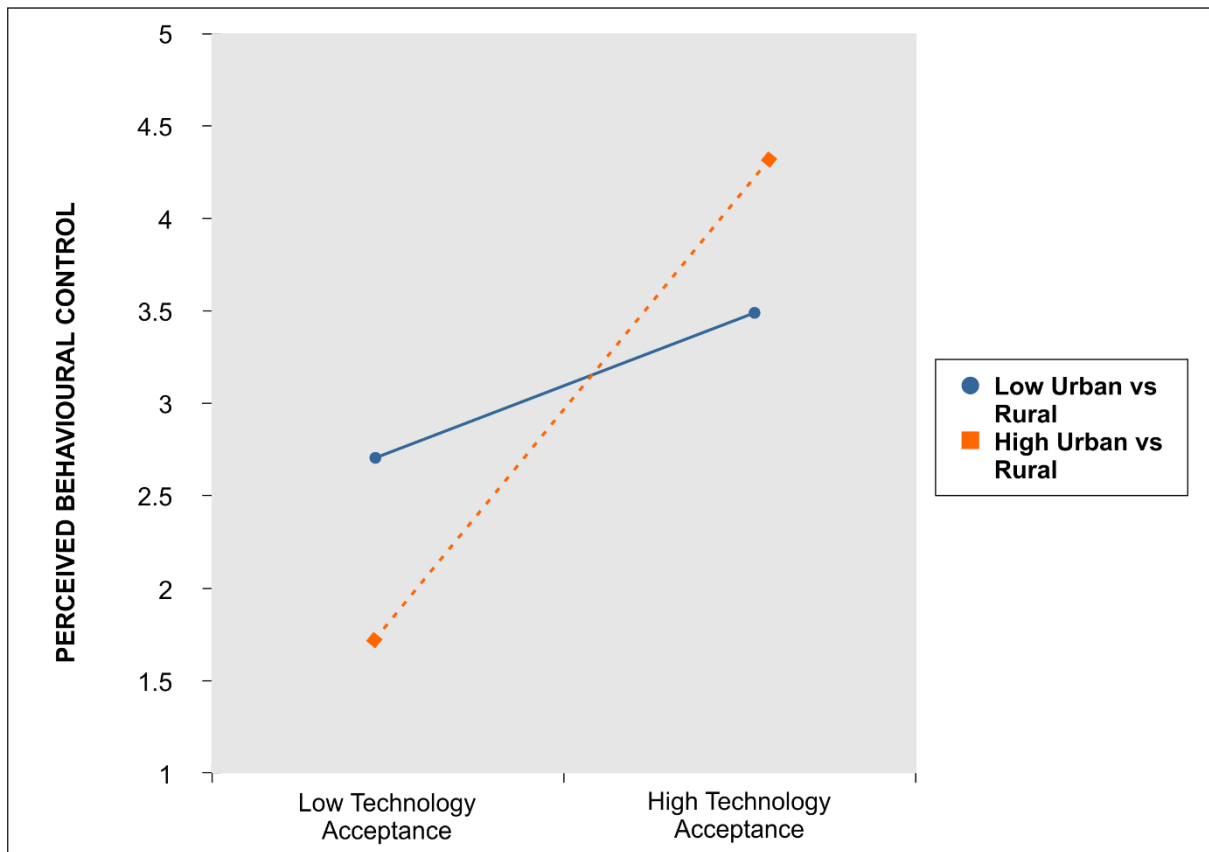


Figure 6.7
Interaction effects between urban versus rural, technology acceptance and perceived behavioural control. 1= urban; 2=rural

As indicated (model 1) in Table 6.24 above, in terms of the main effects, technology acceptance acted as a significant predictor of perceived behavioural control; ($F(3; 399) = 39.67; p \leq .05$), ($B = .72; SEB = .11; 95\%CI = [.50;.95]; p < .05$), denoting that technology acceptance is associated with an increase in the percentage of the perceived behavioural control.

As illustrated in Figure 6.8 below, the relationship between culture and perceived behavioural control was stronger for those living in urban areas than for those living in rural ones. The urban participants who scored high on culture also achieved significantly higher scores on perceived behavioural control.

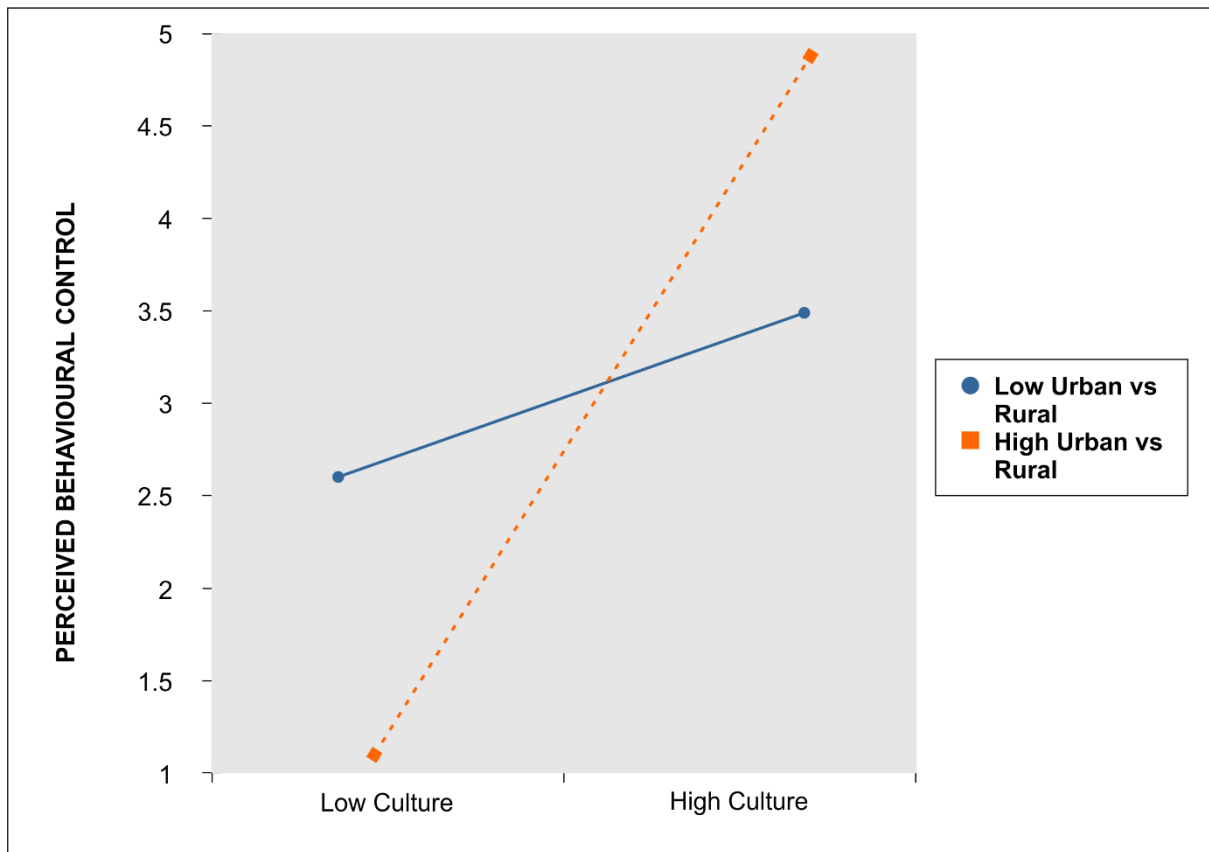


Figure 6.8
Interaction effects between urban versus rural, culture and perceived behavioural control

6.3.5 Tests for significant mean differences

The Mann-Whitney U Test and Kruskal-Wallis Test for detecting significant mean differences were conducted to test the research hypothesis Ha6: Individuals from various demographic variables (gender, age, educational level, income, urban vs. rural background) do differ significantly regarding the variables manifested in the best fit model.

The tests were performed in order to establish whether the samples of participants differ significantly regarding the moderating effect of demographic variables in terms of the mean ranks on technology acceptance, values, culture and attitude towards digital banking (described as intention to use digital banking, subjective norm and perceived behavioural control) variables. The Z-approximation test, which includes a correction for ties in the data, was calculated and a probability value (p) of not less than or equal to .05 was considered, in order to determine the statistically significant differences.

6.3.5.1 Test for significant mean differences with regard to values variable

As Table 6.25 below indicates, the Kruskal-Wallis Test was performed in order to determine whether values demonstrate a difference according to income. A significant difference ($p = .012$) was statistically observed at the significance level of .01. This may mean that the mean rank, perceptions of values amongst the low-income participants were higher than for those with higher income. No significant differences could be detected between age, gender, educational level, and urban versus rural backgrounds. The results revealed an $x^2 = 17.934$; $p = .012$ between values and income.

Table 6.25
Results of Kruskal-Wallis Test for income in terms of values

Moderating variables	Income groups	N	Mean rank	Chi-square (x^2)	Df	P
Values	≥ 2000	285	192.61	17.934	3	.012
	≤ 2000	118	224.67			

6.3.5.2 Test for significant mean differences with regard to intention to use digital banking variable

As Table 6.26 below indicates, the Kruskal-Wallis Test was performed in order to determine whether intention to use digital banking demonstrated a difference according to educational level. A significant difference ($p = .001$) was statistically observed at the significance level of .01. This may mean that the mean rank, perceptions of intention to use digital banking were higher amongst the postgraduate participants than the undergraduate ones. No significant differences could be detected between age, gender, income and urban versus rural.

The results revealed an $x^2 = 17.934$; $p = .012$ between intention to use digital banking and educational level.

Table 6.26
Results of Kruskal-Wallis Test for educational level in terms of intention to use digital banking

Moderating variables	Educational level	N	Mean rank	Chi-square (χ^2)	Df	P
Values	\geq Undergraduate	228	185.20	23.780	3	.001
	\leq Postgraduate	175	223.89			

As Table 6.27 below indicates, the Kruskal-Wallis Test was performed in order to determine whether intention to use digital banking demonstrated a difference according to income. A significant difference ($p = .001$) was statistically observed at the significance level of .01. Considering the mean rank, perceptions of intention to use digital banking were higher amongst the low-income participants than those with a higher income. No significant differences could be detected between age, gender, educational level and urban versus rural.

The results revealed an $\chi^2 = 20.252$; $p = .001$ between intention to use digital banking and income.

Table 6.27
Results of Kruskal-Wallis Test for income in terms of intention to use digital banking

Moderating variables	Income groups	N	Mean rank	Chi-square (χ^2)	Df	P
Values	\geq 2000	285	189.94	20.252	3	.001
	\leq 2000	11	231.13			

6.3.5.3 Test for significant mean differences with regard to subjective norms and urban versus rural variable

As Table 6.28 below indicates, the Kruskal-Wallis Test was performed in order to determine whether the subjective norm demonstrated a difference according to the urban versus rural variables.

Table 6.28
Results of Kruskal-Wallis Test for urban versus rural in terms of intention to use digital banking

Moderating variables	Urban vs rural	N	Mean Rank	Chi-Square (x ²)	df	P
Values	Urban	266	188.04	21.667	3	.001
	Rural	136	227.82			

As shown in Table 6.28 above, a significant difference ($p = .001$) was statistically observed at the significance level of .01. Considering the mean rank, perceptions of the subjective norm were higher amongst the rural participants than the urban ones.

The results revealed an $x^2 = 21.667$; $p = .001$ between subjective norm and urban versus rural. No significant differences could be detected between age, gender, educational level and income.

6.3.6 The Self-Assessment Manikin (SAM) results

The SAM was conducted with a view to assessing whether individuals with different demographic variables differ in terms of their attitude towards banking channels.

Research aim 7: To empirically assess with the use of SAM whether individuals of different demographic variables (gender, age, educational level, income, urban versus rural background,) differ with regards to their attitude towards banking channels.

The research hypothesis Ha7: Based on SAM, individuals of different demographical variables (gender, age, educational level, income, urban versus rural background,) do differ with regard to their attitude towards banking channels, was assessed in this section.

In this sub-section we will discuss the results of the SAM, a component of the PAD Theory. The focus on the research on this component is to understand the attitude towards the following banking channels:

- Participants' Attitude towards BRANCH
- Participants' Attitude towards ATM
- Participants' Attitude towards INTERNET BANKING

- Participants' Attitude towards MOBILE BANKING
- Participants' Attitude towards MPESA
- Participants' Attitude towards USSD

In line with the above, the researcher theorised that the higher the pleasure/ arousal score, the higher the likelihood of the customer using a DBC. The theory and application of the SAM were sufficiently explained in Chapter 5. It is useful, however, to describe the calculation of the pleasure/ arousal score used in this section which will serve to evaluate participants' emotional perception of the major retail brands using the four stimuli of brand logos, customer care, customer reward and quality (Bakker, 2014).

The method is based on the understanding that, among the nine clusters generated by the SAM grid, four (comfortable, warmed, enthusiastic and apprehensive) reflect positive emotions, another four reflect negative emotions (indifferent, sullen, troubled and alarmed) while ambivalent reflects mixed emotions (both positive and negative). The method is, thus, an extraction of the percentage of negative pleasure/ arousal from the positive, and represents participants' overall emotional response to the stimulus or Net Emotional Score (NES).

To repeat, the method is as follows:

[Comfortable + Warmed + Enthusiastic + Apprehensive + $\frac{1}{2}$ Ambivalent] – [Indifferent + Sullen + Troubled + Alarmed + $\frac{1}{2}$ Ambivalent]. (J.P.R. Joubert, Personal communication, 16 January 2019).

An example of application of the above method in this study is the Pleasure/ Arousal or Valence/ Net Emotional Score for the ATM channel as follows:

$$[62.3+7.9+9.7+1.5+(5.5/2)]-[0.5+0.2+4.7+7.7+(5.5/2)]=68\%$$

6.3.6.1 Participants' attitude towards BRANCH

Table 6.29 below presents the details of SAM results with regards to emotions or attitude towards branch, which will be further interpreted in Figure 6.9 below.

Table 6.29
Participants' attitude towards BRANCH

		Arousal							
		Low		Moderate		High		Total	
		Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Pleasure	High	40	9.9%	30	7.4%	212	52.6%	282	70.0%
	Moderate	28	6.9%	30	7.4%	5	1.2%	63	15.6%
	Low	45	11.2%	6	1.5%	7	1.7%	58	14.4%
	Total	113	28.0%	66	16.4%	224	55.6%	403	100.0 %

Notes: ($n = 403$)

$$[52.6+7.4+9.9+1.2+(7.4/2)]-[1.7+1.5+11.2+6.9+(7.4/2)]=49.9\%$$

$$74.94\% - 25.06\% = 49.88\% \text{ Net Emotional Score (NES)}$$

Branch Pleasure	High	9	Comfortable: 9.9% Relaxed	Warmed: 7.4% Capable	Enthusiastic: 52.6% Victorious					
		8	Secure Untroubled	Confident Carefree	Energetic Alive					
		7	Leisurely Respectful	Responsible Secure	Exuberant Triumphant					
	Moderate	6	Indifferent: 6.9% Uninterested	Ambivalent: 7.4% Sheltered	Apprehensive: 1.2% Activist					
		5	Unemotional Aloof	Sensitive Embattled	Anxious Defiant					
		4	Unimpressed Subdued	Repentant Conforming	Startled Radical					
	Low	3	Sullen: 11.2% Unresponsive	Troubled: 1.5% Helpless	Alarmed: 1.7% Aggravated					
		2	Unconcerned Apathetic	Insecure Rejected	Terrified Afraid					
		1	Uncaring Bored	Depressed Discouraged	Stressed Fearful					
			1	2	3	4	5	6	7	8
		Low			Moderate			High		
		Branch Arousal								

Figure 6.9
Participants' emotions towards Branch

Source: The emotions clusters and sub-clusters (Personal communication, Joubert, 2019)

Figure 6.9 illustrates that about 74.94% of participants displayed positive emotions towards the branch, whilst 25.06% displayed negative emotions, resulting in a 49.88% valence or NES. This score is an indication of a positive attitude towards the branch banking and may signify that the branch is still a channel that most participants perceive to be satisfying and stimulating. These results may be an indication that consumers still value the human factor with regard to banking behaviour, and that the branch is still the preference of most consumers. The results reveal that about 50% of participants are emotionally active and have a high or positive attitude toward the branch, both on the pleasure and arousal dimensions. Whilst this is a positive result, it may also pose a challenge in the customer's migration to digital platforms.

Table 6.30
Participants' demographics and attitude towards branch

Demographic	Positive	Negative	Valence (net emotional score – NES)
Male	76.40%	23.60%	52.80%
Female	72.55%	27.45%	45.10%
Younger (Age <35)	73.30%	26.70%	46.59%
Older (Age >35)	78.06%	21.94%	56.12%
Undergraduate	69.96%	30.04%	39.91%
Graduate	81.43%	18.57%	62.86%
Low Income	72.98%	27.02%	45.96%
High Income	79.66%	20.34%	59.32%
Urban	69.17%	30.83%	38.35%
Rural	86.03%	13.97%	72.06%

The results displayed in the above table reveal that, with regard to gender, males have more positive emotions towards the branch, scoring higher than females with 76.40% positive and 23.60% negative, leading to a NES of 52.80%, while females scored 72.55% positive and 27.45% negative, resulting in a NES of 45.10%.

In analysing age, older participants display more positive emotions towards the branch than the younger ones, scoring 78.06% positive and 21.94% negative, leading to a NES of 56.12%, against a NES of 46.59% scored by younger participants.

With regard to educational level, graduates/postgraduates scored higher emotions towards the branch with 81.43% positive and 18.57% negative, resulting in an NES of 62.86%, against the 39.91% scored by undergraduates.

The analysis of income and attitude towards the branch reveals that high income earning participants display higher emotions with a score of 79.66% positive and 20.34% negative emotions, resulting in an NES of 59.32%, against 45.96% scored by low income participants.

With regards to urban versus rural background and attitude towards the branch, the participants from rural areas scored higher than those living in the urban areas, with

86.03% positive and 13.97% negative, resulting in an NES of 72.06% against 38.35% scored by urban background participants.

6.3.6.2 Participants' attitude towards ATM

Table 6.31 below presents the data resulting from SAM on participants' attitude towards ATM, which will be further interpreted in Figure 6.11.

Table 6.31
Participants' attitude towards ATM

		Arousal							
		Low		Moderate		High		Total	
		Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Pleasure	High	39	9.7%	32	7.9%	251	62.3%	322	79.9%
	Moderate	31	7.7%	22	5.5%	6	1.5%	59	14.6%
	Low	19	4.7%	1	0.2%	2	0.5%	22	5.5%
	Total	89	22.1%	55	13.6%	259	64.3%	403	100%

Notes: (n = 403)

$$[62.3+7.9+9.7+1.5+(5.5/2)]-[0.5+0.2+4.7+7.7+(5.5/2)]=68\%$$

$$84.12\% - 15.88\% = 68.24\% \text{ Net Emotional Score (NES)}$$

ATM Pleasure	High	9	Comfortable: 9.7% Relaxed	Warmed: 7.9% Capable	Enthusiastic: 62.3% Victorious					
		8	Secure Untroubled	Confident Carefree	Energetic Alive					
		7	Leisurely Respectful	Responsible Secure	Exuberant Triumphant					
	Moderate	6	Indifferent: 7.7% Uninterested	Ambivalent: 5.5% Sheltered	Apprehensive: 1.5% Activist					
		5	Unemotional Aloof	Sensitive Embattled	Anxious Defiant					
		4	Unimpressed Subdued	Repentant Conforming	Startled Radical					
	Low	3	Sullen: 4.7% Unresponsive	Troubled: 0.2% Helpless	Alarmed: 0.5% Aggravated					
		2	Unconcerned Apathetic	Insecure Rejected	Terrified Afraid					
		1	Uncaring Bored	Depressed Discouraged	Stressed Fearful					
			1	2	3	4	5	6	7	8
		Low			Moderate			High		
		ATM Arousal								

Figure 6.10
Participants' emotions towards ATM

Source: The emotions clusters and sub-clusters (Personal communication, Joubert, 2019)

Figure 6.10 above illustrates that about 84.12% of participants displayed positive emotions towards ATM, against 15.88% of those who displayed negative emotions, resulting in an NES of 68.24%. ATM scores the second highest of all other channels under analysis in this study. This score is a clear indication of a positive attitude towards ATM banking and may signify that ATM is perceived to be a channel that the majority of participants perceive to be satisfying and stimulating.

The results display a positive attitude towards an ATM, with the majority indicating that the ATM experience is satisfying, enjoyable and also stimulating and exciting. About 70% of participants have an affective and positive attitude towards ATM. This is a

positive result, and may represent an encouragement to continue deploying ATMs, particularly in those geographical spaces where it is believed there are consumers with more appetite to migrate from traditional branch banking into digital platforms.

Table 6.32
Participants' demographics and attitude towards ATM

Demographic	Positive	Negative	Valence (net emotional score – NES)
Male	83.80%	16.20%	67.60%
Female	84.64%	15.36%	69.28%
Younger (Age <35)	81.82%	18.18%	63.64%
Older (Age >35)	88.49%	11.51%	76.98%
Undergraduate	75.22%	24.78%	50.44%
Graduate	95.71%	4.29%	91.43%
Low Income	79.47%	20.53%	58.95%
High Income	95.34%	4.66%	90.68%
Urban	79.89%	20.11%	59.77%
Rural	92.28%	7.72%	84.56%

The results displayed in the above table reveal that, with regards to gender, there is no significant difference between male and female, when it comes to attitude towards an ATM. However, females display more positive emotions, scoring partially higher than males, with 84.64% positive and 15.36% negative, leading to a NES of 69.28%, while males scored 83.80% positive and 16.20% negative, resulting in a NES of 67.60%.

In analysing age, older participants display more positive emotions towards the ATM than the younger ones, scoring 88.49% positive and 11.51% negative, leading to a NES of 76.98%, against a NES of 63.64% scored by younger participants.

With regard to educational level, graduates/postgraduates scored higher emotions towards an ATM, with 95.71% positive and 4.29% negative, resulting in an NES of 91.43% against 50.44% scored by undergraduates.

The analysis of income and attitude towards an ATM reveals that high-income earning participants display higher emotions, scoring 95.34% positive and 4.66% negative

emotions, resulting in an NES of 90.68%, against 58.95% scored by low income earning participants.

With regard to urban versus rural background, and attitude towards ATM, the participants from rural areas scored higher than those living in the urban areas, with 92.28% positive emotions and 7.72% negative, resulting in an NES of 84.56% against 59.77% scored by urban background participants.

6.3.6.3 Participants' attitude towards Internet Banking

Table 6.33 below presents the data resulting from SAM on participants' attitude towards Internet Banking, which will be further interpreted in Figure 6.11.

Table 6.33
Participants' attitude towards Internet Banking

		Arousal							
		Low		Moderate		High		Total	
		Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Pleasure	High	16	4.0%	10	2.5%	66	16.4%	92	22.8%
	Moderate	15	3.7%	276	68.5%	2	0.5%	293	72.7%
	Low	16	4.0%	1	0.2%	1	0.2%	18	4.5%
	Total	47	11.7%	287	71.2%	69	17.1%	403	100.0%

Notes: $n = 403$

$$[16.4+2.5+4.0+0.5+(68.5/2)]-[0.2+0.2+4.0+3.7+(68.5/2)]=15\%$$

$$57.57\% - 42.43\% = 15.14\% \text{ Net Emotional Score (NES)}$$

Internet Banking Pleasure	High	9	Comfortable: 4.0% Relaxed Secure Untroubled Leisurely Respectful	Warmed: 2.5% Capable Confident Carefree Responsible Secure	Enthusiastic: 16.4% Victorious Energetic Alive Exuberant Triumphant						
		Moderate	6	Indifferent: 3.7% Uninterested Unemotional Aloof Unimpressed Subdued	Ambivalent: 68.5% Sheltered Sensitive Embattled Repentant Conforming	Apprehensive: 0.5% Activist Anxious Defiant Startled Radical					
			5								
	4										
	Low	3	Sullen: 4.0% Unresponsive Unconcerned Apathetic Uncaring Bored	Troubled: 0.2% Helpless Insecure Rejected Depressed Discouraged	Alarmed: 0.2% Aggravated Terrified Afraid Stressed Fearful						
		2									
		1									
			1	2	3	4	5	6	7	8	9
			Low			Moderate			High		
	Internet Banking Arousal										

Figure 6.11
Participants' emotions towards Internet Banking

Source: The emotions clusters and sub-clusters (Personal communication, Joubert, 2019)

Figure 6.11 above illustrates that about 57.57% of participants displayed positive emotions towards Internet Banking, against 42.43% of those who displayed negative emotions, resulting in a 15.14% NES. This score is an indication of a positive attitude towards Internet Banking and may signify that the latter is perceived to be a channel that a good number of participants consider to be satisfying and stimulating. This is a positive result, and may represent an encouragement to continue to deploy Internet Banking, particularly to those segments operating in very remote conditions who it is believed, have more of an appetite to adopt digital platforms such as internet banking, which they can access at any point, with no need to move from the place of comfort.

The results reveal a moderate attitude towards Internet Banking, with the majority indicating that the internet banking experience is somewhat satisfying, enjoyable and also somewhat stimulating and exciting. These results may be an indication that the majority of participants are not experiencing internet banking to the fullest; therefore there is an opportunity to increase and accelerate the diffusion of internet banking or drive a digital education approach with a view to boosting consumer awareness and usage.

Table 6.34
Participants' demographics and attitude towards Internet Banking

Demographic	Positive	Negative	Valence (net emotional score – NES)
Male	58.20%	41.80%	16.40%
Female	56.54%	43.46%	13.07%
Younger (Age <35)	56.06%	43.94%	12.12%
Older (Age >35)	60.43%	39.57%	20.86%
Undergraduate	51.97%	48.03%	3.95%
Graduate	64.86%	35.14%	29.71%
Low Income	52.46%	47.54%	4.91%
High Income	69.92%	30.08%	39.83%
Urban	56.77%	43.23%	13.53%
Rural	59.19%	40.81%	18.38%

The results displayed in Table 6.34 above, reveal that, with regards to gender, there is no significant difference between males and females, in relation to attitude towards internet banking; however, males display partially higher positive emotions, scoring moderately higher than females with 58.20% positive and 41.80% negative, leading to a NES of 16.40%, while females scored 56.54% positive and 43.46% negative, resulting in a NES of 13.07%.

In analysing age, older participants display more positive emotions towards internet banking than the younger ones, scoring 60.43% positive and 39.57% negative, leading to a NES of 20.86%, against a NES of 12.12% scored by younger participants.

With respect to educational level, graduates/postgraduates scored higher emotions towards internet banking than their counterparts, with 64.86% positive and 35.14% negative, resulting in a NES of 29.71% against 3.95% scored by undergraduates.

The analysis of income and attitude towards internet banking reveals that high income earning participants display higher emotions, scoring 69.92% positive and 30.08% negative emotions, resulting in a NES of 39.83%, against 4.91% scored by low income earning participants.

Concerning urban versus rural background and attitude towards Internet Banking, the participants from rural areas scored slightly higher than those living in the urban areas, with 59.19% positive and 40.81% negative, resulting in a NES of 18.38% against 13.53% scored by urban background participants.

6.3.6.4 Attitude towards mobile banking

Table 6.35 below presents the data resulting from SAM on participants' attitude towards Mobile Banking, which will be further interpreted in Figure 6.12.

Table 6.35
Participants' attitude towards Mobile Banking

		Arousal							
		Low		Moderate		High		Total	
		Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Pleasure	High	44	10.9%	33	8.2%	158	39.2%	235	58.3%
	Moderate	18	4.5%	122	30.3%	6	1.5%	146	36.2%
	Low	17	4.2%	3	0.7%	2	0.5%	22	5.5%
	Total	79	19.6%	158	39.2%	166	41.2%	403	100.0%

Notes: $n = 403$

$$[39.2+8.2+10.9+1.5+(30.3/2)]-[0.5+0.7+4.2+4.5+(30.3/2)]=49.9\%$$

$$74.94\% - 25.06\% = 49.88\% \text{ Net Emotional Score (NES)}$$

Mobile Banking Pleasure	High	9	Comfortable: 10.9% Relaxed	Warmed: 8.2% Capable	Enthusiastic: 39.2% Victorious					
		8	Secure	Confident	Energetic					
		7	Untroubled Leisurely Respectful	Carefree Responsible Secure	Alive Exuberant Triumphant					
	Moderate	6	Indifferent: 4.5% Uninterested	Ambivalent: 30.3% Sheltered	Apprehensive: 1.5% Activist					
		5	Unemotional Aloof	Sensitive Embattled	Anxious Defiant					
		4	Unimpressed Subdued	Repentant Conforming	Startled Radical					
	Low	3	Sullen: 4.2% Unresponsive	Troubled: 0.7% Helpless	Alarmed: 0.5% Aggravated					
		2	Unconcerned Apathetic	Insecure Rejected	Terrified Afraid					
		1	Uncaring Bored	Depressed Discouraged	Stressed Fearful					
			1	2	3	4	5	6	7	8
		Low			Moderate			High		
Mobile Banking Arousal										

Figure 6.12
Participants' emotions towards Mobile Banking

Source: The emotions clusters and sub-clusters (Personal communication, Joubert, 2019)

Figure 6.12 above illustrates that about 74.94% of participants displayed positive emotions towards Mobile Banking, against 25.06% of those who displayed negative emotions, resulting in a 49.88% NES. This score is an indication of a positive attitude towards mobile banking and may signify that this DBC is perceived by a good number of participants to offer comfort, warmth and enthusiasm, meaning that it is satisfying and stimulating. This is a positive result, perhaps representing an encouragement to continue deploying mobile banking, particularly to those segments which, it is believed, have more of an appetite to adopt digital platforms operating through mobile devices that can be accessible in very remote conditions, and accessible at any point, with no need to move geographically.

These results may inform one that there is an excellent opportunity for diffusion of mobile banking, given that there is a good percentage of people who are positive or emotionally connected with mobile banking, and there is still a good percentage of those who are ambivalent about it. These people could easily be open to adopting mobile banking, and according to Rogers (2003), their level of innovativeness could possibly fit under the early adopters (13.5%) and early majority (34%) categories, when taking into account their current attitude towards mobile banking.

Table 6.36
Participants' demographics and attitude towards Mobile Banking

Demographic	Positive	Negative	Valence (net emotional score – NES)
Male	73.80%	26.20%	47.60%
Female	76.80%	23.20%	53.59%
Younger (Age <35)	75.19%	24.81%	50.38%
Older (Age >35)	74.46%	25.54%	48.92%
Undergraduate	71.49%	28.51%	42.98%
Graduate	79.43%	20.57%	58.86%
Low Income	73.16%	26.84%	46.32%
High Income	79.24%	20.76%	58.47%
Urban	72.56%	27.44%	45.11%
Rural	79.78%	20.22%	59.56%

The results displayed in the above table reveal that, with regard to gender there is no significant difference between male and female, in relation to their attitude towards mobile banking. However, females display relatively higher positive emotions, scoring moderately higher than males, with 76.80% positive and 23.20% negative, leading to a NES of 53.59%, against their male counterparts who scored 73.80% positive and 26.20% negative, resulting in a NES of 47.60%.

In analysing age, the results reveal that there is no significant difference with regards to attitude towards mobile banking. However, younger participants display slightly higher positive emotions towards it than the older participants, scoring 75.19% positive and 24.81% negative, leading to a NES of 50.38%, against the NES of 48.92% scored by older participants.

With regards to educational level, graduates/postgraduates scored higher emotions towards mobile banking than their undergraduate counterparts, with 79.43% positive and 20.57% negative, resulting in a NES of 58.86%, against 42.98% scored by undergraduates.

The analysis of income and attitude towards mobile banking reveals that high income earning participants display higher emotions, scoring 79.24% positive and 20.76% negative emotions, resulting in a NES of 58.47%, against 46.32% scored by low income earning participants.

With regards to urban versus rural background and attitude towards mobile banking, the participants from rural areas scored slightly higher than those living in the urban areas, with 79.78% positive and 20.22% negative, resulting in a NES of 59.56%, against 45.11% scored by urban background participants.

6.3.6.5 Participants' attitude towards MPESA

Table 6.37 below presents the data resulting from SAM on participants' attitude towards MPESA, which will be further interpreted in Figure 6.13.

Table 6.37
Participants' attitude towards MPESA

		Arousal							
		Low		Moderate		High		Total	
		Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Pleasure	High	55	13.6%	20	5.0%	253	62.8%	328	81.4%
	Moderate	3	0.7%	41	10.2%	5	1.2%	49	12.2%
	Low	16	4.0%	6	1.5%	4	1.0%	26	6.5%
	Total	74	18.4%	67	16.6%	262	65.0%	403	100.0%

Notes: $n = 403$

$[62.8+5.0+13.6+1.2+(10.2/2)]-[1.0+1.5+4.0+0.7+(10.2/2)]=75.43\%$

$87.72\% - 12.28\% = 75.43\%$ Net Emotional Score (NES)

MPESA Pleasure	High	9	Comfortable: 13.6%	Warmed: 5.0%	Enthusiastic: 62.8%							
		8	Relaxed	Capable	Victorious							
		7	Secure Untroubled Leisurely Respectful	Confident Carefree Responsible Secure	Energetic Alive Exuberant Triumphant							
	Moderate	6	Indifferent: 0.7%	Ambivalent: 10.2%	Apprehensive: 1.2%							
		5	Uninterested	Sheltered	Activist							
		4	Unemotional Aloof Unimpressed Subdued	Sensitive Embattled Repentant Conforming	Anxious Defiant Startled Radical							
	Low	3	Sullen: 4.0%	Troubled: 1.5%	Alarmed: 1.0%							
		2	Unresponsive	Helpless	Aggravated							
		1	Unconcerned Apathetic Uncaring Bored	Insecure Rejected Depressed Discouraged	Terrified Afraid Stressed Fearful							
				1	2	3	4	5	6	7	8	9
				Low			Moderate			High		
	MPESA Arousal											

Figure 6.13
Participants' emotions towards MPESA

Source: The emotions clusters and sub-clusters (Personal communication, Joubert, 2019)

Figure 6.13 above illustrates that 87.72% of the participants displayed positive emotions towards MPESA, against 12.28% of those who displayed negative emotions, resulting in a 75.43% NES. MPESA scores the highest of all other channels under analysis in this study. This score is a clear indication of a positive attitude towards MPESA and may signify that this mobile money channel is perceived by a good number of participants to offer comfort, warmth and enthusiasm, meaning that is satisfying and stimulating. This is a positive result, which may represent an encouragement to continue deploying mobile money services, particularly to those segments and/or geographies that, it is believed, have more of an appetite to adopt digital platforms operating through mobile devices that can be accessible in very

remote conditions, and accessible at any geographical point. The results reveal a positive attitude towards MPESA, with the majority indicating that the MPESA experience is satisfying, enjoyable and also stimulating and exciting.

Table 6.38
Participants' demographics and attitude towards MPESA

Demographic	Positive	Negative	Valence (net emotional score – NES)
Male	86.60%	13.40%	73.20%
Female	89.54%	10.46%	79.08%
Younger (Age <35)	90.53%	9.47%	81.06%
Older (Age >35)	82.37%	17.63%	64.75%
Undergraduate	87.94%	12.06%	75.88%
Graduate	87.43%	12.57%	74.86%
Low Income	89.47%	10.53%	78.95%
High Income	83.47%	16.53%	66.95%
Urban	88.91%	11.09%	77.82%
Rural	85.29%	14.71%	70.59%

The results displayed in the above table reveal that, with regards to gender, there is no significant difference between males and females, in relation to attitude towards MPESA. However, females display relatively higher positive emotions, scoring moderately higher than males, with 89.54% positive and 10.46% negative, leading to a NES of 79.08%, against their male counterparts who scored 86.60% positive and 13.40% negative, resulting in a NES of 73.20%.

In analysing age, the results reveal that younger participants display relatively higher positive emotions towards MPESA, than the older ones, scoring 90.53% positive and 9.47% negative, leading to a NES of 81.06%, against the NES of 64.75% scored by older participants.

With respect to educational level, there is no significant difference between undergraduates and graduate/postgraduate participants. However, undergraduates have scored slightly higher emotions towards MPESA than counterparts, with 87.94% positive and 12.06% negative, resulting in a NES of 75.88%, against the 74.86% scored by graduates/ postgraduates.

The analysis of income and attitude towards MPESA reveal that low-income earning participants display higher emotions, scoring 89.47% positive and 10.53% negative emotions, resulting in a NES of 78.95%, against the 66.95% scored by high-income earning participants.

With regards to urban versus rural background and attitude towards MPESA, the participants from urban areas scored slightly higher than those living in the rural areas, with 88.91% positive and 11.09% negative, resulting in a NES of 77.82%, against the 70.59% scored by rural background participants.

6.3.6.6 Participants' attitude towards USSD

Table 6.39 below presents the data resulting from SAM on participants' emotions or attitude towards USSD, which will be further interpreted in Figure 6.14 below.

Table 6.39
Participants' attitude towards USSD

		Arousal							
		Low		Moderate		High		Total	
		Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %	Count	Table Valid N %
Pleasure	High	13	3.2%	5	1.2%	42	10.4%	60	14.9%
	Moderate	11	2.7%	293	72.7%	1	0.2%	305	75.7%
	Low	28	6.9%	3	0.7%	7	1.7%	38	9.4%
	Total	52	12.9%	301	74.7%	50	12.4%	403	100.0%

Notes: $n = 403$

$$[10.4+1.2+3.2+0.2+(72.7/2)]-[1.7+0.7+6.9+2.7+(72.7/2)]=2.98\%$$

$$51.49\% - 48.51\% = 2.98\% \text{ Net Emotional Score (NES)}$$

USSD Pleasure	High	9	Comfortable: 3.2% Relaxed	Warmed: 1.2% Capable	Enthusiastic: 10.4% Victorious						
		8	Secure Untroubled	Confident Carefree	Energetic Alive						
		7	Leisurely Respectful	Responsible Secure	Exuberant Triumphant						
	Moderate	6	Indifferent: 2.7% Uninterested	Ambivalent: 72.7% Sheltered	Apprehensive: 0.2% Activist						
		5	Unemotional Aloof	Sensitive Embattled	Anxious Defiant						
		4	Unimpressed Subdued	Repentant Conforming	Startled Radical						
	Low	3	Sullen: 6.9% Unresponsive	Troubled: 0.7% Helpless	Alarmed: 1.7% Aggravated						
		2	Unconcerned Apathetic	Insecure Rejected	Terrified Afraid						
		1	Uncaring Bored	Depressed Discouraged	Stressed Fearful						
				1	2	3	4	5	6	7	8
			Low			Moderate			High		
USSD Arousal											

Figure 6.14
Participants' emotions towards USSD

Source: The emotions clusters and sub-clusters (Personal communication, Joubert, 2019)

Figure 6.14 above illustrates that about 51.49% of participants displayed positive emotions towards USSD, against 48.51% of those who displayed negative emotions, resulting in a 2.98% NES. The USSD NES is the lowest of all channels under analysis in this study, and may constitute an indicative feedback that this channel is not widely known by the majority of consumers.

Although it is low, this score is still an indication of a positive attitude towards the USSD and may signify that USSD is a channel that some participants perceive to be satisfying and stimulating. This is a positive result, and may represent an encouragement to continue deploying and marketing USSD, particularly to those segments that, it is believed, have more of an appetite to adopt this digital platform

operating through very basic cellular phone devices in very remote conditions, that they can access at any point, with no need to move geographically.

Table 6.40
Participants' demographics and attitude towards USSD

Demographic	Positive	Negative	Valence (net emotional score – NES)
Male	51.40%	48.60%	2.80%
Female	51.63%	48.37%	3.27%
Younger (Age <35)	52.27%	47.73%	4.55%
Older (Age >35)	50.00%	50.00%	0.00%
Undergraduate	46.93%	53.07%	-6.14%
Graduate	57.43%	42.57%	14.86%
Low Income	49.12%	50.88%	-1.75%
High Income	57.20%	42.80%	14.41%
Urban	52.07%	47.93%	4.14%
Rural	50.37%	49.63%	0.74%

The results displayed in the above table reveal that, with respect to gender, there is no significant difference between males and females, in relation to attitude towards USSD. However, females display partially higher positive emotions, scoring moderately higher than males with 51.63% positive and 48.63% negative, leading to a NES of 3.27%, while males scored 51.40% positive and 48.60% negative, resulting in a NES of 2.80%.

In analysing age, younger participants display relatively higher positive emotions towards USSD than the older ones, scoring 52.27% positive and 47.73% negative, leading to a NES of 4.55%, against a NES of 0.00% scored by older participants.

As regards educational level, graduates/postgraduates scored higher emotions towards USSD than their counterparts, with 57.43% positive and 42.57% negative, resulting in a NES of 14.86% against the negative NES -6.14% scored by undergraduates.

The analysis of income and attitude towards USSD indicates that high-income earning participants display higher emotions, scoring 57.20% positive and 42.08% negative

emotions, resulting in a NES of 14.41%, against a negative NES of -1.75% scored by low income earning participants.

With regards to urban versus rural background and attitude towards USSD, the participants from urban areas scored slightly higher than those living in the rural ones, with 52.07% positive and 47.93% negative, resulting in a NES of 4.14%, against the 0.74% scored by rural background participants.

6.3.6.7 Participants' attitude towards different channels

Figure 6.15 below presents a graphical representation of the participants' attitude towards the different banking channels.

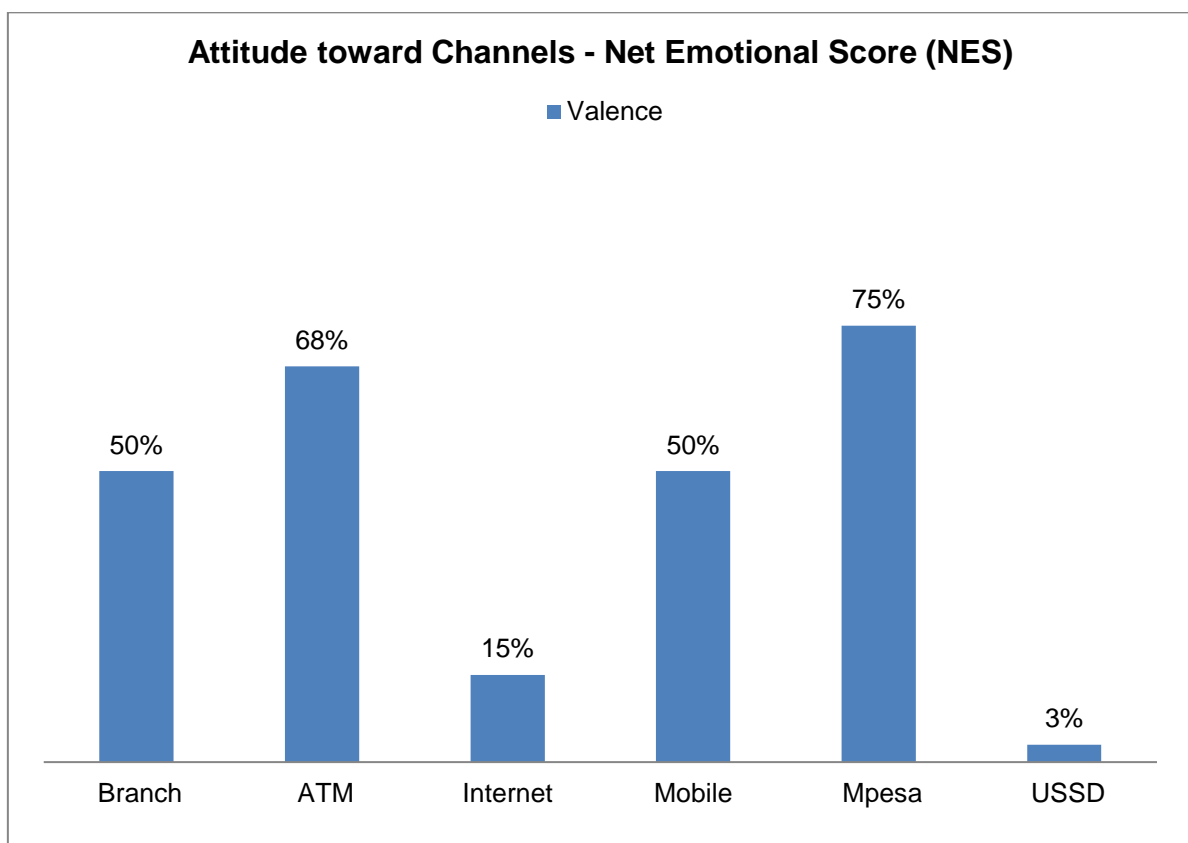


Figure 6.15
Participants' attitude towards different banking channels

Analysing the different channels, the above graph indicates that MPESA is the preferred channel for a money transaction; followed by the ATM. Branch and mobile banking rank the same, followed by internet banking, whereas USSD is almost unknown.

With regard to demographic analysis and attitude towards different channels, the study arrived at the findings as detailed in the sections below.

1. Gender and attitude towards different channels

The bar graph in Figure 6.16 illustrates gender and attitude towards different banking channels.

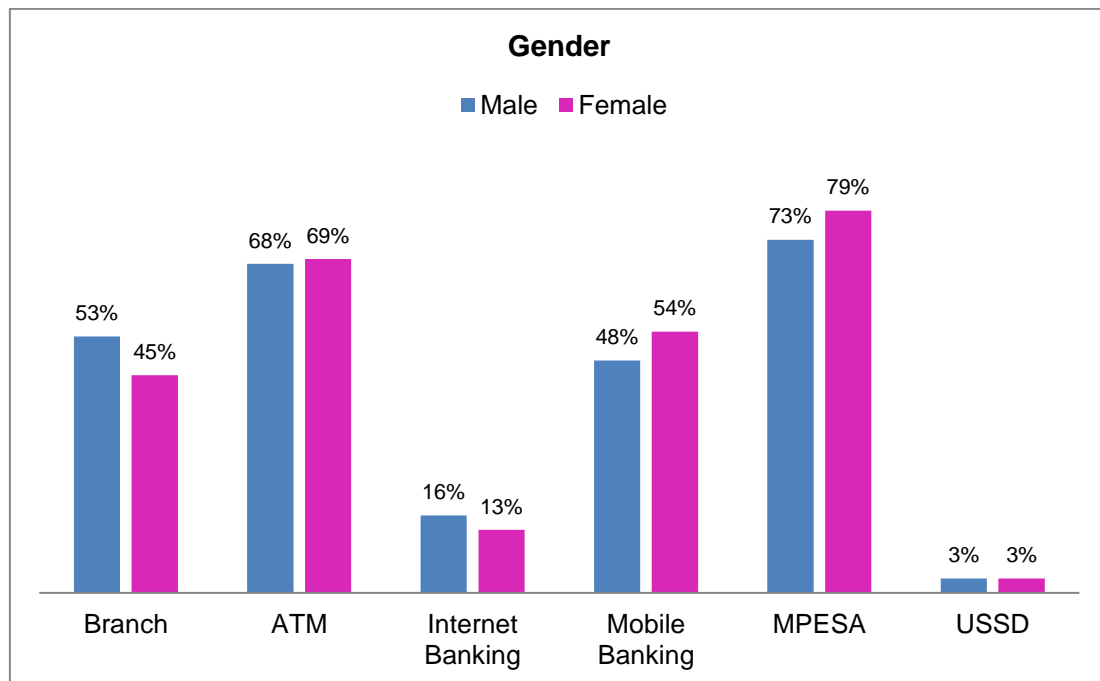


Figure 6.16
Gender and attitude towards different banking channels

According to the above graph, as far as gender is concerned, there is no significant difference between males and females with regard to their attitude toward the different banking channels, although there is a slight difference on branch and on MPESA.

2. Age and attitude towards different channels

The bar graph in Figure 6.17 illustrates age and attitude towards the different banking channels.

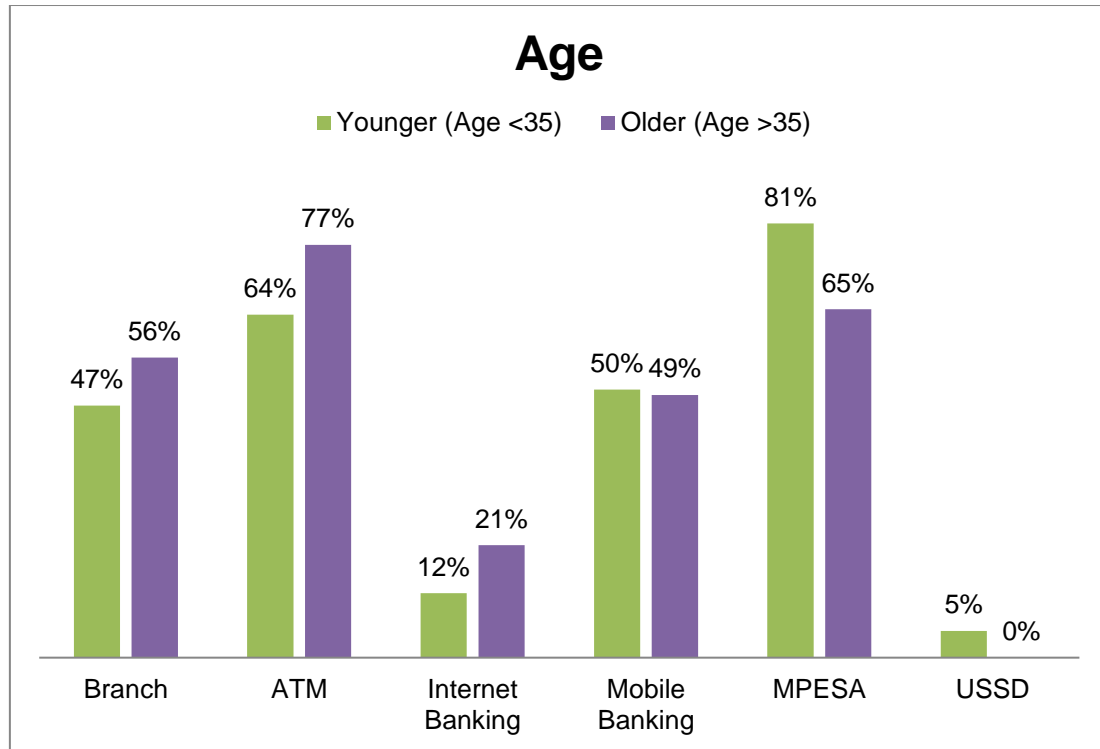


Figure 6.17
Age and attitude towards different banking channels

Age does influence the attitude towards the different banking channels. According to the above graph, older participants have a more positive attitude towards branch, ATM and internet banking when compared to younger participants, whilst younger participants are more inclined to MPESA. However, on mobile banking there is no significant difference.

3. Education level and attitude towards different channels

The bar graph in Figure 6.18 illustrates the education level and attitude towards different banking channels.

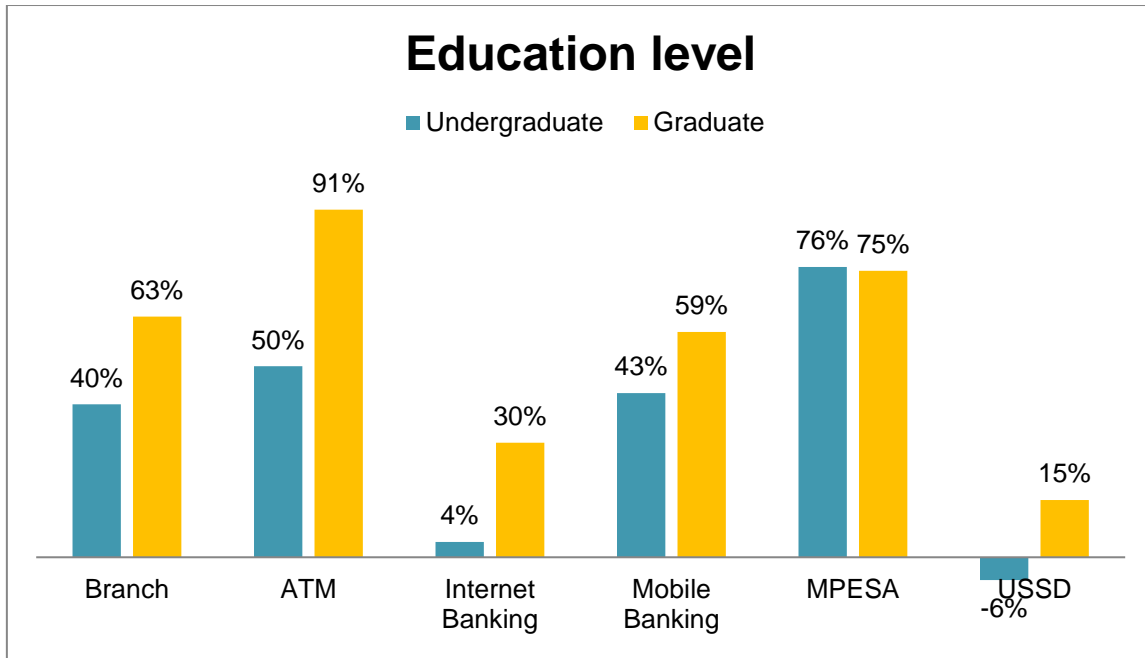


Figure 6.18
Education level and attitude towards different banking channels

Education level has an influence on attitude towards ATM, internet banking, mobile banking, branch, and USSD, with graduates and postgraduates revealing positive attitudes towards these channels when compared to undergraduates. However, concerning MPESA there is no significant difference between education levels.

4. Income and attitude towards different channels

The bar graph in Figure 6.19 illustrates income level and attitude towards different banking channels.

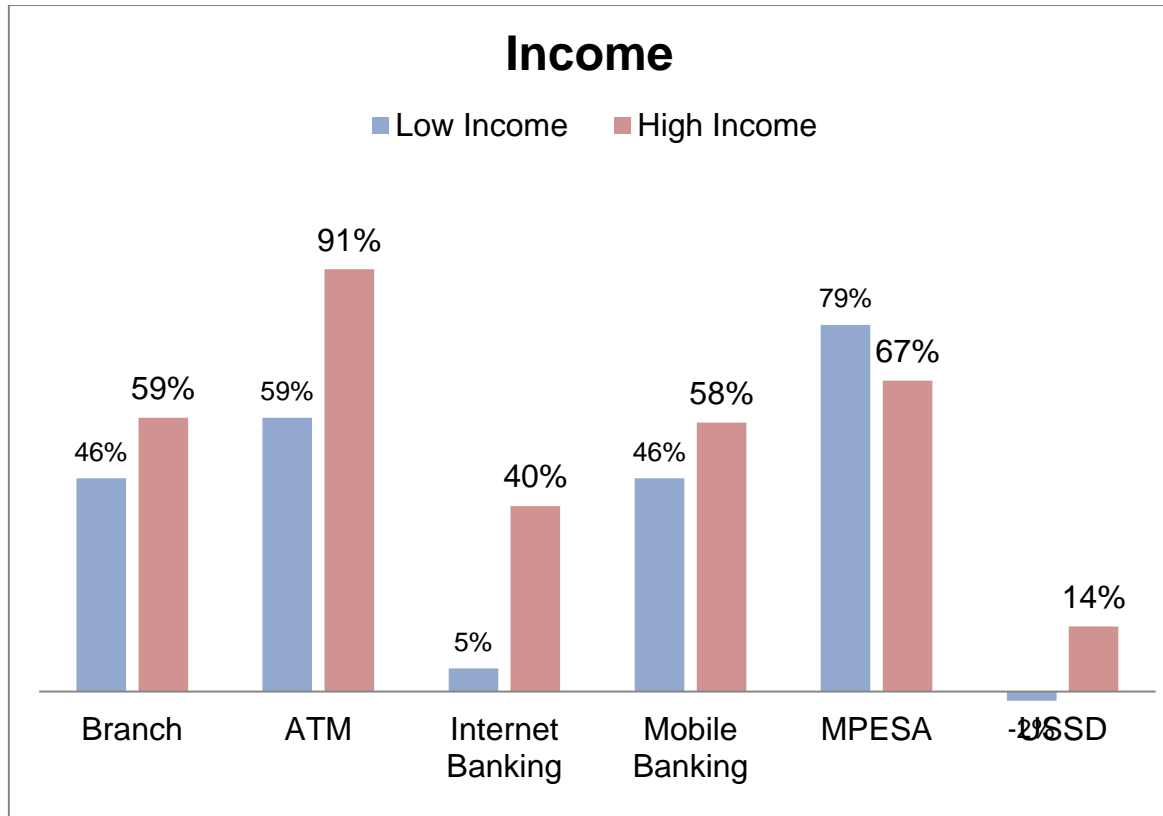


Figure 6.19
Income level and attitude towards different banking channels

Income does have an influence on attitude towards branch, ATM, internet banking, mobile banking, MPESA and USSD. With the exception of MPESA, people with a high income have a more positive attitude towards the different banking channels, when compared to those with low income.

In terms of income and attitude towards the branch, the results reveal those participants with a low income display higher emotion towards a branch. High-income consumers also have a positive attitude towards the latter. This may be an indication that the human factor is important for high-income earner individuals.

In terms of income and attitude towards ATM, the results reveal those participants with a high income display high emotions towards ATM. These results may be an indication that the overall majority of high-income participants find the ATM experience enjoyable and satisfying, as well as stimulating or exciting, when compared to low-income

participants. It is also interesting to see the concentration of behaviour of high-income participants, which may be a reflection of the alignment of banking habits in individuals in this segment.

5. Urban versus rural background and attitude towards different channels

The bar graph in Figure 6.20 illustrates urban vs rural background and attitude towards different banking channels.

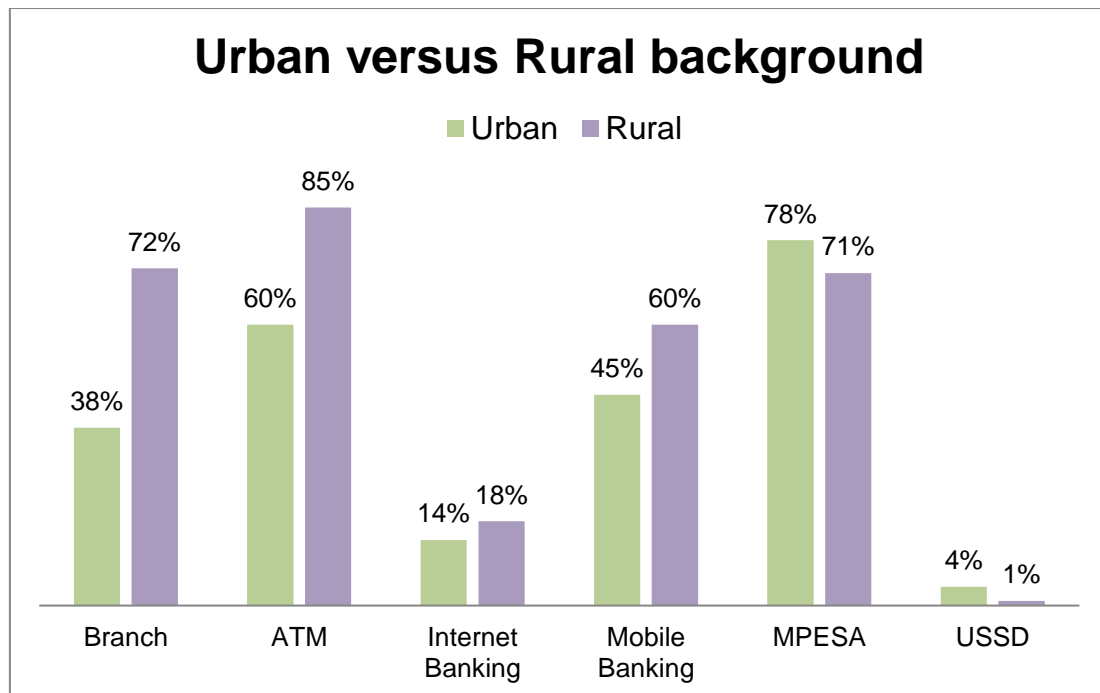


Figure 6.20
Urban vs rural background and attitude towards different banking channels

An individual's residential background influences their attitude towards the different banking channels. With the exception of MPESA and USSD, it is interesting to note that individuals living in the rural areas display higher emotions towards branch, ATM, internet banking and mobile banking, when compared to those living in the urban areas.

CHAPTER 7: DISCUSSION AND INTEGRATION OF THE RESULTS

This chapter presents a discussion of the results that were obtained in Chapter 6.

7.1 DISCUSSION AND INTEGRATION OF THE DESCRIPTIVE STATISTICS

This chapter entails a discussion and consideration of the integration and the examination of the empirical research aims. The interpretation of the socio-demographic profile of the sample, descriptive statistics, inter-correlations, canonical correlations, multiple regressions, SEM, hierarchical moderator regression, the test for significance mean difference, and the PAD are discussed below.

7.1.1 The demographic information of the sample and frequencies

The social demographic profile of the sample indicated that the participants were predominantly male and fell within the age group of 25-35, possessed an honours degree, earned < MZN10,000 p.m. and were living in an urban environment. The socio-demographic profile obtained for the sample indicated that these were the main sample characteristics that had to be considered in the interpretation.

7.1.2 Description statistics: interpretation of the mean scores results

Table 6.1 is relevant to this section.

7.1.2.1 Diffusion of innovation, technology acceptance, values and culture variables profile

The diffusion of innovation, technology acceptance, values and culture variables profile revealed that the participants possessed a high level of technology acceptance. This suggests that participants who perceive the new innovation to be useful, and easy to use, will be likely to portray a positive attitude toward using the information system. According to Taherdoost (2018), participants who have a higher level of PU and PEOU also portray favourable attitudes towards new technology, which results in the intention to use new technology and the displaying of usage behaviour.

The result suggested that participants scored high in values. This implies that participants who report a high level of beliefs that pertain to the desirable behaviour that transcends specific situations, are likely to demonstrate a high sense of comfort and are motivated to show positive attitudes and behaviour. They also appear to possess unique values and beliefs that guide their behaviours. As mentioned, culture and values are key factors that help one to understand the notion of information technology adoption (Al-Smadi, 2012).

The results also revealed that participants scored higher in diffusion of innovation. This suggested that the participants perceive that the new innovation is being communicated among the community members through certain channels. Diffusion, as being the active push and promotion of an innovation toward members of a certain social system, plays an important part in interpersonal communication, which may influence an individual's decision to adopt or reject an innovation (Kee, 2017).

7.1.2.2 Intention to use digital banking, subjective norm and perceived behavioural control profile

The intention to use digital banking, subjective norm and perceived behavioural control profile revealed that participants scored high in the intention to use such banking. This in turn implies that their attitudes towards any object are predicted by a higher degree of knowledge of the individuals' beliefs about the attitude object and the evaluation aspect of these beliefs (Mansour *et al.*, 2014). The participant's attitude has a strong, direct and positive effect on the intention to actually use the new technology (Jahangir, 2007).

The results showed that participants scored high in perceived behaviour control. This in turn implies that the individuals' perception of performing the behaviour is under his/her control; typically, this may be measured by ratings of the ease versus difficulty of performing the behaviour. This also implies that participants are more likely to intend to perform behaviours when they believe that they have the ability and resources to perform them (Sheeran, Trafimow & Armitage, 2003).

The results showed that participants scored high on the subjective norm. This in turn suggests that participants perceive high social influences/pressures to indulge, or not to indulge, in a given behaviour. Participants who perceive their social environment to be more conducive to and supportive of performing a certain behaviour, will most likely

show a positive attitude toward using the innovative technology (Al-Swidi, Huque, Hafeez & Shariff, 2014).

7.2 DISCUSSION OF THE CORRELATIONS

This section presents the discussion of the correlations and the achievement of empirical research aim 1.

Research aim 1:

To investigate the nature of the empirical statistical inter-correlational relationships between the diffusion of innovation, technology acceptance, values, culture and attitude towards digital banking (described as intention to use digital banking, subjective norm and perceived behavioural control) as manifested in a sample of participants in Maputo. (This research aim relates to testing research hypothesis Ha1).

7.2.1 The relationship between values, culture, diffusion of innovation, technology acceptance, and intention to use digital banking, subjective norm and perceived behaviour control

Table 6.2 is of relevance to this section.

To investigate the nature of the empirical statistical inter-correlational relationships between the diffusion of innovation, technology acceptance, values, culture and attitude towards digital banking (described as intention to use digital banking, subjective norm and perceived behavioural control, as manifested in a sample of participants in Maputo. (This research aim relates to testing research hypothesis Ha1.)

All the variables of diffusion of innovation, technology acceptance, values, culture and intention to use digital banking, subjective norm and perceived behaviour control are related. The results suggest that participants perceived a high level of diffusion of innovation, technology acceptance, values and culture. These findings are consistent with those by Sundara and Perera (2018) who found that relative advantage, PEOU, PU, compatibility, complexity, trialability and subjective norms are related and influence consumers' attitude towards digital banking.

The significant relationship observed between the participants' diffusion of innovation and technology acceptance (PU and PEOU) variables implies that participants who perceive relative advantage, existing values, beliefs and who experiment the new technology (indication of diffusion of innovation) to be useful and easy to use, will more likely be open to accepting the new technology; this will accelerate diffusion of such innovation, and it may positively influence the acceptance rate as well as the behavioural intention to use. This position is supported by the study conducted by Al-Smadi (2012) which revealed that the attitude toward digital banking is positively and significantly influenced by PU and PEOU.

With regards to diffusion of innovation and technology acceptance, the results imply that these two constructs are strongly related, and participants who perceive digital banking services as useful and easy to use, will be inclined to perceive its relative advantage. A study by Keil *et al.* (1995) revealed that in diffusion of innovation terms, PU can be mapped to the concept of "relative advantage", and that relative advantage was found to be positively related to acceptance of new technology. Previous literature also suggests that there is an extent of overlap between diffusion of innovation and technology acceptance (Taherdoost, 2018), and that there is a positive correlation between diffusion of innovation and technology acceptance (PU and PEOU) (see Tornatzky & Klein, 1982, in Keil *et al.*, 1995). Some scholars in previous research suggested that technology acceptance should analyse the factors influencing intention to adopt innovation, beyond the constructs of PU and PEOU (Lai, 2017). Therefore, a strong association between diffusion of innovation and technology acceptance adds more constructs to the prediction of intention to use digital banking.

A positive association was found between diffusion of innovation and culture and values. The results imply that cultural factors are of supreme importance to a successful diffusion of innovation. Recent studies confirm the effect of culture on the adoption of digital banking in African countries (Khan *et al.*, 2017).

Previous studies also suggested that, before launching any innovation such as new technology, it is critical to understand the culture of potential adopters' needs and their requirements for such newness, as these are strongly influenced by culture. Cultural aspects can influence the success of diffusion of innovation, by enabling rapid adoption or resistance of such innovation (Al-Smadi, 2012). Rogers (1983) stated that

diffusion of innovation fails because it seeks to swim against the wave of clients' cultural values without navigating toward the latter's perceived needs, attitudes, and beliefs, social norms, and leadership structures.

With respect to diffusion of innovation with stimulation, achievement, conformity and tradition, the results imply that there is a positive association between diffusion of innovation and values. However, previous studies indicated that achievement, self-direction and stimulation are drivers of the openness to embrace innovation through a self-fulfilment which is demonstrated through capability aligned to social and prevailing cultural standards, thereby obtaining social approval whilst the conformity and tradition value types, underlie the conservation (Schwartz, 2012; Wang *et al.*, 2008).

The results further suggest that participants' diffusion of innovation and intention to use digital banking, subjective norm and perceived behaviour control were related. This implies that participants who perceive relative advantage (a construct of diffusion of innovation, as mentioned), together with factors such as perceived social pressure or influence to adopt (subjective norms) and perceived ease or difficulty of performing the behaviour (perceived behavioural control), will result in the intention to adopt or not adopt digital banking (Nguyen *et al.*, 2018). Recent literature (Taherdoost, 2018) reports that diffusion of innovation, subjective norms and perceived behavioural control display a causal relationship with the cognitive beliefs which affect attitudes and behaviours.

The results imply that technology acceptance, values and culture and intention to use digital banking, subjective norm and perceived behavioural control are related. This implies that the constructs of technology acceptance, values and culture influence the intention to use digital banking. Previous research by Al-Smadi (2012), in which there is an integration of technology acceptance, theory of planned behaviour (TBP) and culture, indicates that values and culture are determinants of adoption, and subjective norm and perceived behavioural control have a positive and significant influence on intention towards using digital banking. As noted, according to the literature, the intention to perform a particular behaviour is an outcome of attitudes, subjective norms and perceived behavioural control, upon a positive evaluation which is influenced by behavioural beliefs, which determine the attitudes based on an individual's belief about the consequences of performing such behaviour (Ajzen, 1991; Nchise, 2012; Lai,

2017; Taherdoost, 2018). A key factor to consider is that culture is a set of unique values and beliefs that guides behaviour and is the means by which people develop their attitudes (Hofstede, 2000). This explains the relationship of these variables.

With regard to PU and PEOU and intention to use digital banking, subjective norm and perceived behaviour control, the results imply that participants' perception of usefulness and ease of use of digital banking services or platforms may be a strong trigger for the intention to use these services. Recent studies (Lai, 2017) confirm that PU and PEOU have a direct influence on behavioural intention. Previous research provides a basis to explain how the effect of these two cognitive constructs influences a wide spectrum of belief, attitude, and intention to use information technology (Lai, 2017). It further reiterates that the actual usage of a technology system is influenced directly or indirectly by the user's behavioural intentions, attitude, PU, and perceived ease of the system (Davis, 1989; Lai, 2017; Taherdoost, 2018).

The results suggest that PU and culture and values were significantly related. This implies that the individual's belief system, driven by his or her values and cultural background, will have a significant impact on the extent to which the individual will perceive digital banking as beneficial, and will enhance his or her transactability or bankability. Malhotra and Galletta (1999) highlight the importance of determining how social influences affect the commitment of the user toward use of the information system, for understanding, explaining, and predicting system or technology innovation acceptance and usage behaviour.

A positive association was found between PU and intention to use digital banking, subjective norm and perceived behaviour control. The results suggest that participants who perceive digital banking to be enhancing their transactability will display a strong intention to use it, and this will be solidified by the beliefs in terms of which other individuals approve or disapprove of the behaviour. Such beliefs stem from those of other people which impose a high persuasive influence on him or her, to the extent that the individual will develop a behavioural intention when he/she perceives that the social environment expects a demonstration of such behaviour (Nguyen *et al.*, 2018; Nchise, 2012). Ajzen (1991) stresses that "Intentions to perform behaviours of different kinds can be predicted, with high accuracy, from attitudes toward the behaviour,

subjective norms, and perceived behavioural control; and altogether account for substantial variance in actual behaviour”.

The results suggest that PEOU is associated with culture and values. This implies that a participant’s perception about the degree to which using a DBC will free him or her of effort, is associated with those core values and beliefs that shape individuals perceptions, as part of the collective programming of the mind (Ayala *et al.*, 2017; Hofstede, 1997). Therefore, if according to the individual’s values and culture, digital banking is adding value in freeing him or her from effort, and if being effortless is aligned with the values and culture of the individual, there is a likelihood of the person accepting the use of digital banking.

A significant relationship was found between PEOU and benevolence, universalism, stimulation and tradition. The result implies that the degree to which the individual perceives that using digital banking will free them of effort is significantly associated with their degree of altruism, conscientiousness, arousal, and civic virtue. This means that the extent to which the individual perceives digital banking to be preserving and enhancing the welfare of everyone and the environment; and the degree to which the individual perceives the DB to be protecting the welfare of all humans, resources and environment; the perception of DB to be exciting, positive, creative, innovative and bringing about benefits rather than threatening; as well as the degree to which the individual perceives DB to be culturally fit, respectful of people’s belief systems, values, religion and customs, and not socially imposed, will determine his or her PEOU (Schwartz, 2012; Organ *et al.*, 2006). The results showed that PEOU and intention to use digital banking, subjective norm and perceived behaviour control were significantly related.

A positive relationship was found between culture and subjective norm and perceived behavioural control. The results suggest that the set of beliefs and shared norms, symbols, codes and artefacts (culture) influences the individual’s perception of the expectation of his or her immediate community’s attitude to certain types of behaviour (subjective norms), and the perceived ease or difficulty of performing such behaviour (Nguyen *et al.*, 2018). The relationship of the three constructs influences the individual’s full belief system as regards digital banking and intention to use.

The results indicate that participants' self-direction, hedonism, achievement, power, security and subjective norm were significantly related, which implies that values influence subjective norms. Consequently, self-mastery and autonomy, emotional striving for pleasure or self-gratification, self-fulfilment which is demonstrated through capability aligned to social and prevailing cultural standards, attainment of a dominant or controlling position through status and prestige, as well as perception of a risk neutral environment, are strongly related to perceived social pressure to perform or not to perform the behaviour, and perceived influences that others may have on the individual or self (Schwartz, 2012; Nguyen *et al.*, 2018). Hence, the individual will carry out everything that he or she perceives to form part of behavioural expectations from his or her social environment, in order to feel good about themselves. If the environment uses digital banking, they will also adopt it in order to feel aligned with the common value sets.

A significant association was found between self-direction, achievement and perceived behaviour control. The results suggest that factors such as participants' perception of self-mastery, autonomy, and self-regard, as well as perception of self-fulfilment which is demonstrated through capability aligned to social and prevailing cultural standards, and social approval, are related to the perceived ease or difficulty of performing the behaviour (Schwartz, 2012; Nguyen *et al.*, 2018; Taherdoost, 2018; Lai, 2017; Nchise, 2012; Ajzen, 1991). In other words, self-regard and self-fulfilment influence the perception of ease or difficulty of performing a behaviour. Therefore, the intention to use digital banking is related to these two factors.

7.3 DISCUSSION AND INTEGRATION OF THE INFERENTIAL (MULTIVARIATE) RESULTS

This section presents a discussion and integration of the inferential (multivariate) results and the achievement of empirical research aim 2.

Research aim 2:

To assess the nature of the overall statistical relationship between the diffusion of innovation, technology acceptance, culture, values and attitudes towards digital banking (described as intention to use digital banking, subjective norm and

perceived behavioural control). (This research aim relates to testing research hypothesis Ha2)

7.3.1 Discussion of the canonical correlations

Research aim 2 and Tables 6.3 to 6.4 are of relevance to this section.

This sub-section presents a discussion of the canonical correlation results and the achievement of empirical research aim 2.

Research aim 2 was to empirically assess the nature of the relationship between diffusion of innovation, technology acceptance, culture, values as a composite set of independent latent variables, and intention to use digital banking, subjective norm and perceived behaviour control as a set of latent dependent variables.

Overall, the results suggest that PU and PEOU (technology acceptance variables), achievement and power (values variables) significantly contributed toward explaining the participants' intention to use digital banking, subjective norm and perceived behaviour control.

The results imply that PU and PEOU positively influence the participant's intention to use digital banking, subjective norm and perceived behaviour control. The results also suggest that participants who perceive the innovation or new technology to be easy to use and who believe that using a particular system would be free of effort will be likely to hold the beliefs, feel the social pressure to perform or not to perform their behaviour and also be prepared to use the new innovation. These findings mirror those reported by Takele and Sira (2013) that found that attitude, subjective norm, perceived behavioural control, PU and PEOU and perceived risk were significant in affecting users' intention to use e-banking service channels.

Previous research has shown that if users perceive a new technology as easy to use, they are more likely to adopt it (Chin & Todd, 1995). A positive effect of PEOU of a new technology was also found (Chin & Todd, 1995). The results of a study by Takele and Sira (2013) reveal that attitude, subjective norm, perceived behavioural control, PU and PEOU and perceived risk were significant in affecting users' intention to use e-banking service channels. In addition, recent research results published by Mandler,

Seifert, Wellbrock, Knuth and Kunz (2018) reveal that there are clear differences between the adoption and usage intensity of technology innovation when it comes to the impact of culture.

7.3.2 Discussions of the multiple regression

This sub-section presents a discussion of the multiple regression results and the achievement of empirical research aim 3.

Research aim 3:

To assess whether the diffusion of innovation, technology acceptance, value and culture significantly predict the attitudes towards digital banking (described as intention to use digital banking, subjective norms and perceived behavioural control) construct variables. (This research aim relates to testing research hypotheses Ha2 and Ha3)

Tables 6.5 to 6.8 are of relevance to this section.

Overall, the result suggests that PEOU and self-direction predict the intention to use digital banking. These results reflect those of Taherdoost (2018) who found that positive association between PEOU and PU determined the favourable or unfavourable attitude towards an intention, which will result in behaviour to use or not use a technology. Furthermore Schwartz (2012) asserts that the value of self-direction is associated with openness to change, which may favourably influence the behavioural intention to shift from traditional channels to digital banking platforms. In this sense, we find a parallel between PEOU and self-direction.

The results further suggest that PU, power, achievement positively predict participants' subjective norms while security and hedonism negatively predict these norms. These findings are consistent with those by Mandler *et al.* (2018) whose research indicated that power distance has positive effects as regards digital banking adoption, and that in some cultures with high power distance, individuals are more likely to adopt technological innovations, as a result of the subjective norm effect, while others find a negative relationship or no significant effect.

Moreover, the results indicate that PU, PEOU and self-direction positively predict the perceived behavioural control, while hedonism and conformity negatively predict the participant's perceived behavioural control. These findings corroborate those by Taherdoorst (2018) who found PU and PEOU have a significant impact on attitude of the user and that there is a certain level of overlap between PEOU, PU and perceived behavioural control. According to Mandler *et al.* (2018), although adoption and usage intensity of technology innovation are driven to a certain extent by different cultural dimensions, some studies found a negative relationship or no significant effect of values and culture. Lee, Kozar and Larsen (2003) reported that PU associated with a subjective norm increases one's appetite to adopt technological innovations, whilst subjective norms associated with PEOU decrease such a desire. However, results of this study reveal that both PU and PEOU when associated with subjective norms increase the individual's appetite to use digital banking.

7.3.3 Discussion of the structural equation modelling

This sub-section presents a discussion of the structural equation modelling results and the achievement of empirical research aim 4.

Research aim 4:

Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking, to empirically assess the fit between the elements of the empirically manifested structural model and the theoretical model. (This research aim relates to testing research hypotheses Ha4).

Table 6.9 and Figure 6.1 are pertinent to this section.

This was intended to empirically assess the fit between the elements of the empirically hypothesised model. (This research aim relates to testing research hypothesis Ha4: Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards adoption, the elements of the empirically manifested structural model and the theoretically hypothesised model show a good fit.)

It appears from the results that technology acceptance (PEOU and PU) may contribute positively to the participants' intention to use digital banking, subjective norms and perceived behavioural control. These findings are consistent with those of Takele and Sira (2013) and Lai (2017) who found PU, PEOU, perceived behavioural control, and subjective norms significantly predict the intention to adopt digital banking.

It appears from the results that values (self-direction, benevolence, universalism, tradition, security and conformity) and culture may contribute positively to the participants' subjective norms and perceived behavioural control. These findings correspond with those by Khan *et al.* (2017) who found that cultural values are an important factor for the adoption of digital banking and suggest that when implementing the digital banking, local culture should be taken into consideration. A study conducted by Baptista and Oliveira (2015) established that cultural factors, such as uncertainty avoidance and perceived power imbalances, could hamper the adoption of digital banking. Baptista (2016) found that cultural moderators have significant influence on behavioural intention. High uncertainty avoidance leads to a generation of rigid rules within the society and may slow the acceptance and diffusion of innovations (Kalliny & Hausman, 2007; Perez-Alvarez, 2009; Dwyer *et al.*, 2005).

7.3.4 Discussion of the hierarchical multiple regression

This sub-section presents a discussion of the hierarchical multiple regression results and the achievement of empirical research aim 5.

Research aim 5:

To determine whether demographic variables (age, gender, educational level, income and urban versus rural) significantly moderate the relationship between the technology acceptance, values and culture and intention to use digital banking, subjective norms and perceived behavioural control. (This research aim relates to testing research hypotheses Ha5 and Ha6).

7.3.4.1 Age as moderator

Tables 6.10 to 6.12 and Figure 6.2 are relevant to this section.

Age differences have been revealed to exert impact in the context of technology acceptance and usage, and significantly moderate the influence of behavioural intention determinants (Altawallbeh *et al.*, 2015).

The results in Table 6.10 showed that age did not moderate the relationship between technology acceptance, values and culture and intention to use digital banking. However, technology acceptance, values and culture were associated with an increase in the intention to use digital banking. These results are consistent with the study conducted by Altawallbeh *et al.* (2015) which found that age does not play a moderating role in the adoption of digital technology, and with the research by Baptista and Oliveira (2015), that values and cultural factors, as such, may influence intention to use mobile banking. One of the latest versions of TAM, designed by Venkatesh and Davis (1996; 2000), reveals that PU and PEOU have a direct influence on behavioural intention and it dismisses the attitude construct from the model (Lai, 2017). Venkatesh *et al.* (2003) argued that age moderates the effect of PU, PEOU and subjective norm on behaviour intention.

The results in Table 6.11 indicated that age did not moderate the relationship between technology acceptance, values and culture and subjective norms. However, technology acceptance and culture were associated with an increase in the participants' subjective norms. This finding corroborates those by Khan, Khan and Xiang (2017) who found that age and subjective norms (social influence) do not influence consumer intentions in adopting digital banking.

The results in Table 6.12 indicate that age moderated the relationship between technology acceptance and perceived behavioural control. These results are consistent with the study conducted by Chukwumah (2017) who found that age, PU and PEOU were the most common factors that predict intention to use mobile banking. According to Taherdoorst (2018), perceived behavioural control has a direct influence on actual behaviour as well as an indirect effect through the behavioural intentions to use a technology innovation.

7.3.4.2 Gender as moderator

Tables 6.13 6.11 and Figures 6.2 and 6.3 are of relevance to this section.

One of the most essential aspects in the study of demographics in individual technology adoption and usage decisions is the understanding of gender differences (Altawallbeh *et al.*, 2015; Venkatesh *et al.*, 2000). According to Altawallbeh *et al.* (2015), previous studies by Venkatesh and Morris (2000) and Venkatesh *et al.* (2000) revealed that there are differences between males and females in the way they relate to technology adoption. Most literature reports that males display higher and more favourable attitudes towards technology than females, who display greater anxiety and negative technology perceptions than males, although other studies found no significant gender difference regarding perceptions and usage of information technology (Altawallbeh *et al.*, 2015).

The results in Table 6.14 indicate that gender did moderate the relationship between technology acceptance and intention to use digital banking. The results contradict the study conducted by Mandler *et al.* (2018) who reported that gender does not play a role in the adoption of digital commerce. In terms of gender, the results also revealed that gender does not significantly moderate the relationship between values, culture and intention to use digital banking. Munusamy *et al.* (2012) similarly found that gender does not relate to intention to use digital banking, while a study by Ezema (2012) indicated that gender does not have a significant effect on customers' adoption and usage of e-banking. Research by Rubel (2005) reported that gender differences do not consistently influence values and culture. However, most studies on the relationship between gender, culture and attitude toward digital banking differ in their findings.

The results in Table 6.15 made it clear that gender moderated the relationship between culture and subjective norms. These results are consistent with the study conducted by Altawallbeh *et al.* (2015) who found that gender moderates the relationship between intention to adopt technology systems and the perceived behaviour control adoption decision, and that gender also moderates intention to use technology. A study by Lee (2003) revealed that subjective norms significantly affect the adoption intention of potential adopters, while attitudes significantly affect current users, and there is a significant difference between potential adopters' and existing users' continuous technology usage over time.

Furthermore, the results indicated that gender did not significantly moderate the relationship between technology acceptance, values and subjective norms. However, technology acceptance and values were associated with an increase in the subjective norms. These results are consistent with research conducted by Altawallbeh *et al.* (2015) which found that gender does moderate the relationship between the attitude, subjective norm, and perceived behavioural control on behaviour intention, although there is supportive content about the moderating effect of gender on the relationship between the attitude, subjective norms, and perceived behavioural control and behaviour intention.

Moreover, in Table 6.15, the results show that gender did not significantly moderate the relationship between technology acceptance, values, culture and perceived behavioural control. However, these variables are associated with an increase in the latter. These results are inconsistent with those of the study conducted by Gefen and Straub (1997) who established that gender significantly moderates the effects of PU, PEOU, and social presence; they also reported that men are more affected by PU, while women are more affected by PEOU and the subjective norm.

7.3.4.3 Educational level as moderator

Tables 6.19 to 6.21 and Figure 6.6 are pertinent to this section.

The results in Table 6.19 to Table 6.18 demonstrate that educational level moderated the relationship between values and intention to use digital banking. These findings are consistent with the study conducted by Mayer *et al.* (2012), which reported that educational level is a demographic variable that is viewed as an influencing factor of culture and attitude toward digital banking, and which established a positive relationship between technology acceptance and intention to use digital banking (Lai, 2017). Earlier, Rogers (1983) had identified the characteristics of earlier adopters of innovation as having higher levels of education, social status, and income. According to Mandler *et al.* (2018), education influences the adoption of digital banking and mobile payments in such a manner that higher education levels lead to a higher adoption probability.

Furthermore, the results indicated that educational level did not moderate the relationship between technology acceptance, culture and intention to use digital banking. However, technology acceptance and culture were linked with an increase in

the intention to use such banking. These results are congruent with the study conducted by El Badrawy and El Aziz (2011) who found significant relations between usage of digital technology and level of education. They also discovered significant relationships between both the levels of education and the type of device owned by users. According to Schwartz (2007) educational experiences presumably promote the intellectual openness, flexibility, and breadth of perspective essential for self-direction values (Kohn & Schooler 1983).

The results show that educational level did not moderate the relationship between technology acceptance, values, culture and subjective norms and perceived behavioural control. However, technology acceptance and culture were associated with an increase in the subjective norms. These findings accord with the study conducted by Baki, Birgoren and Aktepe (2018) who found that technology acceptance, described as PU and PEOU, is associated with the subjective norm.

7.3.4.4 Income as moderator

Tables 6.19 to 6.21 are relevant to this section.

Table 6.19 indicates that income did not significantly moderate the relationship between technology acceptance, values, culture and intention to use digital banking. However, the results suggest that there was a close association between technology acceptance, culture and intention to use digital banking. These findings mirror those reported by Mahfuz *et al.* (2016): that, in general, cultural dimensions have no significant influence on behavioural intention, while a study by Mandler *et al.* (2018) noted that income moderates the relationship between digital commerce, and also that consumers' adoption and usage of mobile commerce services is influenced by different cultural dimensions. According to Mandler *et al.* (2018), income displays a positive relationship with digital banking usage.

Table 6.20 indicates that income did not significantly moderate the relationship between technology acceptance, values, culture and subjective norms. However, the results suggest that there was a close association between technology acceptance, culture and subjective norms. The study conducted by Pankomera and Van Greunen (2018) reported that individual income represents a critical factor for mobile banking adoption and usage, given the perception of the benefit of accessibility. Income is a potential influence in adoption of mobile banking (Mandler *et al.*, 2018). Sreen, Purbey

and Sadarangani (2018) established that some dimensions of culture are significantly related to attitude and subjective norms. Kamrath, Rajendranb, Nenguwoc, Afari-Sefad and Bröringe (2018) conclude that behavioural intention is mainly explained by perceived behavioural control and subjective norm, and attitude is significantly influenced by PU and PEOU.

In terms of income, Table 6.21 demonstrates that income did not significantly moderate the relationship between technology acceptance, values, culture and perceived behavioural control. However, the results suggest that there was a close association between technology acceptance, culture and perceived behavioural control. Sreen *et al.* (2018) found that some dimensions of culture are significantly related to attitude, and perceived behavioural control. Kamrath *et al.* (2018) in their research concluded that behavioural intention is mainly explained by perceived behavioural control, which is influenced by PU and PEOU.

7.3.4.5 Urban vs rural background as moderator

Tables 6.21 to 6.24 and Figures 6.6 to 6.8 are pertinent to this section.

Table 6.21 records that urban versus rural did not significantly moderate the relationship between technology acceptance, values, culture and intention to use digital banking. However, there was an association between technology acceptance, culture and intention to use digital banking. These findings mirror those by Ahmad (2018) which highlighted the significance of technology acceptance in explaining adoption and usage in internet banking and mobile banking. Furthermore, Takieddine and Sun (2015) concluded that in cultural contexts, people adopt a technology if they find a fit or match between their values and those represented by the technology. Nevertheless, there is some inconsistency, with the results of a study by Rahman and Sloan (2017) establishing that digital payments have higher adoption in the rural areas than in urban areas.

The result in Table 6.22 further indicate that urban versus rural moderated the relationship between culture and subjective norms. These findings reflect those by Rahman and Sloan (2017) that mobile payment has higher adoption in the rural areas than in urban areas.

In terms of urban versus rural, Table 6.23 indicates that urban versus rural moderated the relationship between technology acceptance, culture and perceived behavioural control. These results are consistent with the study conducted by Rahman and Sloan (2017) who revealed that in semi urban and rural areas, PU was found to be the most significant factor that influenced behavioural intention.

7.3.5 Discussion of the test for significance differences

Research aim 6:

To empirically assess whether significant differences exist between the demographical variables (gender, age, educational level, income, urban vs. rural background) that will act as significant moderators between values, culture, diffusion of innovation, technology acceptance, variables and attitudes towards digital banking (This research aim relates to testing research hypotheses Ha6)

7.3.5.1 Educational level

Table 6.25 is of relevance to the educational level mean differences.

The results indicate that postgraduate participants scored higher in their intention to use digital banking than undergraduates. This implies that educated participants are likely to have a higher level of intention or desire to use the digital devices. These findings reflect those by Crano and Gardikiotis (2015) who found that the higher the educational level, the higher the intention to use digital banking.

7.3.5.2 Income

Table 6.27 is pertinent to the income mean differences.

The results revealed that the low-income participants scored higher on values than those participants with a high income. These findings are consistent with those of Chawla and Joshi (2018) who reported that the level of income affects consumer attitude, intention and behaviour. Clemes *et al.* (2012) point out that low income consumers are less likely to adopt internet banking as opposed to high income consumers.

The results also indicated that low-income participants scored higher in the intention to use digital banking than those participants with a high income. These findings correspond with those by Pankomera and Van Greunen (2018), who established that individual income represents a critical factor for mobile banking adoption and usage. The study conducted by Yiu *et al.* (2007) reported that high income individuals have a higher adoption rate of internet banking than the lower income respondents.

7.3.5.3 Urban versus rural background

Table 6.28 is of relevance to the urban vs rural mean differences.

The results made it clear that rural participants scored higher in the subjective norm than the urban participants. These findings are consistent with those by Rahman and Sloan (2017) who found that there is higher adoption of digital payments in the rural areas than in urban areas. The study conducted by Satsios and Hadjidakis (2018) indicates that subjective norm has a direct positive influence on intention to adopt.

7.3.6 Discussion and integration of the SAM results

This section presents a discussion and integration of the SAM results and the achievement of empirical research aim 7.

Research aim 7:

To empirically assess with the use of SAM whether individuals of different demographic variables (gender, age, educational level, income, urban versus rural background,) differ with regards to their attitude towards banking channels.

Table 6.29 to Table 6.28 and Figure 6.10 to Figure 2.20 are of relevance to this section.

A study conducted by Boshkoska and Sotiroski (2018), with a similarly sized sample (409 interviewees), revealed that the usage of electronic channels is influenced by demographics, specifically age, level of education, total monthly income in the family, and level of computer knowledge and skills.

7.3.6.1 Gender and attitude towards different channels

With respect to gender and attitude towards branch, the results reveal that male participants display higher pleasure and arousal towards a branch than females. This

may mean that the majority of male consumers still enjoy branch banking and continue to find it satisfying and stimulating or exciting. These results are supported by a study conducted by EY (2017), which reveals that male consumers, regardless of age and income, tend to use branches for banking at slightly higher rates than females, although they manifest interest in innovation, fees, and quality. The same study also reveals that younger females display a greater predisposition to use digital banking solutions, whilst younger males show greater interest in traditional branch banking (EY, 2017).

Additionally, the findings of the study on gender and attitude towards an ATM, point to the fact that there is no major gender difference with regard to ATM usage. However, female participants display a slightly higher positive attitude towards ATM than the males. This may be an indication that the majority of females perceive the ATM experience as enjoyable and satisfying and also find it stimulating and exciting. The study conducted by EY (2017) reveals that males and females display similar usage behaviour towards an ATM (EY, 2017); this is confirmed by this thesis, although it brings in a marginally different perspective.

With regards to gender and attitude towards internet banking, the findings of the study point to the fact that there is no significant gender difference on attitude towards internet banking. However, male participants display relatively higher emotions than female participants. This could contradict the studies conducted by Clemes *et al.* (2012) which revealed that gender influences the preference for internet banking. The results of their study show that females are more likely to use the latter than males. Gao and Owolabi (2008) found that female respondents are more likely to adopt internet banking than males in Nigeria. As indicated, Lichtenstein and Williamson (2006) note that in Australia, female users are more likely to use internet banking. It is interesting to note that although the internet banking NES is not very high, it is positive, which may be an indication that there is a major opportunity for diffusion of internet banking, with a view to increasing the exposure of consumers to this digital platform, which would influence the attitude.

The findings of the study on gender and attitude towards mobile banking point to the fact that female participants have relatively higher positive attitude towards mobile banking than the males, though this is not a significant difference.

This may well be supported by the study conducted by EY (2017), which revealed that the female adoption rate of mobile financial services is higher than that of the male. The findings of the study on gender and attitude towards MPESA point to the fact that female participants have a more positive attitude towards MPESA than the males. This may be an indication that the majority of female consumers have a positive attitude towards MPESA, perceiving the experience as enjoyable and satisfying, and they also find the MPESA experience more stimulating and exciting than their male counterparts; although the results recorded by both females and males reveal a positive attitude towards MPESA.

The study by EY (2017) further revealed that the rate of adoption of digital banking by females is higher, regardless of age and income. Female consumers' adoption rate of mobile devices such as tablets and mobile phones is higher, whilst males are much more inclined to personal computers, when it comes to accessing their accounts.

The findings of the study on gender and attitude towards USSD point to the fact that there is no significant gender difference. It is also interesting to see that both males and females display the same score in the attitude toward USSD. The other interesting aspect to note is that although it is positive, the USSD NES is very low, when compared to other channels, which may be a clear indication of an opportunity for diffusion of USSD.

7.3.6.2 Age and attitude towards different channels

The results revealed that age does influence the attitude towards the different banking channels.

With regards to age and attitude towards branch, the results reveal that older participants display higher emotions than younger participants, and they find the experience more satisfying. It is also interesting to note that the majority of the older participants reveal a high attitude towards a branch, meaning that they enjoy the branch experience, although they do not find the latter stimulating to the same level and with the same impact. This may be an indication that although there is pleasure in using the branch, going to the branch does not necessarily excite the consumer in this age range. Time spent and long queues may be two of the aspects that underlie the low and moderate attitude, though the human factor gives them pleasure.

Previous studies by EY (2017) revealed that younger consumers, regardless of their age, display higher levels of future digital banking usage intentions, with the exception of the branch, where the usage intention rate of younger males is higher than that of the female consumers (EY, 2017). Therefore these rates may represent the divergent attitudes between younger males and females, when it comes to attitude towards the branch.

With respect to age and attitude towards an ATM, the results reveal that, overall, participants' attitude is high. However, older participants, display higher emotions towards ATM than their younger counterparts. These results may be an indication that although the majority of younger consumers have a positive attitude towards the ATM and perceive it as satisfying, enjoyable, exciting and stimulating, the older segment holds a more positive attitude towards this channel.

With regards to age and attitude towards internet banking, the results reveal that older participants display higher emotions towards internet banking, although the overall NES is low, when compared with other channels. Younger consumers appear to be moderate towards internet banking. This could possibly be a reflection of access to internet banking, if one considers that younger generations tend to be more oriented to digital platforms.

With respect to age and attitude towards mobile banking the results reveal that there is no significant difference in this attitude though younger participants display slightly higher NES. This may be an indication that age does not significantly influence the attitude towards mobile banking. This could be supported by the study conducted by Munusamy et al (2012) in which the authors found that age is negatively related to the adoption of internet banking. Moreover, his study reveals that younger customers are more likely to adopt internet banking (Zainuddin & Othman, 2014).

Concerning age and attitude towards MPESA, the results of the study reveal that overall there are high emotions towards MPESA. However, younger participants display higher NES when compared to older ones.

With regards to age and attitude towards USSD, the results reveal that the attitude towards USSD is very low. However, there is no significant difference between younger and older participants, although younger ones display a relatively higher NES.

It is interesting to see the consistency between both age groups when it comes to attitude towards USSD.

7.3.6.3 Education level and attitude towards different channels

With respect to education level, the findings indicate that postgraduate participants have a more positive attitude towards the branch when compared to the undergraduates. These results may be an indication that the majority of consumers with high education, and postgraduates, find the branch experience enjoyable and satisfying, hence displaying a positive attitude towards the branch, with high pleasure, although they do not find the branch banking experience stimulating and exciting at the same level. We also find reasonable pockets of presence across the different levels of both pleasure and arousal. This may result from the different segmentation of the undergraduate consumers with regard to age, gender, income and living background (urban versus rural), which may also influence the attitude towards a branch.

As regards education level and attitude towards ATM, the study findings indicate that graduate/postgraduate participants display a higher positive attitude towards ATM when compared to their undergraduate counterparts, despite the fact of the overall results of emotions towards ATM being high. There is also a similarity in terms of alignment of this segment and that of high income, which may be translated as indicating that most postgraduate consumers have high income. The other aspect of interest in this segment is the concentration of trends, which confirms the reliability of the instrument, as well as the relationships detected, as far as this segment is concerned.

Concerning education level and attitude towards internet banking, the study findings indicate that postgraduate participants display a more positive attitude towards such banking when compared to the undergraduates. This may be an indication that the more literate the individual is, the stronger their predisposition towards innovativeness; as a result, they will be open to adopting innovations such as internet banking. This is supported by a study by Polatoglu and Ekin (2001) in which it was reported that highly educated consumers are more likely to adopt internet banking. Literacy could be one of the aspects that influence the attitude of undergraduate participants, and this could be supported by Clemes *et al.*'s (2012) study, which revealed that low qualifications

have the highest impact on customers' adoption of internet banking; this result is consistent with the findings of Yiu *et al.* (2007) and Gerrard *et al.*'s (2006) study: that less-educated people are less likely to use internet banking (cited in Clemes *et al.*, 2012).

With regard to education level and attitude towards mobile banking, the study findings indicate that postgraduate participants display a higher positive attitude towards mobile banking when compared to the undergraduates. This may indicate that one's academic level has an influence on attitude towards mobile banking. This is supported by previous studies. For instance, Boshkoska and Sotiroski (2018) reported similar results.

With respect to education level and attitude towards MPESA, the findings establish that there is no significant difference in attitude towards MPESA. However, undergraduate participants display a marginally higher positive attitude towards MPESA when compared to their graduate/postgraduate counterparts. This may be related to the fact that MPESA is a mass mobile money channel and does not require a complex device (such as one running Android) to transact, which makes transactability easy and does not require literacy.

Concerning education level and attitude towards USSD, the study findings indicate that postgraduate participants display a more positive attitude towards USSD when compared to the undergraduates. This may be an indication that the more literate the individual is, the more informed and open for innovation this person is, and as a result will be open to adopt a new technology such as internet banking.

7.3.6.4 Income and attitude towards different channels

In terms of income and attitude towards the branch, the results reveal those participants with a low income display higher emotion towards a branch. High-income consumers also have a positive attitude towards the latter. This may be an indication that the human factor is important for high-income earner individuals.

In terms of income and attitude towards ATM, the results reveal those participants with a high income display high emotions towards ATM. These results may be an indication that the overall majority of high-income participants find the ATM experience enjoyable and satisfying, as well as stimulating or exciting, when compared to low-income

participants. It is also interesting to see the concentration of behaviour of high-income participants, which may be a reflection of the alignment of banking habits in individuals in this segment.

In terms of income and attitude towards internet banking, the results reveal that high-income participants have a more positive attitude towards internet banking, when compared to their low-income counterparts. These results are supported by previous research, as noted earlier (Yiu, *et al.*, 2007). The probable reason behind the less positive attitude towards internet banking displayed by low-income participants, could possibly be the lack of access to internet banking, given the type of transactions that they normally perform, as a result of their income level.

In terms of income and attitude towards mobile banking, the results reveal that high-income individuals have a high positive attitude. These results may be an indication that such participants find the mobile banking experience satisfying, as well as stimulating, when compared to those with a low income. This affords a major opportunity to diffuse mobile banking to both high- and low-income individuals.

In terms of income and attitude towards MPESA, the results reveal that low-income participants display high emotions towards MPESA. These results may be an indication that overall, the majority of low-income participants find the MPESA experience enjoyable and satisfying, as well as stimulating or exciting, when compared to those with a high income. The reason behind this may be the fact previously mentioned, that MPESA allows transactability for very small amounts and uses very cost-effective devices. It is also interesting to note that high-income participants have a low attitude towards MPESA, when compared to low-income respondents, and this may mean that this segment is more inclined to other digital banking platforms, rather than mobile money solutions.

In terms of income and attitude towards USSD, the results reveal that high-income participants have a more positive attitude towards USSD. These results may be an indication that individuals of higher income display higher pleasure and arousal when compared to their low-income counterparts. This may imply that high-income individuals have a positive attitude towards USSD and perceive it to be satisfying and stimulating.

7.3.6.5 Urban versus rural background and attitude towards different channels

The findings of the study reveal that participants living in rural areas display higher emotions towards the branch than those living in urban settings. This may be an indication that an urban background is not strongly related to emotions towards a branch, although there is a larger branch network in urban areas. These results may be a clear indication that consumers in rural areas still perceive branch banking as satisfying, and have an affective connection with their branch, meaning that they find such banking stimulating. This may be a result of various factors, which may include availability of alternative channels to the branch in the rural areas as well as digital education.

With respect to urban versus rural background and attitude towards the ATM, it is interesting to note that the findings of the study reveal that participants who are living in rural areas display higher emotions or positive attitude towards an ATM than those living in urban settings. Despite the fact that most ATMs as well as ATM up- time (the time that the ATM is functional) are more prevalent in the urban areas, the rural participants displayed a higher attitude than urban ones. These results may be an indication that the majority of rural consumers have a positive attitude towards an ATM and perceive the experience as enjoyable and satisfying, as well as stimulating and exciting.

In terms of urban versus rural background and attitude towards internet banking, it is also interesting to note that the findings of the study reveal that participants living in rural areas display higher NES towards internet banking than those living in urban settings, though the NES is low when compared to most channels under analysis. This may offer an indication that there is also a need for more exposure to and proper diffusion of internet banking to individuals living in both the urban and the rural areas, with a view to raising the attitude level towards internet banking as well as the intention to use it.

With regard to urban versus rural background and attitude towards mobile banking, it is interesting to note that the findings of the study reveal that participants residing in rural areas have a more a positive attitude towards mobile banking than those living

in urban settings. This may mean that mobile banking has become an alternative channel for transaction for consumers in the rural settings.

In terms of urban versus rural background and attitude towards MPESA, the findings of the study reveal that, with regard to this attitude, participants living in urban areas display higher NES towards MPESA than those living in rural settings. The availability of agents and other aspects of transactability may be influencing factors for these results. These results are somewhat inconsistent with a study by Rahman and Sloan (2017) who reported that mobile payment records higher adoption in rural areas than in urban areas. Of the 40% of users of mobile payments in Bangladesh, 81% were from rural and semi urban areas. Absence of alternative solutions could be one of the possible reasons, as the use of mobile payments may represent an alternative solution to ordinary banking.

Concerning urban versus rural background and attitude towards USSD, the findings of the study reveal that participants living in urban areas hold a more positive attitude towards USSD than those living in rural settings. This may be an indication that there is also a need for more exposure to and proper diffusion of USSD to individuals living in the rural areas, with a view to raising the attitude level towards USSD as well as the intention to use it. It is also interesting to observe the similarity in behaviour between the attitude towards USSD and attitude towards MPESA; both can be used by means of low-cost devices. It is also intriguing to notice the alignment with the age graph results.

7.4 DECISIONS REGARDING THE RESEARCH HYPOTHESES

This section summarises the research hypotheses.

Table 7.1
Summary of decisions regarding the research hypothesis

Hypothesis	Research hypothesis	Supportive evidence
H01	There is no statistically significant interrelationship between the values, culture, diffusion of innovation, technology acceptance, attitudes towards digital banking and demographics.	No
Ha1	There is a statistically significant interrelationship between the values, culture, diffusion of innovation, technology acceptance, attitudes towards digital banking and demographics (gender age, educational level, income and urban versus rural background)	Yes
H02	The values, culture, diffusion of innovation, and technology acceptance, as a composite set of independent latent variables, are not significantly and positively related to attitude towards digital banking as dependent latent variable	No
Ha2	The values, culture, diffusion of innovation, and technology acceptance, as a composite set of independent latent variables, are significantly and positively related to attitudes towards digital banking as dependent latent variable	Yes
H03	The values, culture, diffusion of innovation and technology acceptance, do not positively and significantly predict the attitudes towards digital banking	No
Ha3	The values, culture, diffusion of innovation, and technology acceptance do positively and significantly predict the attitudes towards digital banking	Yes
H04	Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance and attitudes towards digital banking, the elements of the empirically manifested structural model and the theoretically hypothesised model do not show a good fit.	No
Ha4	Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance and attitudes towards digital banking, the elements of the empirically manifested structural model and the theoretically hypothesised model show a good fit.	Yes
H05	The demographical variables (gender, age, educational level, income and urban versus rural background) do not significantly and positively moderate the relationship between the independent variables (values,	No

Hypothesis	Research hypothesis	Supportive evidence
	culture, diffusion of innovation, technology acceptance) and the (attitudes towards digital banking) dependent variable	
Ha5	The demographical variables (gender, age, educational level, income, urban versus rural background) do significantly and positively moderate the relationship between the independent variables (values, culture, diffusion of innovation, technology acceptance) and the (attitudes towards digital banking) dependent variable	Yes
H06	Individuals from various demographical variables (gender, age, educational level, income, urban versus rural background) do not differ significantly regarding the variables manifested in the best fit model.	No
Ha6	Individuals from various demographic variables (gender, age, educational level, income, urban versus rural background) do differ significantly regarding the variables manifested in the best fit model.	Yes
H07	There are no significant differences on SAM with regard to individual demographical variables (gender, age, educational level, income, urban versus rural background) and participants' attitudes towards banking channels	No
Ha7	There are significant differences on SAM with regard to individual demographical variables (gender, age, educational level, income, urban versus rural background) and participants' attitudes towards banking channels	Yes

7.5 CHAPTER SUMMARY

The following empirical research aims were achieved:

Research aim 1: To empirically investigate the nature of the statistical interrelationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.

Research aim 2: To empirically assess the nature of the overall statistical relationship between the independent latent variables (values, culture, diffusion of innovation, technology acceptance) and dependent variable (attitudes towards digital banking)

Research aim 3: To empirically determine whether the variables of values, culture diffusion of innovation, and technology acceptance, positively and significantly predict the attitudes towards digital banking.

Research aim 4: Based on the overall statistical relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking, to empirically assess the fit between the elements of the empirically manifested structural model and the theoretical model.

Research aim 5: To empirically assess whether the demographical variables significantly moderate the relationship between values, culture, diffusion of innovation, technology acceptance, and attitudes towards digital banking.

Research aim 6: To empirically assess whether significant differences exist between the demographical variables that will act as significant moderators between values, culture, diffusion of innovation, technology acceptance, variables and attitudes towards digital banking.

Research aim 7: To empirically assess, with the use of SAM, whether individuals of different demographic variables differ with regards to their attitude towards banking channels.

The following chapter discusses the conclusions and limitations of the study, as well as the recommendations of the study.

CHAPTER 8:

CONCLUSIONS, LIMITATIONS, RECOMMENDATIONS

8.1 INTRODUCTION

The aim of this chapter is to discuss the conclusions and limitations of the study and to make recommendations for the implementation of digital banking channels (DBC) for customers in the Mozambican market.

After recapitulation of what was stated in Chapter 1, conclusions regarding the literature review and the empirical scrutiny will be drawn in the sections below.

8.2 CONCLUSIONS REGARDING THE LITERATURE REVIEW

To recapitulate: The general aim of this research was to construct and test a model that explains the relationship between diffusion of innovation, technology acceptance, values and culture, attitude towards digital banking.

Research aim 1: To theoretically conceptualise values (conceptualised as benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition), culture (conceptualised as power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, long-term/ short-term orientation), diffusion of innovation (conceptualised as perceived relative advantage, perceived compatibility, perceived complexity, perceived trialability, perceived observability), and technology acceptance (conceptualised as PEOU and PU), with regard to the usage of digital banking.

Research aim 2: To theoretically conceptualise attitudes towards digital banking (conceptualised here as subjective norms, perceived behavioural control and intention to use), and Pleasure, Arousal, Dominance (PAD) Theory – embodied in the Self-Assessment Manikin (SAM).

Research aim 3: To explore the theoretical relationship between the values (conceptualised as benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition), and culture (conceptualised as power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, long-term/ short-term orientation), diffusion of innovation (conceptualised

as perceived relative advantage, perceived compatibility, perceived complexity, perceived trialability, perceived observability), technology acceptance (conceptualised as PEOU and PU), and attitudes towards digital banking (conceptualised as subjective norms, and perceived behavioural control and intention to use digital banking).

Research aim 4: To construct an integrated scientific theoretical framework that explains the nature of the theoretical relationship between the values (conceptualised as benevolence, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition), culture (conceptualised as power distance, uncertainty avoidance, Individualism-collectivism, masculinity-femininity, long-term/short-term orientation), diffusion of innovation (conceptualised as perceived relative advantage, perceived compatibility, perceived complexity, perceived trialability, perceived observability), technology acceptance (conceptualised as PEOU and PU), and attitudes towards digital banking (conceptualised as subjective norm, and perceived behavioural control and intention to use digital banking).

Research aim 5: To thoroughly assess the implications of the digital banking model for consumer attitude towards digital banking and intention to use digital banking.

Conclusions were drawn about each of the specific aims.

8.2.1 First literature review aim

To theoretically conceptualise Values, Culture, Diffusion of Innovation, and Technology Acceptance. The first aim was achieved in Chapter 2.

The following conclusions were drawn:

The diffusion of innovation, technology acceptance, values and culture are factors that influence attitude and use of innovation or technology. Relative advantage, compatibility, complexity, trialability, and observability are five dimensions or attributes that influence diffusion of innovations by helping to decrease uncertainty about the innovation. Diffusion of innovation involves a sequence of six stages that follow each other in chronological order, namely, knowledge, persuasion, decision, implementation, confirmation and adoption (Kee, 2017; Rogers, 2003). For any invention to be successful, it is critical that there is adoption and usage of such an innovation. Therefore, adopters are categorised as innovators; early adopters; early majority; late majority; and laggards (Rogers, 2003).

Technology acceptance was introduced by Davis (1989), based on the attitude–behaviour paradigm taken from cognitive psychology in an attempt to explain the motivation for accepting new technology. (Refer to Section 2.4.)

According to Hofstede (2011), a shorthand definition of culture is: "Culture is the collective programming of the mind that distinguishes the members of one group or category of people from others" (p.3) Culture may also be defined as the enduring pattern of behaviour that defines the way interactions and transactions are done (Katzenbach *et al.*, 2016; Ayala *et al.*, 2017).

In summarising, values are concepts or beliefs, which pertain to desirable end-states or behaviours, transcend specific situations, guide selection or evaluation of behaviours and events, and are ordered in relative importance (Schwartz & Bilsky, 1990; Simón, *et al.*, 2017). Therefore, every value is distinct from others because of the motivational goal that underlies it (Simón *et al.*, 2017).

Emotions may mediate relationships between values. Studies revealed that people's values influence the emotions they desire to feel, and as a result, they will endorse the values that will trigger the desired and convenient emotion (Tamir *et al.*, 2016). Therefore, people who experience the emotions they desire to experience, whether positive or negative, are inclined to be happier, because this is the result of their own choice and they experience the emotions resulting from the endorsement of their own values' content (Tamir, Schwartz, Oishi & Kim, 2017; Tamir *et al.*, 2016).

8.2.2 Second literature review aim

To theoretically conceptualise attitudes towards digital banking (PAD Theory/ Self-Assessment Manikin – SAM) and intention to use (subjective norm, perceived behavioural control). This was achieved in Chapter 3.

The following conclusions were drawn:

The attitudes towards digital banking can be explained through the PAD Theory – Self-Assessment Manikin (SAM), as well as subjective norm and perceived behavioural control (dimensions of Theory of Planned Behaviour), that inform the intention to use, and are determinant factors in the usage of digital banking. Attitude was defined earlier in Section 3.1 (Crano & Gardikiotis, 2015; Macamo, 2007; Katz, 1960). Therefore, it is relevant to understand emotions, and in so doing link these to attitude (Schwartz,

2012). Attitude towards the behaviour refers to the degree to which the performance of behaviour is positively or negatively valued (Mansour *et al.*, 2014).

Subjective norms and perceived behaviour control are commonly used approaches in the study of attitude, and address factors that influence behavioural intention of the individual's attitudes toward that behaviour (Ajzen, 1991; Nchise, 2012; Lai, 2017; Taherdoost, 2018). The actual behaviour is a product of the effect of two variables, namely, attitudes and subjective norms, on the individual, and it establishes that an increase in attitude and subjective norms leads to a stronger intention to perform a particular behaviour, in this particular case, the intention to use digital banking (Lai, 2017; Taherdoost, 2018; Nguyen *et al.*, 2018; Satsios & Hadjidakis, 2018).

Psychological theorists address the relationship between attitude and behavioural intention and established that behavioural intention is a product of an individual's attitude toward the behaviour and subjective norms (Hall *et al.*, 2018; Ajzen, 2012). Therefore, PAD Theory (through the Self-Assessment Manikin – SAM) helps to explore the consumer's attitude. The present study also addresses this recommendation by using the PAD Theory for reasons discussed earlier (see Section 3.1.3.2) (Landowska, 2018; Bekker *et al.*, 2014; Russel & Mehrabian, 1997; Bradley & Lang, 1994).

8.2.3 Third literature review aim

To explore the theoretical framework that investigates the relationship between values, culture, diffusion of innovation, technology acceptance, and attitude towards digital banking/ intention to use, and demographical characteristics (measured as age, gender, educational level, income and urban versus rural background). This was achieved in Chapter 4.

The following conclusions were drawn:

The diffusion of innovation, technology acceptance, values and culture have an influence on the attitude towards digital banking, as well as the intention to use the latter, and demographical characteristics influence the attitude towards digital banking. However, different demographics operate differently according to different DBCs.

The literature reveals that there are various factors that influence consumer attitude towards DBC and the adoption of digital banking, and these include psychological

factors (Sundara & Perera, 2018; Talla, 2013). Further, PU and PEOU (dimensions of technology acceptance) have a positive and significant impact on customers' attitude toward digital banking (Al-Smadi, 2012).

Values and culture influence action when they are relevant in the context and important to the individual (Schwartz, 2012; Simón *et al.*, 2017; Schwartz & Sortheix, 2018). Attitude, subjective norm, perceived behavioural control, PU and PEOU, influence significantly the users' intention to use digital banking service channels (Al-Smadi, 2012; Takele & Sira 2013). A study conducted by Clemes *et al.* (2012) revealed that consumers of different genders, ages, and with different levels of education and incomes attribute different amounts of importance to the influencing factors of digital banking adoption.

Conclusions drawn from the present study are that technology acceptance dimensions, values, culture and diffusion of innovation do have an influence on attitude towards digital banking, and that consumer demographics (age, gender, education level, income and rural and urban living background also have an influence on attitude towards digital banking.

8.2.4 Fourth literature review aim

To construct an integrated scientific theoretical framework that explains the nature of the theoretical relationship between the diffusion of innovation, technology acceptance, values, culture and attitudes towards digital banking and intention to use digital banking. This aim was also achieved in Chapter 4.

In the previous studies there is a common behavioural pattern with regard to the attitudes towards the adoption of digital banking. The variables from the Diffusion of Innovation, as well as technology acceptance, values, and culture positively and significantly influence the attitudes towards adoption (Sundara & Perera, 2018; Taherdoost, 2018; Schwartz & Sortheix, 2018; Madarie, 2017; Khan *et al.*, 2017; Lai, 2017; Ayala *et al.*, 2017; Schwartz, 2012; Simón *et al.*, 2017; Talla, 2013; Al-Smadi, 2012; Takele & Sira, 2013). However, these studies were conducted in different settings, with varying cultural backgrounds. Therefore, the objective of this study was to examine the adoption of digital banking in Mozambique, through investigating the moderating effect of variables, both independent and dependent. The demographic

variables are moderating ones that were analysed to see to what extent they influence the independent variables and the dependent variable.

The conclusions with this study confirm the previous studies. The values and technology acceptance variables significantly influence the attitude towards digital banking. The culture and diffusion of innovation also influence the attitude towards digital banking. However, there is a need to reassess the assessment instruments in order to achieve strong internal consistency. Subjective norms and perceived behavioural control constructs, not only influence the intention to use digital banking, but they also influence the attitude towards digital banking, and this transform the dimensions of Theory of Planned Behaviour by Ajzen (1991), in which the author posits that Attitude, Subjective Norms and Perceived behavioural control, influence the person's Intention, which in turn displays the behaviour.

8.2.5 Fifth literature review aim

To thoroughly assess the implications of the digital banking model for consumer attitude towards digital banking and intention to use digital banking. This was likewise achieved in Chapter 4.

The following conclusions were drawn:

- The implication of the theoretical model to explain the effect of values, culture, technology acceptance and diffusion of innovation on attitude towards digital banking, as well as the demographical characteristics, given that consumers need be provided with digital banking platforms that take into account their needs, and which presupposes that the banks must understand what the factors are that influence the consumer attitude towards digital banking as well as the intention to use digital banking. Such factors must envisage the enhancement of digital banking adoption and usage, as well as a positive banking environment in Mozambique (Talla, 2013; Al-Smadi, 2012; Takele & Sira 2013).
- The present study concludes that there is a need to address the factors influencing attitude towards digital banking. Failing to address such factors may result in developing digital channels that are not fit-for-purpose for consumers. These, in turn, may lead to investing in solutions that do not respond to consumer needs, and which may negatively impact the customer experience. Previous studies have

also identified differences in various consumer behaviours across cultures, but there is still a relative gap with regards to an integrated model which takes into consideration values and culture, to explain the attitude towards digital banking and intention to use (Eljelly & Abdalla, 2014).

- The present study also concluded that demographical characteristics (age, gender, educational level, Income and urban versus rural background) also influence attitude towards digital banking, as different demographics relate differently with the various digital banking channels. Diversifying the digital banking channels and aligning to the different needs for the different demographical segments, may increase the Net Emotional Score, and as a result may boost the satisfaction, as well as accelerate the diffusion, acceptance, adoption and usage of digital banking channels, and drive a digital transculturation. The banking culture will continue to benefit from transformation, and as a result, reinforce the psycholoGITAL approach in the banking industry

The banks may benefit from the development of a model, owing to the fact that this study will add value to the literature review on digital banking adoption. In addition, it will also inform banking industry operators of the factors influencing attitude towards digital banking (Talla, 2013; Al-Smadi, 2012; Takele & Sira 2013). These should be taken into consideration when addressing the issues pertaining to a consumer decision to adopt digital banking.

8.3 CONCLUSIONS REGARDING THE EMPIRICAL STUDY

This section will present the conclusions in terms of the research aims of the empirical study. (Refer to Table 6.2.)

8.3.1 First aim: Interpretation of the correlation results

Relationship between values, culture, diffusion of innovation, technology acceptance, and attitude towards digital banking.

Research aim 1 was noted above.

The empirical results provide the supportive evidence for the research hypothesis Ha1. The following overall conclusions were drawn:

Relationship between diffusion of innovation, technology acceptance, values, culture and intention to use digital banking, subjective norm, perceived behavioural control

The empirical results provide the supportive evidence for the research hypothesis Ha1.

The following overall conclusions were reached:

Conclusion 1: Participants' perceptions of diffusion of innovation, technology acceptance, values and culture are significantly related to intention to use digital banking, subjective norms and perceived behavioural control

Based on the significant relationships found, the following conclusions can be drawn:

- Participants' diffusion of innovation and technology acceptance were related. (See Moore & Benbasat, 1991; Keil *et al.*, 1995; Sundara & Perera, 2018; Baki *et al.*, 2018).
- Participants' diffusion of innovation, culture and values were related. (Refer to (Kalliny & Hausman, 2007; Dwyer *et al.*, 2005; Takada & Jain, 1991; Daghfous *et al.*, 1999). It is therefore critical to analyse the effect of cultural characteristics on the diffusion of innovation process.
- Participants' diffusion of innovation, stimulation, achievement, conformity and tradition were related (Schwartz, 2012; Wang *et al.*, 2008).
- Participants' technology acceptance, values and culture were associated with their intention to use digital banking. Cultural values are critical factors in influencing the adoption of such banking, and therefore they should always be taken into consideration when implementing such technology (Mahfuz & Wang, 2016).
- Participants' PU and PEOU are associated with their intention to use digital banking; (see Takele & Sira, 2013).
- Participants' PU was related to culture and values. Previous research suggests that dimensions of cultural values should be included in the acceptance model (Mahfuz & Wang, 2016).
- Participants' PEOU was related to culture and values. Previous studies suggest that dimensions of cultural values should be included in the TAM, given their importance in technology acceptance (Mahfuz & Wang, 2016; Azam & Quaddus, 2013).

- Participants' self-direction, hedonism, achievement, power and security were associated with subjective norms. Previous researchers found that the value of hedonism is considered the most important factor in influencing technology acceptance (Mahfuz & Wang, 2016).
- Participants' self-direction and achievement were associated with perceived behavioural control. (See Wang *et al.*, 2008; and Mahfuz & Wang, 2016).

8.3.2 Second aim: Interpretation of the canonical correlation analysis results

Research aim 2 was to empirically assess the nature of the overall statistical relationship between the independent latent variables (diffusion of innovation, technology acceptance, value, culture) and dependent variable (attitudes towards adoption).

The results provide supportive evidence for the research hypothesis Ha2.

Conclusion 2: Based on the significant association found between participants' technology acceptance, values, culture and intention to use digital banking, subjective norm and perceived behavioural control, the following conclusions can be drawn:

- PU and PEOU are strong predictors of intention to use digital banking, affected by the subjective norm and perceived behavioural control (Takele & Sira, 2013; Larsen, 2003).
- Achievement and power are strong predictors of intention to use digital banking, together with the subjective norm and perceived behavioural control. (See Takele & Sira, 2013, in particular; also Wang *et al.*, 2008).

8.3.3 Third aim: Interpretation of the multiple regression results

Research aim 3 was to empirically determine whether the variables of diffusion of innovation, technology acceptance, values and culture positively and significantly predict the attitudes towards adoption of digital banking.

The results provide supportive evidence for the research hypothesis Ha2 and Ha3.

Conclusion 3: Participants' PEOU and self-direction significantly predict their intention to use digital banking. PU, power, and achievement significantly predict

participants' subjective norms. Furthermore, security and hedonism negatively predict participants' subjective norm.

Based on these findings, the following conclusions can be drawn:

- Participants' PEOU influences their intention to use digital banking. According to Lai (2017), PEOU has a direct influence in this respect.
- Participants' self-direction influences their intention to use digital banking. (See the study by Wang *et al.*, 2008).
- Participants' PU, power and achievement influence their subjective norm, as established by Schwartz (2012) and Hall *et al.* (2018).
- Participants' security and hedonism influence their subjective norm (Nguyen *et al.*, 2018; Schwartz, 2012).

8.3.4 Fourth aim: Interpretation of the structural equation modelling results

Research aim 4 was based on the overall statistical relationship between diffusion of innovation, technology acceptance, values, culture and attitudes towards adoption, to empirically assess the fit between the elements of the empirically manifested structural model and the theoretical model

The results provide supportive evidence for research Hypothesis Ha4. The following overall conclusion was drawn:

Conclusion 4: The SEM (empirically tested attitude towards digital banking) emphasised that technology acceptance, values and culture should be considered when formulating consumer attitudes toward digital banking adoption strategies (see Figure 5.1).

The results depicted in Figure 5.1 indicate significant associations between the independent and dependent variables.

- The results show that overall, the technology acceptance construct appears to be strongly correlated with intention to use digital banking, subjective norm, and perceived behavioural control. Studies by Jaafreh and Al-abedallat (2012) and Bike *et al.* (2018) make these points.

- The results reveal the values construct to be related to subjective norm and perceived behavioural control (Ajzen, 1985; Taherdoost, 2018).
- The results indicate the culture construct to be related to subjective norm and perceived behavioural control (see Zanariah *et al.*, 2012 in this regard).
- The results reveal the intention to use digital banking to be related to both subjective norm and perceived behavioural control (Bike *et al.*, 2018; Satsios & Hadjidakis, 2018).

Empirically manifested model

This section depicts the variables that were identified in the empirically manifested model.

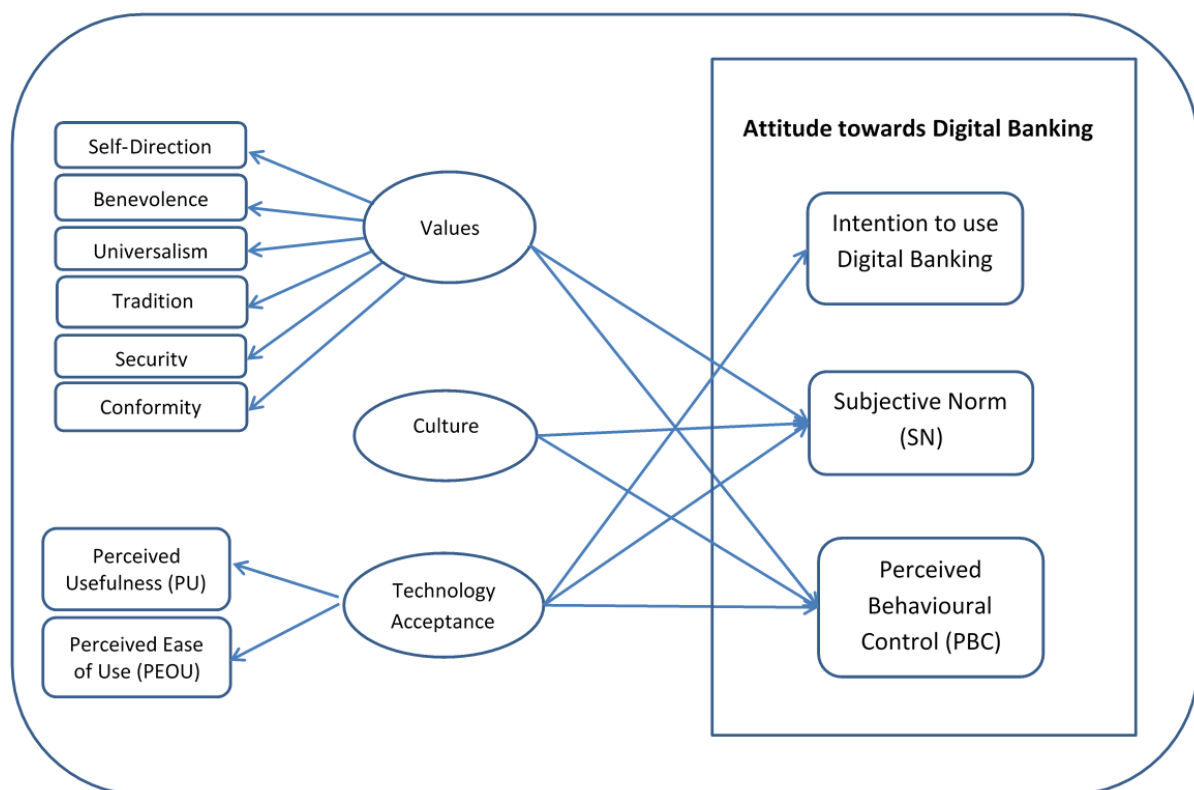


Figure 8.1
Empirically manifested model

The theory of planned behaviour postulates three conceptually independent determinants of intention, namely, attitudes, subjective norms, and perceived behavioural control, which are described as antecedents of, or predicting intentions (Ajzen, 1991).

However, the results of the present study bring in a new finding by the integration of intention together with subjective norm and perceived behavioural control as determinants of attitude towards digital banking.

8.3.5 Fifth aim: Interpretation of the hierarchical moderated regression analysis

Research aim 5 was to empirically assess whether the demographical variables significantly moderate the relationship between diffusion of innovation, technology acceptance, values, culture and attitudes towards adoption.

The results provided supportive evidence for research hypothesis Ha5. The following conclusion was drawn:

Conclusion 5: Age, gender, education level (qualifications), and urban versus rural moderate the relationship between the participants' technology acceptance, values, culture and their intention to use digital banking and perceived behavioural control variables.

Based on these findings, the following conclusions can be reached:

- Age significantly moderated the relationship between participants' technology acceptance and their perceived behavioural control (Altawallbeh *et al.*, 2015; Lai, 2017).
- Gender significantly moderated the relationship between participants' technology acceptance and their intention to use digital banking. Studies by Taherdoost (2018) and Altawallbeh *et al.* (2015) report these findings.
- Educational level significantly moderated the relationship between participants' values and intention to use digital banking. See Schwartz (2007), as well as Boshkoska and Sotiroski (2018).
- Urban versus rural environments significantly moderated the relationship between technology acceptance and subjective norm. Previous research by Chawla and Joshi (2018) is pertinent.
- Urban versus rural significantly moderated the relationship between culture and subjective norm. Subjective norm, it is also referred to as culture, is an important

factor that influences attitude and intention, and is significantly moderated by living background, whether urban or rural (Chawla & Joshi, 2018; Zanariah *et al.*, 2012).

Based on these findings, it can be concluded that to achieve the enhancement of attitude towards digital banking purposes, it is vital for banking institutions to take cognisance of demographic information, as these variables significantly moderate the relationship between the participants' technology acceptance, values, culture and the intention to use digital banking, subjective norm and perceived behavioural control variables.

8.3.6 Sixth aim: Interpretation of test for significant differences

Research aim 6 was to empirically assess whether significant differences exist between the demographical variables that will act as significant moderators between diffusion of innovation, technology acceptance, values, culture variables and attitudes towards digital banking adoption.

The results provided supportive evidence for Research Hypothesis Ha6. The following conclusions were reached:

Conclusion 6: Significant differences were found between values, intention to use digital banking, subjective norm and income, educational level, and urban versus rural variables.

Based on these findings, the following conclusions can be drawn:

Income:

The results revealed that the low income participants scored higher on values than those participants with a high income. Relevant in this respect are studies by Chawla and Joshi (2018) and Clemes *et al.* (2012).

These results also demonstrated that low income participants scored higher in the intention to use digital banking than those participants with a high income. Pankomera and Van Greunen (2018), as well as Yiu *et al.* (2007) reported results that support this finding.

Educational level:

The results indicated that postgraduate participants scored higher in the intention to use digital banking than the undergraduate individuals; a similar finding to that of Crano and Gardikiotis (2015).

Urban versus rural:

The results showed that rural participants scored higher in the subjective norm than the urban ones. See Rahman and Sloan (2017), as well as Satsios and Hadjidakis (2018).

Conclusion 7: Significant differences exist between educational level and income and urban versus rural with regard to values variables and the intention to use digital banking and subjective norms.

8.3.7 Seventh aim: interpretation of the SAM

Research aim 7: To empirically assess with the use of SAM whether individuals of different demographic variables (gender, age, educational level, income, urban versus rural background,) differ with regards to their attitude towards banking channels.

The results provided supportive evidence for research hypothesis Ha7.

Conclusion 7: Based on SAM, individuals of different demographic variables differ with regard to their attitude towards digital banking channels.

Based on these findings the following conclusions can be drawn:

8.3.7.1 Demographic variables and Attitude towards branch

- In terms of gender, males display higher results as regards attitude towards the branch, than females. These results are buttressed by a study conducted by Kaynak and Harcar (2005).
- With regard to age, the older participants displayed a more positive attitude towards branch banking than their younger counterparts. Chawla and Joshi (2018) found that older consumers tend to rely more on services such as branch banking than younger counterparts. These results are supported by Kaynak and Harcar (2005).

- With regard to education level, graduate/ postgraduate participants score higher than undergraduates with respect to attitude towards branch. These results are also supported by Kaynak and Harcar (2005).
- As far as income is concerned, individuals with a high income display a higher attitude towards the branch than those with low income. These results are supported by Kaynak and Harcar (2005).
- With respect to urban versus rural background, participants from rural backgrounds score higher in their attitudes towards the branch than their urban counterparts. These results are reinforced by Kishore and Sequeira's (2016) study.

8.3.7.2 Demographic variables and Attitude towards ATM

- In terms of gender, there are no significant differences between males and females with regard to attitude towards ATM. These results are buttressed by Min-Kim *et al.* (2014).
- As regards age, the older participants displayed a more positive attitude towards the ATM than their younger participants. These results are supported by previous research which revealed that there is considerable difference between age groups with regards to the use of an ATM (El Aziz, El Badrawy, & Hussien, 2014).
- With regard to education level, graduate/ postgraduate participants score a higher attitude towards ATM than undergraduates. These results are reinforced by El Aziz *et al.* (2014) who report that there is a significant difference with respect to attitude towards an ATM between respondents of different education levels (El Aziz *et al.*, 2014).
- As far as income is concerned, individuals with high income display a higher attitude towards an ATM than those of low income. These results are supported by El Aziz *et al.* (2014) who note that there is a significant difference with regard to attitude towards an ATM amongst respondents of different incomes (El Aziz *et al.*, 2014).
- With respect to urban versus rural background, participants from a rural background score higher in their attitude towards an ATM than their urban counterparts. These results are reinforced by Min-Kim *et al.* (2014), who found that

regardless of urban or rural living background, people still perceive the ATM to be an important banking channel (Min-Kim *et al.*, 2014).

8.3.7.3 Demographic variables and Attitude towards internet banking

- In terms of gender, there are no significant differences between males and females with regards to attitude towards internet banking. These results are supported by El Aziz *et al.* (2014).
- With regards to age, the older participants displayed more of a positive attitude towards internet banking than their younger counterparts. These results are affirmed by Chawla and Joshi (2018).
- With regards to education level, graduate/ postgraduate participants score higher than undergraduates with regards to attitude towards internet banking. These results are supported by El Aziz *et al.*'s research (2014).
- As far as income is concerned, individuals with a high income display a higher attitude towards internet banking than those of a low income. These results are also supported by Chawla and Joshi's (2018) study.
- With regards to urban versus rural background, participants from the latter score slightly higher in their attitude towards internet banking, than their urban counterparts. These results are buttressed by Kishore and Sequeira (2016).

8.3.7.4 Demographic variables and Attitude towards mobile banking

- In terms of gender, there are no significant differences between males and females with regards to attitude towards mobile banking. These results are affirmed by El Aziz *et al.* (2014).
- With regards to age, there are no significant differences as regards attitude towards mobile banking. These results are reinforced by El Aziz *et al.* (2014).
- With respect to education level, graduate/ postgraduate participants score higher than undergraduates concerning attitude towards mobile banking. These results are supported by Chawla and Joshi (2018).
- As far as income is concerned, individuals with high income display a higher attitude towards mobile banking than those of low income. These results are once more supported by Chawla and Joshi (2018).

- With regards to urban versus rural background, participants from a rural background score slightly higher in their attitude towards mobile banking than their urban counterparts. These results are affirmed by Kishore and Sequeira's (2016) study.

8.3.7.5 Demographic variables and Attitude towards MPESA

- In terms of gender, there are no significant differences between males and females with regards to attitude towards MPESA. These results are supported by the study conducted by El Aziz *et al.* (2014).
- With regard to age, the younger participants displayed more positive attitude towards MPESA than their older counterparts. These results are affirmed by the study by Chawla and Joshi (2018).
- With regards to education level, there are no significant differences between graduate/ postgraduate participants and undergraduates. These results differ from the study by Van Hove and Dubus (2019), which reports that education positively influences attitude towards MPESA (Van Hove & Dubus, 2019).
- As far as income is concerned, lower income earning participants display higher attitude towards MPESA than those of high income. These results are supported by a study conducted by Van Hove and Dubus (2019), which reveals that low income earners display high in MPESA adoption, given their limited access to formal financial services (Van Hove & Dubus, 2019).
- With regard to urban versus rural background, participants from the former background score slightly higher in their attitude towards MPESA, than their rural counterparts.

These results are also supported by Van Hove and Dubus (2019).

8.3.7.6 Demographic variables and Attitude towards USSD

- In terms of gender, there are no significant differences between males and females with regards to attitude towards USSD. These results are supported by El Aziz *et al.* (2014).

- Concerning age, the younger participants displayed slightly higher positive attitude towards USSD than their older counterparts. These results are buttressed by Chawla and Joshi (2018).
- With regards to education level, graduate/ postgraduate participants score higher than undergraduates as regards attitude towards USSD. These results are supported by Chawla and Joshi (2018).
- In terms of income, individuals with high income display a higher attitude towards USSD than persons with a low income. These results are affirmed by Chawla and Joshi (2018).
- With regards to urban versus rural background, participants from the former background score slightly higher in their attitude towards mobile banking, than their rural counterparts. These results are supported by Kishore and Sequeira (2016).

Overall, MPESA, followed by the ATM, are the channels that score most highly in terms of attitude towards banking channels. The study by El Aziz *et al.* (2014) indicated that an ATM is ranked by customers as the most preferred banking channel (El Aziz *et al.*, 2014).

8.3.8 Conclusions regarding the central hypothesis

The constructed and tested model explains the relationships between diffusion of innovation, TAM, values and variables, attitude towards digital banking and intention to use digital banking related-factors and demographical variable characteristics. The empirical study provided statistically significant support for the central hypothesis. This hypothesis is therefore accepted.

8.4 CONTRIBUTION TO THE FIELD OF INDUSTRIAL AND ORGANISATIONAL PSYCHOLOGY

Conclusions were drawn in terms of the contribution to the literature review, empirical study and consumer attitudes towards digital banking.

8.4.1 Contribution in terms of the literature review

The findings of the literature review add value to the field of Industrial and Organisational Psychology – Consumer Psychology especially, particularly with

regard to the consumer's attitude towards digital banking. The literature review provided new insight into the relationship between the diffusion of innovation, TAM, values and culture variables. The literature review contributed a new understanding by providing relevant information on the consumer attitude.

Furthermore, the study added significant value to the existing literature through its insight into the ways in which diffusion of innovation, technology acceptance, Values, and Culture variables are related. Based on the literature review, a model for diffusion of innovation, TAM, values, and culture was constructed.

8.4.2 Contribution in terms of the empirical study

The statistical relationships observed among the contingencies of the diffusion of innovation, technology acceptance, values, culture, and intention to use digital banking, subjective norm and perceived behavioural control scale could be used to foster and enhance the customer attitude toward digital banking.

The SEM and multiple regression analyses from these measuring instruments demonstrate that the participants' technology acceptance, values, and culture are significantly related to intention to use digital banking, subjective norm and perceived behavioural control.

The canonical correlation analyses confirmed that the overall relationship between the technology acceptance, values, and culture is significantly related to intention to use digital banking, subjective norm and perceived behavioural control, and highlighted the key variables that influence the overall relationships. The hierarchical moderated regression analyses and tests for significant mean differences assisted in identifying the demographic information that moderated the technology acceptance, values, and culture variables that influence and enhance the customer attitude toward digital banking.

The structural model (empirically tested attitude towards digital banking model) highlighted the technology acceptance, values, and culture variables that need to be considered when designing customer attitude towards digital banking strategies.

The robust statistical analyses enabled and allowed the researcher to identify technology acceptance, values, culture, and the intention to use digital banking, subjective norm and perceived behavioural control elements and demographic

information characteristics of the sample group that are substantially significant to consider in the design of a model (Figure 7.1) for considering in developing the consumer attitude towards digital banking strategies. These were highlighted in the conclusions.

8.4.3 Contribution regarding the field of consumer attitude towards digital banking

With regard to the diffusion of innovation, technology acceptance, values, and culture variables and consumer attitude toward digital banking, both the literature review and empirical results have contributed new knowledge to the field of Industrial and Organisational Psychology, particularly in terms of the development of a diffusion of innovation, technology acceptance, values and culture model, and the design for enhancing the consumer adoption of a digital banking strategy in the Mozambique financial sector.

The literature review provided positive insights into individuals' perception of consumer attitudes. The relationship between the diffusion of innovation, technology acceptance, values and culture variables and attitude towards and intention to use digital banking factors provided new knowledge regarding the implementation of digital banking. This new knowledge or understanding could be utilised to develop digitisation strategies in the financial sector.

In light of the literature review, the following conclusion was drawn: Industrial psychologists and consumer psychology practitioners should take the theoretical models of diffusion of innovation, technology acceptance, and culture variables, and consumer attitude and intention (subjective norms and perceived behavioural control) into account when designing digital banking platforms. Since gender, age, educational level, income and urban versus rural background moderated the relationship between diffusion of innovation, technology acceptance, values and culture variables and attitude towards, and intention to use, digital banking factors, theoretical models should also be devised in this regard.

The results of the empirical study provided new knowledge about the relationship between diffusion of innovation, technology acceptance, values and culture variables and the attitude towards and intention to use digital banking factors. This new knowledge suggests that in enhancing the consumer's attitude towards digital banking,

as well as intention, it would be wise to take the effect of values, culture, diffusion of innovation, and technology acceptance into account.

It is advisable that banks start migrating consumers to DBCs by increasing the diffusion and dissemination of digital banking platforms, by encouraging customers to use digital platforms as opposed to traditional banking channels. This will happen when banks continue to introduce digital solutions that are perceived by consumers to be useful and easy to use. It is also crucial that financial institutions take into consideration the implementation of a model that is culturally fit and which addresses a combination of the diffusion of innovation, technology acceptance, values, and culture variables in the study of attitude towards, and intention to use, digital banking in Mozambique.

It is essential that financial institutions are cognisant of the importance of developing and deploying digital banking solutions which are responding to consumer needs and aspirations towards doing banking in a context that is perceived to be aligned with the culture, values and ability used by the different segments in order to drive the digital transculturation of the banking experience in Mozambique.

It is therefore recommended that, for the purpose of migrating consumers from physical channels into digital banking platforms, values, culture diffusion of innovation and technology acceptance, variables, which are underlined in the findings of this study, be taken into account as the banks increase the digitisation process, drive transculturation, and enhance the psycholoGITAL environment by raising the consumers' net emotional score towards digital banking.

To better address the migration to digital banking platforms, the banks must take into account the demographical characteristics at play, as well as the moderating effects of the different variables in the attitude towards digital banking and consumers' intention to use such services, according to what was established by the findings of this study.

It is also recommended that financial institutions implement innovative solutions for the consumer adoption of digital banking platforms purposes, diffusion of innovation, technology acceptance, values and culture variables and attitude towards, and intention to use, digital banking factors which are underlined in the findings of this study. Sundara and Perera (2018) pointed out that diffusion of innovation, technology

acceptance, values and culture variables may enhance consumer attitude towards, and intention to use, digital banking. Moreover, financial institutions should emphasise their strengths and needs, specifically taking the demographic profile of consumers into consideration in terms of the moderating effects of gender, age, educational level, income and urban versus rural background, which were highlighted in the findings of this study.

8.5 LIMITATIONS OF THE STUDY

The limitations of the study concerning both the literature review and the empirical study are discussed below.

8.5.1 Limitations in terms of the literature review

The main literature review of this study was limited to Rogers' (2003) Diffusion of Innovation, Davies' (1989) Portrait Values Questionnaire (PVQ), Schwartz (2012), Hofstede's Culture Questionnaire (2000) and the Technology Acceptance Model Questionnaire (TAMQ).

There has been limited research conducted on the relationship between the diffusion of innovation, technology acceptance, values and culture variables, especially in the context of the Mozambican consumer's attitude towards, and intention to use, digital banking. Hence, there was a minimal amount of Mozambique-specific literature, as well as of other local content contributing to the topic.

8.5.2 Limitations in terms of the empirical study

The main limitation of the empirical study was that a larger sample with cross-country (Mozambique) coverage with more representatives in terms of gender, age, educational level, income and urban versus rural would have been desirable. The study was limited to Maputo City and Maputo Province. Therefore, one cannot generalise the findings to the whole country.

Furthermore, diffusion of innovation, technology acceptance, values and culture variables may have had an effect on the observed results. It is therefore recommended that a correctly representative study be investigated in the future.

In spite of the sample size of 403, this was not considered to be large enough to determine whether or not there is a definite, widespread relationship between diffusion of innovation, technology acceptance, values, culture and attitude towards, and intention to use, digital banking. Therefore, the study cannot be generalised.

Another limitation pertaining to the study is that it was cross-sectional in nature. Therefore, it was not possible to confirm the causal relationships between the constructs. Future studies on the relationship between the diffusion of innovation, technology acceptance, values, and culture variables and attitude towards, and intention to use, digital banking factors (subjective norms, and perceived behavioural control) should consider obtaining larger samples from across the country, or even region, as well as in terms of gender, age, educational level, income and urban versus rural background in Mozambique, in order to increase the generalisability of the research findings. Longitudinal studies should also be conducted in order to determine whether or not there is an association between the constructs over time.

A further limitation of this study was the issue of translation and back-translation of the seven instruments from English to Portuguese. It is important to note that the questionnaire was long and complex. Therefore, the literal translation into Portuguese may not have translated the exact meaning of the original questionnaires as in English; the same applies to their back-translation from Portuguese into English. Therefore, it is recommended that researchers should seek, whenever possible, to maintain the semantic, idiomatic and conceptual form of such instruments, without losing the original (Beaton *et al.*, 2000; Mitonga-Monga, 2015).

Another limitation of this study is the fact that 24.1% of the sample obtained only basic education, a qualification lower than Grade 12, and 32.5% obtained Grade 12 or equivalent. It might be that this sample could have experienced language challenges in understanding the items of the various instruments used, and might have struggled in responding to the different questions. Therefore, it is recommended that future research should include firstly, a short language proficiency test to determine the level of language understanding, in order to minimise the language limitation's influence on the results.

An additional limitation of this study was the use of field workers for data collection, which may have influenced the approach to participants, and consequently affected the quality of data collected.

Despite the above-mentioned limitations, it may be concluded that the study provides evidence and offers promise for future researchers in terms of the relationship between the variables that influence the consumer's attitude toward and intention to use DBC in the Mozambique financial services context. It is important to consider the significance of a favourable and positive digital banking environment, as well as the fact that the model itself makes a significant contribution to the theoretical, empirical and practical levels.

Findings, such as the fact that the above categories of consumers perceive digital banking as favourable and positive, while the male consumers, and those who are older, with a high educational level and more income, perceive some digital banking as not easy to use, indicate that these perceptions might inhibit their attitude towards, and intention to use, digital banking (as regards subjective norms and perceived behavioural control). This will, hopefully, motivate future researchers' initiatives. Such initiatives may confidently introduce a new attitude and influencers of intention that will assist the latter categories of consumers to be more open in adopting innovations.

8.6 ETHICAL CONSIDERATIONS

As previously stated (Section 1.10), the ethical rules, regulations and procedures of the research institution were adhered to. Permission to conduct the research was also obtained from the management of the organisation as well as the ethics committee at the University of South Africa (UNISA).

8.7 RECOMMENDATIONS

Based on the findings, conclusions and the limitations of this study, the following recommendations for Industrial and Organisational Psychology, as well as for further research, are suggested.

8.7.1 Recommendations for the field of Industrial and Organisational Psychology - Consumer Psychology

Although the findings provided a valuable understanding in terms of the research aims, it is important to determine the specific interventions needed to address digital banking adoption and usage, with a view to migrating consumers from the traditional banking to digital banking platforms.

It is thus recommended that diffusion of innovation, values, culture, and technology acceptance be considered as independent variables, while, correspondingly, attitude towards digital banking and intention to use (subjective norms and perceived behavioural control) be regarded as a dependent variables; also that the moderating demographic variables (gender, age, education level, urban versus rural background and income) be analysed in order to assess the extent to which they moderate the independent variables and the dependent variable.

Consumer attitude towards and intention to use digital banking may be influenced by the diffusion of innovation, technology acceptance, values, and culture variables. Therefore, financial institutions should create digital platforms that are perceived to be useful, easy to use, have relative advantage, are compatible with clients' needs, not complex, trialable and observable. They should also take into account the consumer values and cultural context.

Consumers' attitude towards, and intention to use, digital banking may also be influenced by subjective norms, perceived behavioural control, and NES. Therefore, it is recommended that digital banking solutions be designed with a view to ensuring that they are perceived as culturally fit-for-purpose, easy to manage, as well as satisfying and stimulating to the consumers, and presenting a level of control and dominion to the user.

Furthermore, consumer attitude towards, and intention to use, digital banking may be influenced by culture and values. Therefore, financial institutions should develop strategies that take into account the role of values and culture in digital banking or any technology innovation acceptance and usage. In addition, they should take into consideration the culture and values dimensions of the consumers' context when developing new digital platforms and defining diffusion strategies, so as to anticipate

and consequently address any foreseen or unforeseen values or culturally-related technology acceptance barriers that may occur.

It is recommended that for the more effective consumer adoption of digital banking, financial institutions should design digital banking solutions that take into account the needs of the different consumer segments, in line with the diffusion of innovation, technology acceptance, values, and culture variables. The financial institutions should also develop digitisation strategies and encourage high levels of digital utilisation.

Lastly, it is recommended that financial institutions create interactive and user friendly digital platforms that encourage and support diffusion and usage of innovation.

8.7.2 Recommendations for future studies

The findings of this study showed a need for further research in exploring the relationship between the diffusion of innovation, technology acceptance, values, and culture variables. It is recommended that further research addresses the limitations inherent to this study. The study was limited to Maputo City and Maputo Province, and as intimated, other studies of this nature should therefore be conducted using a representative sample from across the country, gender, age groups, educational levels, income and urban versus rural environments, while focusing on different digital banking channels.

This study was cross-sectional in nature, and it was therefore not possible to ascertain the causal relationships of the relations between the variables under investigation. Longitudinal studies would thus be appropriate to determine the influence of the variables tested in this study on consumer attitude towards, and intention to use, digital banking.

Diffusion of innovation did not fit the model, therefore it is recommended that further studies make use of methods and/ or approaches that could provide a fuller and wider scope of understanding of diffusion of innovation in the Mozambican context.

8.8 EVALUATION OF THE RESEARCH

This study contributed at three levels to the field of Industrial and Organisational Psychology, namely, the theoretical, empirical and practical level.

8.8.1 Contribution at a theoretical level

The findings of this study have provided a new understanding of how the diffusion of innovation, technology acceptance, values, and culture variables are related to consumer attitude towards digital banking. The literature review highlighted the importance of considering these constructs in the development of digital banking platforms and strategies.

The approach followed by this study was original, as it integrated all these constructs, in order to develop an attitude towards digital banking model for consumers in the financial sector.

Industrial and organisational psychologists, in the Consumer Psychology sub-field of IOP, should therefore be in a better position to assist financial institutions in understanding the relationship between the diffusion of innovation, technology acceptance, values, and culture variables and attitude towards digital banking digital banking factors, through using the services of such consumer psychologist experts involved with consumer attitudes.

It is recommended that these findings, especially the theoretical Diffusion of innovation, technology acceptance, values and culture Model and its key behavioural aspects, be used for analysing consumer attitudes towards digital banking and the intention to use DBC in Mozambique.

8.8.2 Contribution at an empirical level

The findings of this study contributed to the development of an empirically-tested Diffusion of innovation, technology acceptance, Values and Culture Model that may be used to inform attitude toward digital banking, as well as intention to use it, for consumers in the Mozambique financial sector. The proposed model offers a new contribution to the field of Organisational Psychology and adds valuable knowledge and understanding to contemporary research on the diffusion of innovation, TAM, values, and culture variables and attitude towards digital banking that manifests in consumer intentions to use digital banking in the financial services industry in today's continually evolving – and digital – environment.

The empirically-tested Values, Culture, Diffusion of Innovation and Technology Acceptance, Model outlined that the elements (variables) investigated should be taken

into consideration when designing digital banking strategies to address consumer attitudes. As noted, studies on the relationships between the constructs which were relevant to this study have not been profoundly explored within the Mozambique context.

Furthermore, this study drew attention to the fact that gender, age, educational level, income and urban versus rural background acted as moderators of the relationship between the values, culture, diffusion of innovation, and technology acceptance variables and attitude towards digital banking. These findings add new knowledge that may inform financial institutions about the appropriate digitisation strategies, by emphasising the need to take the demographic details of consumers into account.

8.8.3 Contribution at a practical level

This study is important and useful because of the relationships that were found between values, culture, diffusion of innovation theory, and the technology acceptance variables and the dependent attitude towards digital banking. The outcomes will be useful in informing financial institutions about consumer attitudes, and intention to use, digital banking strategies that have been designed to address issues related to consumer attitudes towards digital banking and intention to use. Moreover, the study provided practical recommendations for investigating the consumer attitude towards digital banking influence, based on the literature review and empirical results.

In addition, the findings of this study could help industrial and organisational psychologists and consumer psychologist specialists to develop a deeper understanding of the constructs of relative advantage, perceived compatibility, perceived trialability, perceived observability, perceived complexity, PU and PEOU, self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, universalism; power distance, individualism-collectivism, masculinity-femininity, uncertainty avoidance, long-term/short-term orientation, and indulgence-restraint when considering values, culture, diffusion of innovation, and technology acceptance that will positively influence the attitude towards digital banking factors of consumers in the financial services industry.

The study helped to create a more rounded understanding of the fact that consumers differ in terms of their predisposition to the value, culture, diffusion of innovation and technology acceptance variables and consumer attitude towards digital banking, and

showed that it is important that each consumer, taking gender, age, educational level, income and urban versus rural background into consideration, be segmented accordingly, in order to address their attitude towards digital banking, as well as their intention to use DBCs.

This research has constituted a starting point for action by banking organisations, in the sense that no substantial evidence to date exists of a relationship between values, culture, diffusion of innovation, technology acceptance model, and attitude towards digital banking, especially within the Mozambique digital banking consumer context. As noted, this study also contributed significantly to the body of knowledge, in particular for the Consumer Psychology field.

8.9 CHAPTER SUMMARY

This chapter presented the conclusions and limitations of this study and made recommendations for consumer psychology in terms of consumer attitudes towards digital banking strategies and further research. The limitations were discussed with reference to the literature review and the empirical study.

After the recommendations for future studies, a summary of the research was presented, highlighting the extent to which the results of the study provide support for values, culture, diffusion of innovation, technology acceptance, and attitude towards the digital banking and intention to use digital banking model for consumers in the context of Mozambique's financial services sector.

In this study, research aim 7 has consequently been achieved, namely to formulate conclusions based on the research findings and to make recommendations for Industrial and Organisational Psychology with a particular focus on Consumer Psychology, as well as for the Mozambican financial industry and for future research based on the findings of this study.

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