

The Influence of Demographic Factors on Perceptions of Mobile Banking

Master's Dissertation

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Abstract

The advancement of technology in mobile devices, places South African banking institutions in unique positions to leverage these advancements into innovative, value-added services. Mobile banking is one such innovation that has afforded banking clients the ability to - amongst other services - view bank statements, pay bills, and transfer money. Despite a growing trend towards mobile banking service offerings by South African banks, privacy and security issues are still considered a concern. This dissertation conceptualises the influence of demographic factors on perceptions of mobile banking. Privacy Calculus Model (PCM) has been used as a theoretical lens to explain the cognitive process involved when a potential mobile banking subscriber is presented with mobile banking technology solutions. PCM is extended by abstracting the risk/benefit trade-off psyche held by SA bank clients, and there is an attempt to explain, using PCM, the bank clients' cognitive process and willingness to subscribe to mobile banking services. A quantitative research method has been used for this purpose. Purposeful sampling that targeted South African bank account holders was applied. Empirical results show that potential South African mobile banking subscribers are not homogeneously influenced in the same manner. Instead - for example - people in different age groups are subject to different influences than a grouping defined by highest education level. Thus, in order for South Africa's four big banks to attract and retain mobile banking subscribers, they should realise that different groups of people are influenced by subscription to mobile banking in different ways.

Dedication

To my lovely fiancé, Sinnah Lazarus, and beloved infant daughter, Minenhle.

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Thank you.

Declaration

Internet banking

For the purposes of this study, internet banking refers to computer (desktops and laptops) based internet banking.

South African Banking

For the purposes of this study, South African banking refers to South Africa's big four retail banks, namely ABSA, FNB, Standard Bank, and Nedbank.

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Part 1

Introductory

CHAPTER ONE

This chapter provides a preliminary background to the evolution of mobile technology and how it has affected people and businesses around the globe. The chapter also highlights the need for research into mobile technology, particularly mobile banking. The study's problem statement, objectives, scope and context are also discussed. The chapter concludes by providing a research outline and a summary.

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1. INTRODUCTION

The 21st Century has witnessed growing adoptions of mobile device technology (e.g. the cellular phone, personal digital assistants and smartphones) by users in different environments such as business, banking, academia and entertainment. There are several factors that have been attributed to the increase in adoption of mobile device technology, including affordability and convenience. Mobile devices are convenient because of ease of use, accessibility and portability - compared to their landline counterpart (Gustke, [2012]). In recent years, it has become affordable to own a mobile device because of the constant decrease in the retail price value of devices as newer versions get released.

Rosenberg (2008) argues that in order for organisations to increase and maintain market penetration, they need to develop strategies that will leverage mobile device technology into innovative, value-added services. For financial organisations, the aim is to create presence within mobile device technology, in order to attract and retain clients (Oxford Business Group, 2008: 51). Mobile banking is one such innovation that can enhance financial organisational presence within the sphere of mobile device technology, by affording banking clients the ability to - amongst other services - view bank statements, pay bills, and transfer money.

Internationally, the adoption of mobile banking services continues to increase especially in countries such as the United States of America (USA) (Business Wire, 2012). It was actually reported that in year 2012, mobile banking was used by 33% of mobile consumers in USA which is 9% more than it was in year 2011 (ibid). In the South African context, not only have the banking organisations embraced extending services via mobile device technology, there is also a significant subscription rate to mobile banking by South African bank clients (Kamhunga, 2012).

When it comes to global comparisons, South Africa has one of the world's largest mobile banking user rates (ibid). The question that arises though is that who are these South Africans that are warming up to mobile banking? What does their demographic information entails? Are they males or female South Africans? Are they of Black or White race groups? Such questions come to mind because South Africa is a big country that is often referred to as "Rainbow Nation" because its non-homogeneous people from different race groups, ethnicities, age groups etc., (Dlamini, 2005: 3).

Another question that comes to mind is what are the underlying influences that attract South Africans to mobile banking services? Could it be because mobile banking applications are convenient? Do mobile banking services provide better security than internet banking?

Are benefits to mobile banking services outweigh the existing/perceived risks that were inherited during the internet banking era? Or could it be that downloading and subscribing to a mobile banking applications is simply 'cool'?

1.1. Need for Research into Mobile Banking Subscription

Research into mobile banking subscription would provide insights into several issues that have been part of technological inventions. The first issue is security. An analysis of how security issues and related risks have been handled in the implementation of mobile banking, would later serve as guidelines for future technological innovations and implementations that involve specifically banking environments.

Secondly, research into mobile banking subscription would further provide insight into handling privacy concerns. Another issue to technological inventions has been the fear that organisations (or copyright holders to applications) can collect and use subscribers' information without consent. Is it possible that mobile banking is succeeding' because it has been able to handle privacy-related issues more efficiently than its internet banking counterpart? This study can potentially share insights into answering such questions.

The aforementioned reasons for a need to research mobile banking subscription are in the South African mobile banking context. Thus, as a case study, the research findings will be specific to a South African implementation and adoption of mobile banking technology.

1.2. Problem Statement

There is currently an inadequate insight on the influence of demographic factors on perceptions of mobile banking in South Africa.

1.3. Research Key Concepts

Main concepts that can be derived from the problem statement are as follows:

- i. Demographic factors
 - a. Such as gender, race group, level of education etc.

- ii. Perceptions of Mobile Banking
 - a. Such as perceived utility or usefulness of mobile banking, perceived ease of mobile banking's use, perceived privacy assurances that comes with adoption to mobile banking

Related concepts that can be derived from the problem statement would be:

- i. Mobile Banking
- ii. Mobile Banking in South Africa

1.4. Research Objective

- i. To examine the influence of demographic factors on perceptions of mobile banking.

1.5. Research Questions

The research questions are divided into main and sub-main questions.

- i. What is the demographic nature of South Africans warming up to mobile banking?
 - a. Are they male or female South Africans?
 - b. Are they of Black or White race groups?
 - c. What is their level of education?
 - d. Under which age-group brackets can they be classified?
- ii. What are the underlying influences that cause South Africans to subscribe to mobile banking?
 - a. Could it be because mobile banking applications are convenient?
 - b. Do mobile banking services provide better security than internet banking?
 - c. Could it be that downloading and subscribing to mobile banking applications is simply 'cool'?

1.6. Research Scope

This study is based on South Africa's big four retail banks (namely ABSA, FNB, Standard Bank and Nedbank), because they have the greatest market share of South Africa's banking clients (van der Merwe, 2010).

1.7. Research Outline

Figure 1.7 illustrates the study's outline.

Figure 1.7. The Outline

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Chapter 1	<i>Introduction</i>
Part 2: Literature & Frameworks	
Chapter 2	<i>Literature Review & Derived Frameworks</i>
Part 3: Designing the Research	
Chapter 3	<i>Research Methodology</i>
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Appendix D	<i>Hypotheses Testing</i>

1.8. Chapter Summary

There have been continued mobile device technological inventions. Successful organisations are able to take advantage of the growing mobile device technological inventions, and leverage these advancements into innovative, value-added services. Mobile banking is one such value-added service that has been implemented by several financial organisations. Surprisingly, mobile banking has gained popularity with bank clients around the world, including South Africa. Thus, the popularity and growing subscriptions to mobile banking raises questions about the influence of demographic factors on perceptions of mobile banking. This study will undertake research that will examine the influence of demographic factors on perceptions of mobile banking in South Africa.

Part 2

Literature Review & Derived Frameworks

CHAPTER TWO

This chapter reviews current scholarly views on research concepts such as demographic factors, mobile banking, and information privacy. The chapter also proposes a theoretical framework and then derives a conceptual framework.

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2. LITERATURE REVIEW

This chapter reviews current scholarly views on concepts such as demographic factors of South Africa, mobile banking, mobile banking security, and information privacy. The chapter commences with a definition of demographics and provides an overview of South African demographics. Mobile banking, its channels, security, and a South African mobile banking context is also discussed. An overview of information privacy is also given. The chapter concludes by deriving theoretical and conceptual models as well as chapter summary.

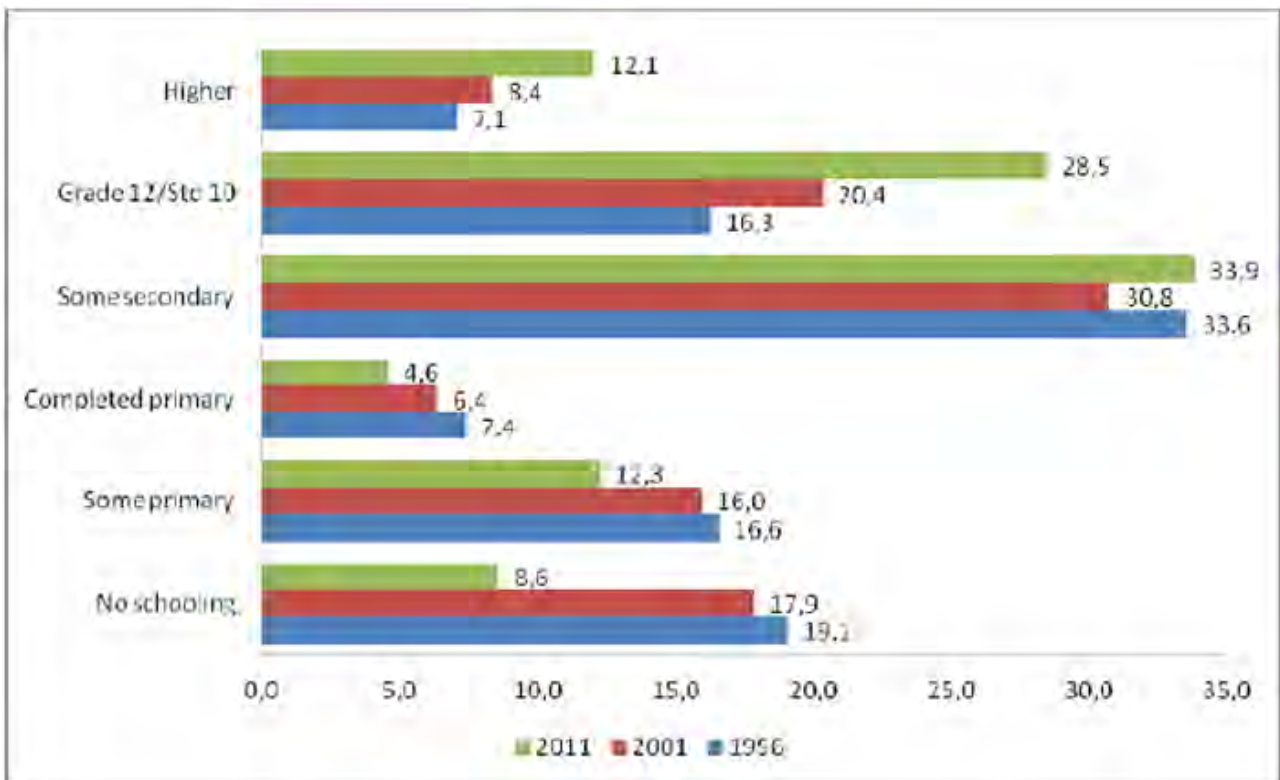
2.1. Demographic Factors of South Africa

This section further clarifies some of the study's concepts that were derived in the previous chapter. Thus, the aim is to get a detailed understanding of demographics and demographics of South Africa. Demographics refer to the grouping of populations by different characteristics such as gender, age, and race (Investor Glossary, [2013]). On the other hand the definition of demographic factors (also referred to as demographic variables) is closely related to that of demographics in such that the characteristics mentioned in the preceding definition can be considered as examples of demographic factors. This deduction is based on Maduku's (2011: 67) definition of demographic variables as comprising of age, gender, income, and level of education. Similarly, for Business Dictionary ([2013]), demographic factors pertains to population's socioeconomic characteristics that includes sex, age, income level, education level, religion, occupation, marital status, and size of household.

According to the Census conducted in 2011, South Africa has a population of 51.77 million. It is divided into several population groups of Black Africans, Coloured, White, Indian/Asians and "Other" (SAInfo, 2012). South Africa is also separated into 9 provinces namely Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West, and Western Cape. The Gauteng and KwaZulu-Natal provinces contribute 42% of South Africa's population (ibid).

Although the difference in number of South African males versus females is not that very significant compared to previous Censuses, there are still more females than males (Statistics South Africa, 2012: 9). There has been an increase in number of South African obtaining a higher level of education (ibid: 11). (Higher level of education comprises of certificates, diplomas, degrees, and post-graduate qualifications) (ibid). Figure 3.5 shows the level of education by South Africans of age 20 or more.

Figure 2.1 Level of Education



This section has provided insight on what concepts such as demographics and demographic factors entail. It also covered demographics of South Africa by looking at South Africa's latest census data (Census 2011). Popular demographic factors that scholarly and South Africa's Census covers are as follows:

- Gender
- Age
- Level of education
- Race
- Size of Household
- Level of Income
- Religion
- Occupation
- Marital status

2.2. Overview of Mobile Banking and Related Concepts

Yoo et al (2008: 120) define mobile banking as a coalescence of mobile technology and financial services, which surfaced after the dawn of the portable internet and smart-chip-embedded handsets. The mobility-specific services (which are an integral part of mobile technology) enable subscribers to access their bank accounts and transfer funds anytime and anywhere, via their handheld communication devices such as mobile phones (PDAs) (Muir, 2006: 5). Furthermore, mobile banking provide subscribers with services such as applying for loans and credit cards, account balance enquiries, managing financial accounts, dealing in stocks and shares, and using modelling tools for savings and borrowings (Elliot & Phillips, 2004: 328).

Requirements for mobile banking are that subscribers should be in possession of a mobile device on at least Code Division Multiple Access (CDMA) or General Packet Radio Service (GPRS) protocols, as well as an active bank account. Consequently, more and more banking customers opt for a mobile banking service. This rapid growth in the subscription to mobile banking services derives from the fact that, statistically, more people own mobile phones than fixed-line telephones (Deans, 2005: 97). Mobile banking encompasses various mobile media channels, such as SMS banking, Mobile Web, and Mobile banking client applications (MMA, 2009: 1). These channels to mobile banking are discussed in the following sub-section.

2.2.1. Mobile Banking Channels

Mobile Web is defined as the ability to visit a bank's banking website using an IP-enabled mobile device. The Wireless Application Protocol (WAP) is an open standard that is used to enable internet access from mobile devices (MMA, 2009: 3). The advantage of conducting mobile banking via mobile web, is that processing occurs on the bank's remote servers - thereby reducing the amount of data stored on the user's mobile device (Punithavathi & Duraiswamy, 2011: 496).

SMS Banking is based on Global System for Mobile Communications (GSM), and allows subscribers to receive and request banking information on their mobile devices via the Short Message Service (SMS) (Peevers et al, 2008: 114; Adagunodo et al, 2007: 227). Mobile banking client applications are downloadable agent-based technology applications that are stored and installed into a user's mobile device (MMA, 2009: 4). The benefits of downloading and installing mobile banking applications include access to online banking services, highly secure encryption and authentication of subscriber's sensitive data, and the ability to customise the application interface according to preferences (MMA, 2009: 4).

2.2.2. Mobile Banking in South Africa

Similar to the preceding discussion on demographics, it is important that mobile banking into South Africa context is discussed as this study focuses on South Africa. The main requirement for subscribing to mobile banking services across South Africa's four retail banks is that subscribers should be active account holders within a given bank. Typical mobile banking services include balance inquiry, viewing statements, transfers of money between accounts, making payments to beneficiaries, and purchases of pre-paid airtime and electricity (Nedbank, [2012]; Standard Bank, [2012]; ABSA, [2012]; FNB, [2012]).

The big four South African banks (Nedbank, ABSA, FNB, Standard Bank) use General Packet Radio Service protocol (GPRS), the Short Message Service protocol (SMS), and Unstructured Supplementary Service Data (USSD), to make mobile banking services accessible to banking clients (Chikomo et al, 2006: 1). The SMS and USSD rely on Wireless Internet Gateway (WIG). The SMS Banking, which is based on Global System for Mobile Communications (GSM), allows subscribers to receive and request banking information on their mobile devices using the text-layout of the SMS platform (Peevers et al, 2008: 114; Adagunodo et al, 2007: 227).

The big four banks of South Africa also have a .mobi website that can be accessed by subscribers via mobile web. The following are .mobi website addresses for South Africa's big four banks (Nedbank, [2012]; Standard Bank, [2012]; ABSA, [2012]; FNB, [2012]):

- <http://www.fnb.mobi/>
- <http://nedbank.mobi/>
- <http://absa.mobi/>
- <http://standardbank.mobi/>

A .mobi is top-level domain that is issued by an organisation called Mobile Top-Level (mTLD) (Cremin et al, 2007: 7; Mobile Website Designer, [2012]). A .mobi website is a website lightweight version that renders an easily viewable content via mobile devices (Network Solutions, [2012]).

FNB became the first bank out of the big four to introduce a mobile banking application in South Africa (Alfreds, 2011). The app allows subscribers to, amongst other things, make financial transfers and payments, locate FNB's ATMS, buy prepaid products, and view foreign exchange rates (FNB App, [2012]). Just over a year after launching the application, FNB reported over 4 billion transactions being completed via its mobile banking application (Staff Writer, 2012).

2.3. Mobile Banking Security

The prevalent challenge to mobile banking is the ability to guarantee fully-functioning mobile banking services, whilst ensuring maximum security for subscribers (Punithavathi & Duraiswamy, 2011: 497). According to Kipper (2007: 3), mobile technological environments such as mobile banking can subject themselves to security risks, for several reasons. Firstly, security risks can be incurred by mobile technology, because wireless networks are often shared and mainly unrestrained.

Secondly, mobile devices are transient in their positioning. In other words, mobile devices are not lastingly positioned in one fixed location, and tied to fixed physical infrastructure. This then contributes to the difficulties of detecting and locating suspicious activity within a given network. Another reason for security risks, given by Kipper (2007: *ibid*), is the ease of use. In other words, the convenience of using and connecting to the mobile environment creates familiarity with the way that one utilises the network. Therefore, familiarity can promote user indifference, which in turn may expose the user to all kinds of risks (*ibid*).

Similarly to other technological inventions, mobile banking has been susceptible to security threats and attacks (Deans, 2005: 74). These mobile banking threats and attacks are discussed in the following sub-sections.

2.3.1. Threats

Three categories of threats exist in mobile banking channels, namely disclosure threats, integrity threats, and denial-of-service threats. Disclosure threats or violations of confidentiality occur when the message or information considered to be private is disclosed to a third party (Elliot & Phillips, 2004: 416). Disclosure threats are further divided into eavesdropping, masquerading, traffic analysis, browsing, leakage, and inference (*ibid*).

Integrity threats occur when the contents of a report, communication or message are copied, manipulated or altered by an interloper (*ibid*, 417). The third and final type of threat to mobile devices is denial-of-service. Denial-of-service is established when right of entry to a base station or access point is deemed unfeasible by a hostile (possibly, intruder's) terminal, overloading it with calls (*ibid*, 417).

2.3.2. Mobile Device Attacks

There are numerous techniques and ways of attacking mobile device. These include, stealing or duplicating data from the mobile device, stuffing malevolent code (e.g. Trojans, worms, and logic bombs) onto the device, or sabotaging key applications or files on the device (Kipper, 2007: 23-24). Another mobile device attack is termed SIM cloning. The SIM (Subscriber Identity Module) is a smart card that contains “subscriber-related information including the Personal Identity Number (PIN) and PIN Unblocking Key (PUK) codes” (Lin, 145). SIM cloning involves duplicating a subscriber’s SIM card, which then gets used by the criminals masquerading as the original SIM-card owner (Gonzales, 2010; Kipper, 2007:28).

Midnight Raid Attack is another form of mobile device attack that is usually run when the targeted victim is asleep - hence, the name “Midnight” Raid Attack. Essentially, this type of attack functions by sending a text message to a mobile device during the night (assuming the victim is asleep), that will immediately launch a web browser and redirect the targeted mobile device to a malicious website. The malicious website is then used to download executable malicious files onto the mobile device that will copy and steal data from the device (Mills, 2009).

The dynamic and evolving nature of technology in general, and mobile technology in particular, has allowed mobile device hackers and intruders to become more sophisticated in the way that they attack mobile devices and their environment. The recent growing trend to mobile device attack, derives from the use of malicious software, particularly in the form of botnets (Lee, 2010).

2.3.2.1. Mobile Device Botnet

The word ‘botnet’ originates from ‘robot’ and ‘network’ (Kayne, 2011). A botnet is used to describe an environment where machines (i.e. computers and mobile devices) are contaminated with remote-controlled software that can be executed and controlled by an intruder or hacker at a remote location (ibid). Similarly, Puri (2003: 4) argues that hackers can turn a victim’s computer into a botnet by simply remote-installing malicious software.

With regard to mobile environments, botnets can be utilised to perpetrate numerous crimes. For example, botnets can be used to steal user information and a user’s phone contacts, and then store it on a web server. Botnets can also hijack a user’s mobile device and send bulk spam text messages to a victim’s phone contact numbers. Malicious botnets include the Symbian operating system-based malware, titled SYMBOS_YXES.B (Muravitskaya, 2009).

Symbian is an open source operating system that was initially developed by Nokia, and is largely accessible to mobile devices (Mokhonoana & Olivier, 2007: 1; de Jode, 2004: xxiv). Some of the botnet code is embedded in Short Message Service (SMS) messages that are sent to the victim's mobile device, particularly with a sexual connotation. "Sexy View", "Sexy Space" and "Sexy Girl" are all aliases for a botnet called SymbOS.Exy.C (Asrar, 2009). The SMS messages sent to the victim's mobile device contain web address links to sites that have harmful executable files (Thomson, 2010).

The attack on mobile devices is not only aimed at open source operating systems such as Symbian; hackers have also embarked on a mission to attack Google's Android mobile operating system. The botnet titled "Geinimi" currently targets Android users of Chinese-speaking users (Kirk, 2010). Usually the Geinimi is embedded in paid and free game-applications for Android users. Once the game is downloaded onto the mobile device, the malware copies and sends the device's SIM data and International Mobile Equipment Identity (IMEI) number to the hacker's remote server (Kirk, 2010).

Zeus is financial malware that targets smartphone holders, and the botnet aims to steal bank secret access codes via SMS (Shanmuga, 2010). Zeus functions by tricking the victim into responding to SMS messages by launching a website (via mobile device) that supposedly contains the latest security certificate, but instead is infected with malicious applications, including Zeus (Shanmuga, 2009; Greene, 2010). The website then installs the Zeus botnet on the user's device. Once installed, the botnet intercepts text messages sent by the bank to the victim's mobile device while the victim is logged on to the internet or cellphone banking, and sends the acquired victim's bank access codes to the intruder's remote server (Greene, 2010).

2.4. Introduction to Information Privacy

In today's socially connected world, privacy continues to be highly significant with regard to individuals' freedom and democracy (Solovo et al, 2006: 2). The aforementioned threats and challenges to the success of mobile banking are largely attributed to the way mobile banking handles the issue of information privacy.

In 1986, Richard Mason presented a paper in which he posited, amongst other things, that the main threats to privacy were the continued innovation of information (Freeman & Peace, 2005: 3). The complex and controversial information privacy-related debates still feature in newsrooms, as multinational corporates seek ways to reassure communities about effective ways to secure personal information.

The privacy debates have evolved from being a social issue to a more political debate (ibid: 135). As a result, governments around the world continue to formulate policies and legislation that deal with people's information privacy (ibid). As the role of information technology spreads into every facet of life, information privacy continues to be a contested topic (Cate, 1997: 1).

Information privacy relates to the disclosure and use of personal information, and is defined as the right of institutions, groups, or individuals, to decide on the extent of disclosing their personal information (Solovo et al, 2006: 1; Cate, 1997: 22). The leading privacy concerns emanate from the storage of clients' financial information and patients' medical information (Szewczak & Snodgrass, 2002: 140). For the purposes of this study, privacy in financial information is of most concern. According to Barman (2002: 151), organisations (i.e. financial institutions) should overtly inform consumers as to why personal information is collected and utilised. It should therefore be up to the consumer to grant permission for organisations to share their personal information with third parties, or for marketing purposes.

Many countries have established regulatory bodies that oversee the functioning of financial institutions. For example, in the United States, the Financial Services Modernization Act (FSMA) forbids financial institutions from sharing clients' private personal information to non-affiliated third party organisations, unless permission is granted by the client (Shaw, 2001: 51). In South Africa, the banking institutions abide by the stipulated codes of banking practice, which are administered by the banking ombudsman. As part of the codes of banking practice, the bank assures the client of keeping the client's information confidential and private, regardless of whether the client still banks with the given bank or not (OBSSA, [2012]: 8).

2.5. Theoretical Orientation

The preceding sections have portrayed mobile banking security as complex and volatile. Although financial institutions have laws that prevent them from disclosing clients' personal information, the literature review section on mobile security concluded that there are prevalent security risks factors that continue to impact the functionality (and subsequently, market adoption) of mobile technological inventions. This section therefore provides a theoretical lens for explaining underlying concepts in the literature review. One such theoretical lens is the use of the Privacy Calculus Model (PCM).

The PCM is a framework that can be used for understanding matters of information privacy and disclosure threats. In information systems, the PCM posits that consumers' (i.e. subscribers to mobile or internet commerce services) constantly engage in an information privacy decision process (or in short, calculus), wherein they compare the perceived risks against the perceived benefits of disclosing personal information online (Xu et al, 2011: 43; Dinev et al, 2008: 216; Kim & Lee, 2009: 183).

In other words, people are inclined to consent or sign-up for a technological invention whenever the perceived benefits outweigh the perceived privacy risk (Bansal et al, 2010: 141).

Another related concept to the PCM is the Technology Acceptance Model (TAM). While the PCM attempts to share insight on the psyche of a potential subscriber, TAM provides insight on external factors that largely influence the potential subscriber's decision on whether or not to disclose personal information online (Park, 2009: 151). TAM identifies Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) as prominent influencers to the adoption of technological inventions (Legris et al, 2003: 192; Pai & Huang, 2011: 652; Turner et al, 2010: 462).

PEOU refers to the amount of effort required from the subscriber's side to utilise a system or service. The less the effort, the higher the PEOU levels, and thus the likelihood that the subscriber will perceive the proposed technological product as beneficial. This in turn will influence the consumer's privacy calculus process towards that specific technology or service (Venkatesh, 2000: 344). PU refers to whether or not a potential subscriber believes that utilising the technology (mobile banking) will increase his or her own productivity. Similarly, the higher the belief that the technology will improve productivity, the greater the PU, which in turn increases the chances that the subscriber will be willing to risk disclosure of private information as a trade-off to using the technology (ibid).

PU and PEOU, however, are not the only determinants of privacy calculus. For Bijker et al (1987: 30) there are social factors that define the meaning and usefulness of technological innovation in a given context. For example, while business individuals can have a positive PU and PEOU towards the buying and use of Apple's *iPad* device (i.e., [2012]), university students can in turn decide to purchase the device because a role model has one, or because it seems 'cool' to own one. Thus, in order to determine the influences on adopting a technological solution, an understanding of the social construction of technology (SCOT) is necessary (Nessiaprincess, 2009). SCOT is defined by four components, namely interpretive flexibility, closure and stabilisation, wider context, and relevant social groups. Component, relevant social groups, is of utmost concern in this study.

SCOT argues that every technological innovation should aim to appeal to relevant social groups. With SCOT, relevant social groups are responsible for shaping technological artefacts through social interactions that highlight their technological needs (Olsen & Engen, 2007: 458; Forlano, [2012]; Klein & Kleinman, 2002: 29 - 30). Hence, for the proponents of SCOT, it is humans that shape technology, rather than the other way around. In the banking community, relevant social groups would be banking clients. It is important, therefore, that banks' technological artefacts such as mobile banking services, are aligned with the needs of the relevant social groups.

This section has covered the theoretical standpoint of the study. The PCM has been chosen for the study because it helps to evaluate people’s perceptions towards something and how they undertake a calculus to evaluate risk/benefits to taking up something. Thus, the PCM can assist in gaining understanding of how South Africa perceives mobile banking. In addition to PCM, SCOT and TAM theories were used as part of this study’s theoretical lens. This is because in trying to understand the perceptions of mobile banking (as indicated in the problem statement), TAM theory can assist in what drives people (i.e. South Africans) to adopting a proposed technological invention (i.e. mobile banking). The inclusion of SCOT is because since it was found that South Africa is a diverse “rainbow” country, there could be group opinion leaders (i.e. relevant social groups) that influence their societies in subscribing to a new technological invention. Thus, while the study uses PCM, TAM and SCOT are still relevant theories to understanding South Africa’s perceptions of mobile banking.

Figure 2.5 Theoretical Model

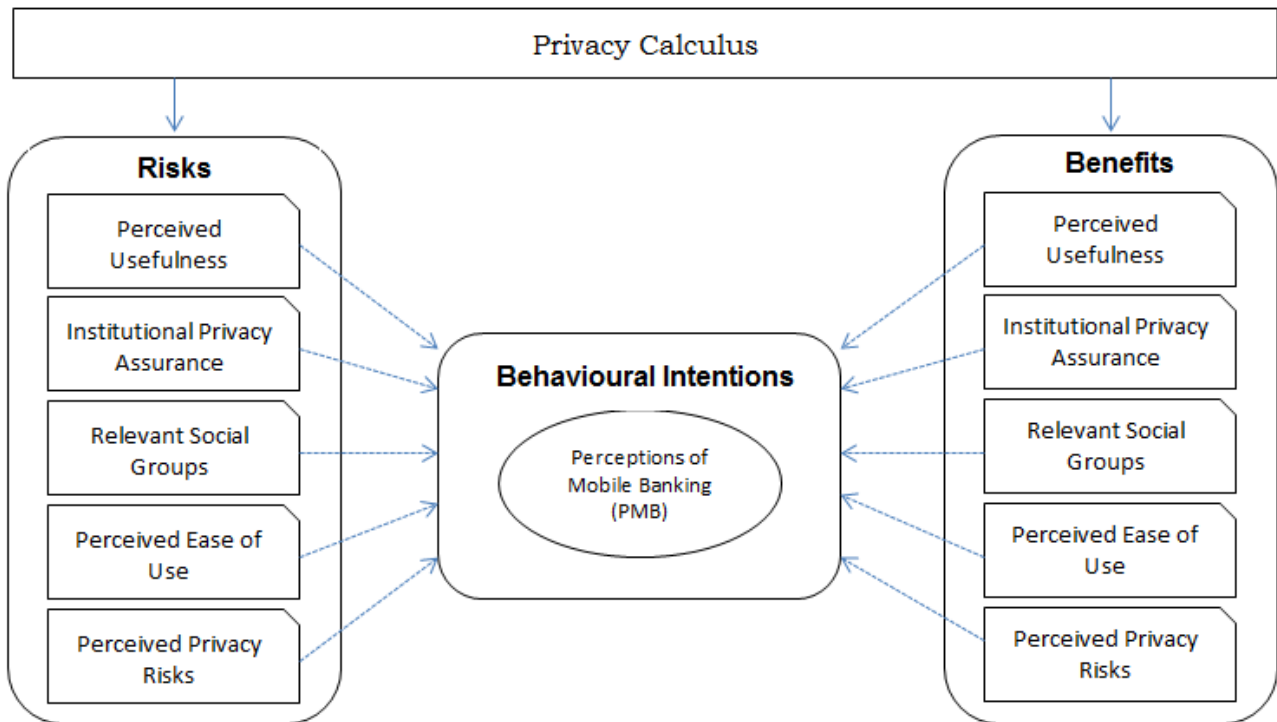


Figure 2.5 is based on the theoretical orientation discussed in the preceding sections. It graphically illustrates that a privacy calculus for perceiving mobile banking would potentially involve weighing the perceived benefits (i.e. mobile banking is fully functional and easy to use) against potential risks (i.e. mobile banking is not fully functional not is it easy to use). Furthermore, the theoretical model is has six main constructs, namely:

- i. Perceptions of Mobile Banking (PMB)
- ii. Perceived Ease of Use (PEOU)
- iii. Perceived Usefulness (PU)

- iv. Relevant Social Groups (RSG)
- v. Institutional Privacy Assurance (IPA)
- vi. Perceived Privacy Risks (PPR)

The theoretical model also shows that Risks and Benefits are measured using all preceding constructs except for PMB whereas the study's Behavioral Intentions is through PMB.

2.6. Conceptual Modelling

The theoretical model alluded to the existence of an environment whereby a calculated decision-making process exists wherein decisions undertaken are influenced by a causal relationship between perceived benefits and perceived risks. The aim of this section is to formulate this study's conceptual model, which will largely be derived from underlying constructs of theoretical model. The conceptual model uses similar constructs as the ones identified in the preceding theoretical model section. Based on the study's problem statement, the dependent variable that requires testing is:

- i. Perceptions of mobile banking (PMB).

The independent variables that will be used to test the aforementioned dependent variable have been derived and adopted from theoretical model as follows:

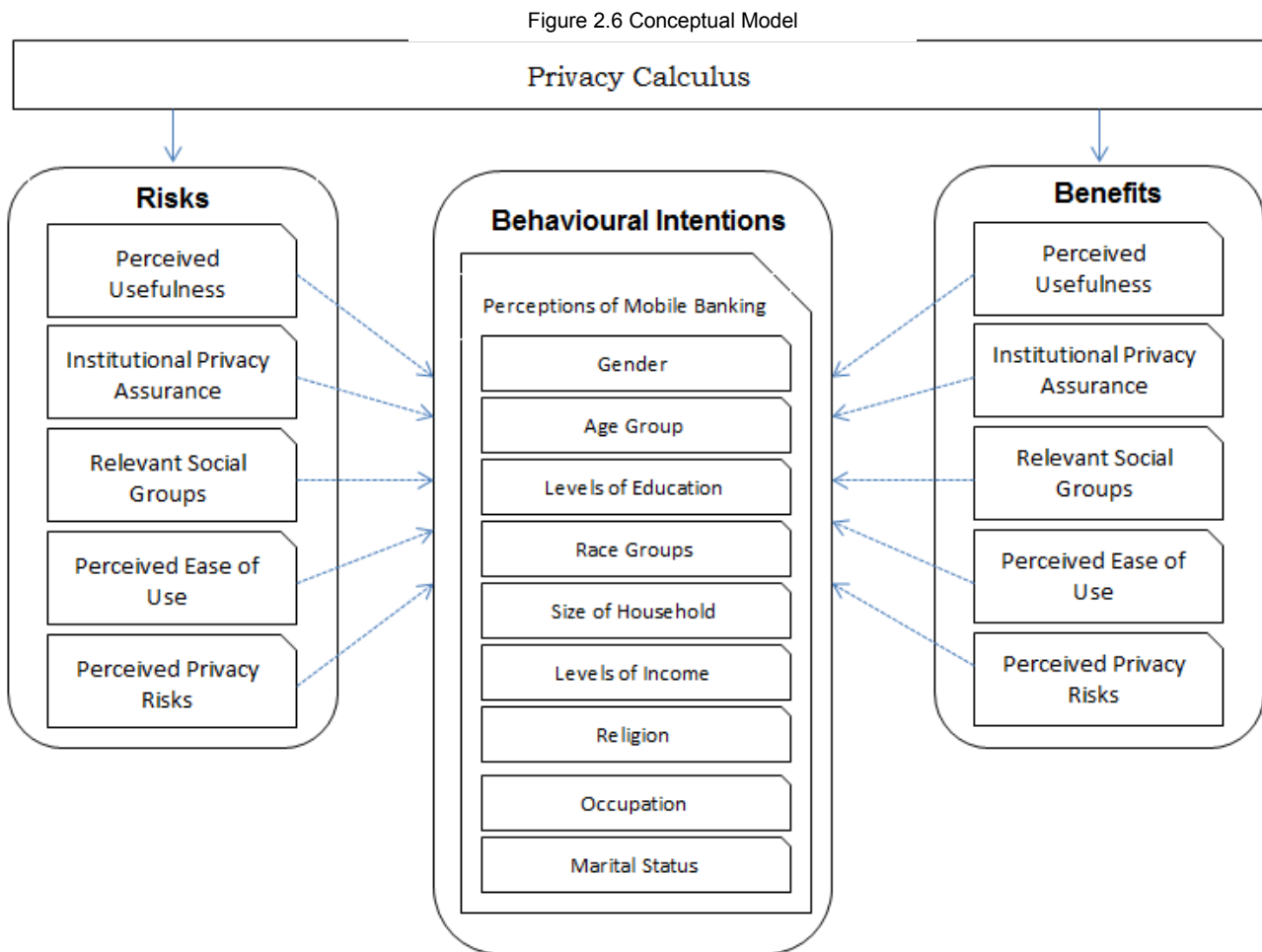
- i. Perceived Ease of Use (PEOU)
- ii. Perceived Usefulness (PU)
- iii. Relevant Social Groups (RSG)
- iv. Institutional Privacy Assurance (IPA)
- v. Perceived Privacy Risks (PPR)

Accordingly, the problem statement, which is the basis for this entire research, alluded to the demographic factors and their influence on perceptions of mobile banking. Thus, the aforementioned dependent variable will be in conjunction with popular demographic factors that were identified in the preceding literature review. Thus the dependent variable will then be subdivided into the following:

- i. Perceptions of Mobile Banking by Gender
- ii. Perceptions of Mobile Banking by Age Groups
- iii. Perceptions of Mobile Banking by Levels of Education Groups
- iv. Perceptions of Mobile Banking by Race Groups

- v. Perceptions of Mobile Banking by Size of Household
- vi. Perceptions of Mobile Banking by Level of Income Groups
- vii. Perceptions of Mobile Banking by Religion Groups
- viii. Perceptions of Mobile Banking by Occupation Groups
- ix. Perceptions of Mobile Banking by Marital status Groups

Figure 2.6 shows the study's derived conceptual model.



2.6.1. The Hypotheses

The preceding section has covered the lists of independent and dependent variables that will be part of this study. In this section, research hypotheses will be formulated using independent and dependent variables that were derived in the preceding section. The point of departure in this section is to revise the research objective by replacing the words of “demographic factors” with popular demographic factors that were uncovered in the literature section. Thus, the derived research objective will be as follows:

- 1) To examine the influence of Gender on perceptions of mobile banking.

- 2) To examine the influence of Age Groups on perceptions of mobile banking.
- 3) To examine the influence of Levels of Education Groups on perceptions of mobile banking.
- 4) To examine the influence of Race Groups on perceptions of mobile banking.
- 5) To examine the influence of Size of Household Groups on perceptions of mobile banking.
- 6) To examine the influence of Level of Income Groups on perceptions of mobile banking.
- 7) To examine the influence of Religion Groups on perceptions of mobile banking.
- 8) To examine the influence of Occupation Groups on perceptions of mobile banking.
- 9) To examine the influence of Marital status Groups on perceptions of mobile banking.

The next part is to formulate hypotheses per derived research objective. According to the theoretical model covered in preceding sections, a potential mobile banking subscriber habitually evaluates the benefits (i.e. positives) versus risks (i.e. negatives) of a proposed technological artefact (i.e. mobile banking application), therefore alternate (H_1) and null hypotheses (H_0) are formulated as follows:

- Influence of Gender on Perceptions of Mobile Banking
 - H_0 : Mobile banking's PEOU is perceived negatively across gender
 - H_1 : Mobile banking's PEOU is perceived positively across gender
 - H_0 : Mobile banking's PU is perceived negatively across gender
 - H_1 : Mobile banking's PU is perceived positively across gender
 - H_0 : Mobile banking's RSG is perceived negatively across gender
 - H_1 : Mobile banking's RSG is perceived positively across gender
 - H_0 : Mobile banking's IPA is perceived negatively across gender
 - H_1 : Mobile banking's IPA is perceived positively across gender
 - H_0 : Mobile banking's PPR is perceived negatively across gender
 - H_1 : Mobile banking's PPR is perceived positively across gender

- Influence of Age Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's PEOU is perceived negatively across age groups
 - H_1 : Mobile banking's PEOU is perceived positively across age groups
 - H_0 : Mobile banking's PU is perceived negatively across age groups
 - H_1 : Mobile banking's PU is perceived positively across age groups
 - H_0 : Mobile banking's RSG is perceived negatively across age groups
 - H_1 : Mobile banking's RSG is perceived positively across age groups
 - H_0 : Mobile banking's IPA is perceived negatively across age groups
 - H_1 : Mobile banking's IPA is perceived positively across age groups
 - H_0 : Mobile banking's PPR is perceived negatively across age groups

- **H₁**: Mobile banking's PPR is perceived positively across age groups
- Influence of Size of Household Groups on Perceptions of Mobile Banking
 - **H₀**: Mobile banking's PEOU is perceived negatively across sizes of household groups
 - **H₁**: Mobile banking's PEOU is perceived positively across sizes of household groups
 - **H₀**: Mobile banking's PU is perceived negatively across sizes of household groups
 - **H₁**: Mobile banking's PU is perceived positively across sizes of household groups
 - **H₀**: Mobile banking's RSG is perceived negatively across sizes of household groups
 - **H₁**: Mobile banking's RSG is perceived positively across sizes of household groups
 - **H₀**: Mobile banking's IPA is perceived negatively across sizes of household groups
 - **H₁**: Mobile banking's IPA is perceived positively across sizes of household groups
 - **H₀**: Mobile banking's PPR is perceived negatively across sizes of household groups
 - **H₁**: Mobile banking's PPR is perceived positively across sizes of household groups
- Influence of Level of Education Groups on Perceptions of Mobile Banking
 - **H₀**: Mobile banking's PEOU is perceived negatively across levels of education groups
 - **H₁**: Mobile banking's PEOU is perceived positively across levels of education groups
 - **H₀**: Mobile banking's PU is perceived negatively across levels of education groups
 - **H₁**: Mobile banking's PU is perceived positively across levels of education groups
 - **H₀**: Mobile banking's RSG is perceived negatively across levels of education groups
 - **H₁**: Mobile banking's RSG is perceived positively across levels of education groups
 - **H₀**: Mobile banking's IPA is perceived negatively across levels of education groups
 - **H₁**: Mobile banking's IPA is perceived positively across levels of education groups
 - **H₀**: Mobile banking's PPR is perceived negatively across levels of education groups
 - **H₁**: Mobile banking's PPR is perceived positively across levels of education groups
- Influence of Race Groups on Perceptions of Mobile Banking
 - **H₀**: Mobile banking's PEOU is perceived negatively across race groups
 - **H₁**: Mobile banking's PEOU is perceived positively across race groups
 - **H₀**: Mobile banking's PU is perceived negatively across race groups
 - **H₁**: Mobile banking's PU is perceived positively across race groups
 - **H₀**: Mobile banking's RSG is perceived negatively across race groups
 - **H₁**: Mobile banking's RSG is perceived positively across race groups
 - **H₀**: Mobile banking's IPA is perceived negatively across race groups
 - **H₁**: Mobile banking's IPA is perceived positively across race groups
 - **H₀**: Mobile banking's PPR is perceived negatively across race groups

- **H₁**: Mobile banking's PPR is perceived positively across race groups

- Influence of Level of Income Groups on Perceptions of Mobile Banking
 - **H₀**: Mobile banking's PEOU is perceived negatively across level of income groups
 - **H₁**: Mobile banking's PEOU is perceived positively across level of income groups
 - **H₀**: Mobile banking's PU is perceived negatively across level of income groups
 - **H₁**: Mobile banking's PU is perceived positively across level of income groups
 - **H₀**: Mobile banking's RSG is perceived negatively across level of income groups
 - **H₁**: Mobile banking's RSG is perceived positively across level of income groups
 - **H₀**: Mobile banking's IPA is perceived negatively across level of income groups
 - **H₁**: Mobile banking's IPA is perceived positively across level of income groups
 - **H₀**: Mobile banking's PPR is perceived negatively across level of income groups
 - **H₁**: Mobile banking's PPR is perceived positively across level of income groups

- Influence of Religion Groups on Perceptions of Mobile Banking
 - **H₀**: Mobile banking's PEOU is perceived negatively across religion groups
 - **H₁**: Mobile banking's PEOU is perceived positively across religion groups
 - **H₀**: Mobile banking's PU is perceived negatively across religion groups
 - **H₁**: Mobile banking's PU is perceived positively across religion groups
 - **H₀**: Mobile banking's RSG is perceived negatively across religion groups
 - **H₁**: Mobile banking's RSG is perceived positively across religion groups
 - **H₀**: Mobile banking's IPA is perceived negatively across religion groups
 - **H₁**: Mobile banking's IPA is perceived positively across religion groups
 - **H₀**: Mobile banking's PPR is perceived negatively across religion groups
 - **H₁**: Mobile banking's PPR is perceived positively across religion groups

- Influence of Occupation Groups on Perceptions of Mobile Banking
 - **H₀**: Mobile banking's PEOU is perceived negatively across occupation groups
 - **H₁**: Mobile banking's PEOU is perceived positively across occupation groups
 - **H₀**: Mobile banking's PU is perceived negatively across occupation groups
 - **H₁**: Mobile banking's PU is perceived positively across occupation groups
 - **H₀**: Mobile banking's RSG is perceived negatively across occupation groups
 - **H₁**: Mobile banking's RSG is perceived positively across occupation groups
 - **H₀**: Mobile banking's IPA is perceived negatively across occupation groups
 - **H₁**: Mobile banking's IPA is perceived positively across occupation groups
 - **H₀**: Mobile banking's PPR is perceived negatively across occupation groups

- **H₁**: Mobile banking's PPR is perceived positively across occupation groups
- Influence of Marital status Groups on Perceptions of Mobile Banking
 - **H₀**: Mobile banking's PEOU is perceived negatively across marital status groups
 - **H₁**: Mobile banking's PEOU is perceived positively across marital status groups
 - **H₀**: Mobile banking's PU is perceived negatively across marital status groups
 - **H₁**: Mobile banking's PU is perceived positively across marital status groups
 - **H₀**: Mobile banking's RSG is perceived negatively across marital status groups
 - **H₁**: Mobile banking's RSG is perceived positively across marital status groups
 - **H₀**: Mobile banking's IPA is perceived negatively across marital status groups
 - **H₁**: Mobile banking's IPA is perceived positively across marital status groups
 - **H₀**: Mobile banking's PPR is perceived negatively across marital status groups
 - **H₁**: Mobile banking's PPR is perceived positively across marital status groups

2.7. Chapter Summary

Undoubtedly, the banking industry around the globe is constantly being shaped by the dynamic nature of technological artefacts. While the banking sector continues to market and attract more subscribers to its mobile banking initiatives, the issue of security is still essential and a key determinant to the adoption and use of mobile banking services. There has been growing sophistication within the hacking community, in terms of infiltrating and targeting mobile technological inventions. Evidently, there are numerous types of security threats and attacks directed at mobile banking channels. While some of these security threats and attacks can be considered trivial, most have malicious intent.

The Privacy Calculus Model (PCM) was adopted to explain a decision-making process of a potential technology service subscriber. It posits that the potential subscriber is likely to risk disclosure of personal information, provided the perceived benefits of a given product or service outweigh the perceived privacy risks. Technology's perceived ease of use, perceived usefulness, institutional privacy assurance, and relevant social groups, were identified as being influential in perceptions of mobile banking.

This chapter applied the concepts of a Privacy Calculus Model in terms of explaining the privacy concerns of a potential consumer. There was also the formulation of a conceptual framework that comprises a dependent construct such as willingness to subscribe, and independent variables in the form of Perceived Privacy Risks, Institutional Privacy Assurance, Relevant Social Groups, Perceived Ease of Use, and Perceived Usefulness. The theoretical model and conceptual model were formulated based on literature review.

Part 3

Designing the Research

CHAPTER THREE

This chapter provides a structural framework and further defines the research design.

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3. RESEARCH METHODOLOGY: THE STRUCTURAL FRAMEWORK

According to Dawson (2006: 14), a research method is the general principle that will guide the research. There are two types of research methods: qualitative, and quantitative. Quantitative research methods seek answers to the “how much” and “how many” questions. Consequently, the findings of a quantitative research methodology are presented in an aggregated, summarised and statistical form (Britten, 2011: 385; Jacobs et al, 1999: 717-718). On the other hand, qualitative research is explanatory, and has strong emphasis on seeking to answer the “why”, “what” and “how” questions (ibid). For the purposes of this study, the research method will be quantitative. Such a method will assist in examining and quantifying the influence of demographic factors on perceptions of mobile banking.

There are different instrument used for carrying out a quantitative research. Questionnaires are one such instrument that can be used to facilitate a quantitative research. Questionnaires can be divided into self-administered or structured (Statkon, [2013]: 2). Self-administered questionnaires refer to questionnaires that are completed by respondents in their own time whereas in a structured questionnaire, the researcher completes the questionnaire based on respondent’s answers to the questionnaire. The greater advantage between two questionnaire types is that the self-administered one reduces a possibility of interviewer bias and completed at respondent’s convenient time (ibid).

A special attention should be given in formulating questions of a questionnaire. It is important that questions are linked to study’s research questions and objectives (ibid). Quantitative research questions are divided into three categories: descriptive, comparative and relationship (or causal). The purpose of using descriptive research questions is so to describe variables that are being measured. Typically descriptive research questions are phrased as “How much” or “What are” (Laerd, [2012]; Southalabama, [2012]; Suttle, 2011). The aim of comparative research questions is to investigate groups’ differences based on dependent variables, and they are normally phrased as “what is the difference between” (ibid; Laerd. [2012]).

The third research question type, relationship, aims to investigate groups’ associations or causal relationships between two or more variables. This question type is usually phrased as “What is the relationship” (ibid). This study mainly uses the last research question type to formulate quantitative research questions. This is because the study aims to examine the causal relationships between demographic factors against perceptions of mobile banking. Furthermore, biographical questions should be added in the beginning of a questionnaire and it should contain relevant questions that will contribute towards resolving research problem (Statkon, [2013]: 3, 15).

Additional guidelines to designing questions of a questionnaire is to organise questions into logical order, consult experts that are within a given field of study to review the newly designed questionnaire, adhere to ethical standards that includes respecting the rights of questionnaire respondents, and questionnaire must contain a cover letter that includes information such as who is conducting the study, reason for conducting the study, how long it will take to complete the questionnaire, and contact details of the person conducting the study (ibid: 15-16).

A sample research questionnaire that was designed for this study is provided in Appendix A and has been designed according to scholarly guidelines that have been discussed in preceding paragraphs. The questionnaire was designed in consultation with Statkon – which is a team of experts who are tasked with assisting postgraduate students of the University of Johannesburg with designing their research (UJ-Statkon, [2013]). The questionnaire is divided into sections A-D. Section A is used to capture the background information pertaining to the respondent, such as determining whether the respondent owns a cell phone or has been an account holder at a South African bank. Section B captures the biographical information of the respondent, such as age, gender, and race. Section C captures a respondent's perceptions towards mobile banking, while section D attempts to evaluate the extent of institutional privacy assurances as an influence on users' perceptions of mobile banking.

3.1. Data Sampling

Sampling is a way of identifying the unit of analysis (i.e. people, objects, or other elements) that can be used to conduct a research study (Burns & Grove, 2005: 341). For the purposes of this study, the sample comprises bank clients that belong to the big four South African banks, and are currently (or previously) subscribers to mobile banking. Sampling is further divided into probability and non-probability sampling methods. During non-probability sampling, not every member of a target population is chosen as part of the sample. On the contrary, probability sampling requires that every research element (target population member) has an equal opportunity of being chosen for study. For the purposes of this research, a non-probability sample method will be utilised.

Non-probability sampling is divided into reliance on available subjects, quota, purposive or judgemental, and snowball sampling (Babbie, 2011: 206). Reliance on available subjects sampling is also known as convenience sampling and it involves stopping people on the streets and collecting data (ibid). Quota sampling resolves the issue of sample representativeness by outlining characteristics of a target population (e.g. proportion of males against females, population age groups) (Adler & Clark, 2011: 124).

Purposive sampling is used when randomisation of a sample is not possible, and allows the researcher to choose the sample based on certain characteristics, and from which greater insight into the research study can be gained (Agarwal, 2005: 186). This study will use purposive sampling. Thus data will be collected from South Africans who have an active bank account, and who currently (or previously) use mobile banking services.

3.2. Data Collection: Techniques and Instruments

Data collection is a process of gathering information that will address a research problem (Anon - Ohio, [2012]: 16-17). It is a crucial aspect of a research study, as imprecise use of data collection methods can render the research findings invalid and unreliable (Anon – Data Collection Methods, [2012]). Although there are numerous ways of gathering data, whatever the method chosen, it should adequately and efficiently address the given research problem (Anon - Ohio, [2012]: 16).

Data can be collected from a primary or a secondary source. Secondary sources comprise magazines, journal articles, books, organisational records, and census data. Primary sources include conducting in-depth interviews, and using questionnaires and observations (Kumar, 2005: 118). Quantitative data collection methods include surveys, questionnaires, sampling, structured interviews, tracking and experiments (Anon – Data Collection Methods, [2012]).

For the purposes of this research, questionnaires were used as a quantitative data collection method. A sample research questionnaire that was designed for this study is provided in *Appendix A*.

3.3. Data Capturing

Data capturing involves capturing the research data collected, using computer programs (Rothman et al, 2008: 508). SPSS is one such computer program that is popular for facilitating data capturing and analysis (Brace et al, 2006: 2). This study will use SPSS for data capturing and analysis.

3.4. Data Analysis

The aim of this section is to produce a guideline that will be adopted when analysing research data. The discussion will commence by providing a definition of data analysis, specifically quantitative data analysis. Subsequent sections will then provide a theoretical understanding of concepts such as research reliability and validity, and the steps involved in ensuring that the research is reliable and valid.

Data analysis is a process that involves making sense of data (Wilkinson, 2000: 77), and should be confined within the constraints of a given research problem and objectives (Walliman, 2011: 209). Quantitative data analysis utilises syntax of mathematical processes to make sense of collected data (ibid: 210). Closely related to quantitative data analysis, is the concept of statistics which entails “a science of gathering and analysing numerical data” (ibid: 210). In statistics, parametric and non-parametric statistics can be distinguished (ibid: 211).

Non-parametric statistics employs ordinal scale to measure data (Foster, 1998: 7), and refrains from making assumptions regarding collected data or the population from which the observations are drawn (Dunn, 2010: 279). On the other hand, parametric statistics adopt an assumption that characteristics are valid of any population from which samples are drawn. Thus, the distribution of scores from which a sample is drawn should be normal (i.e. a bell-shaped normal frequency distribution) (ibid: 279). Ratio or interval scale of measurement is applicable when using parametric statistical tests (Foster, 1998: 7). This study will adhere to the requirements and procedures of a parametric statistics.

Parametric statistics are further classified into descriptive and referential (Walliman, 2011: 211-212; Wilkinson, 2000: 81). Descriptive analysis involves reducing data into conveniently understandable chunks (ibid: 84) by “quantifying the characteristics of data” (Walliman, 2011: 212). For example, the researcher may indicate the number of females versus males that participated in the research questionnaire. In addition to the descriptive analysis, is identifying and quantifying relationships amongst variables (ibid: 213). This can be simply established by measuring the correlation coefficient value. The SPSS software can be used to obtain a variable’s correlation coefficient and can further conduct quantitative data analysis (ibid: 211; Whitehead, 2008: 49).

Pearson’s Product Moment Correlation Coefficient and Spearman’s Rank Order Correlation Coefficient are the most popular indicators used to measure study’s correlation coefficient. In both techniques, the relationship between variables has positive or negative correlation if the coefficients’ values are positive or negative respectively (Wilkinson, 2000: 90). Subsequently, conducting descriptive analysis often provides background to the research, that easily leads to doing inferential analysis for further in-depth understanding of the data (ibid: 93).

Inferential analysis involves formulating predictions and testing research hypotheses based on data analysed (Walliman, 2011: 213; Wilkinson, 2000: 94). Statistical significance is a popular technique of inferential analysis, whereby probability of differences in for instance, males versus females, is evaluated to see whether it is representative or not (Wilkinson, 2000: 94).

This study will aim to satisfy both types of parametric testing, and will provide frequency reports and discussions based on descriptive parametric statistics, as well as formulating predictions and testing research hypotheses based on inferential parametric statistics.

3.4.1. Reliability and Validity Analysis

According to Foster (1998: 202), whenever data analysis is conducted, it is imperative that reliability and validity of the measurement instrument is evaluated. Thus, this section will provide theoretical understanding of the concepts “research reliability” and “research validity”.

3.4.1.1. Reliability Analysis

Reliability refers to the consistency of a research’s measurement instrument, such that similar responses are obtained whenever the instrument is employed at different occasions for the same population sample (De Vaus, 2002: 17).

There are various ways of assessing reliability of a scale, such as a test-retest, panel-of-judges, the parallel-forms, and the internal consistency methods (ibid: 18-19). The internal consistency method focuses on measuring the consistency at which respondents answer questions that relate to an underlying construct or scale. Thus, whenever respondents answer questions (of a specific concept) in a consistent manner, then the measurement instrument used to measure the given concept is deemed reliable. Furthermore, the internal consistency quantifies reliability through use of coefficient values that range between -1.00 and +1.00 (Dunn, 2010: 183).

The internal consistency method is further divided into average inter-item correlation, average inter-total correlation, split-half correlations, Cronbach’s alpha, and the Kuder-Richardson coefficient (De Vaus, 2002: 19-21). This study will utilise internal consistency’s Cronbach’s alpha method, to measure and evaluate the reliability of measurement instruments. According to Field (2005: 667), the Cronbach’s alpha is an average score based on calculating correlation coefficients of two sets of “loosely equivalent data”. The rules of Cronbach’s alpha further dictate that the measurement instrument can only be reliable with positive values of 0.7 or more (ibid: 668).

3.4.1.2. Validity Analysis

Validity on the other hand, refers to examining whether the research’s measurement instrument is actually measuring what it is supposed to measure (Kaplan & Saccuzzo, 2009: 135).

This means that it is possible that the instrument is reliable, but that it could be measuring different underlying concepts than the research's initial objectives. Thus, a valid measurement instrument is "one that truly measures the construct of interest" (Dunn, 2010: 433).

Similarly to research reliability, there are various aspects to validity such as criterion, convergent and discrimination, construct, and content validity (De Vaus, 2002: 27). For the purposes of this study, construct validity will be further scrutinised. Construct validity involves the estimation of the existence of inferred underlying characteristics (e.g. intelligence, love, and curiosity) based on behaviour (Gregory, 1996: 117). Such an inference is established by using a series of activities whereby the researcher concurrently defines a construct and further develops the measurement instrument for the given construct (Kaplan & Saccuzzo, 2009: 147).

Construct validation is often a lengthy process, because "no criterion or universe of content is accepted as completely sufficient in defining the construct to be measured" (Gregory, 1996: 119). In other words, as postulated by De Vaus (2002: 28), a construct becomes validated when relationships within items of measurement instrument, are established in line with theoretical understanding about the construct. One way of validating the construct, is by conducting factor analysis (Gregory, 1996: 123). Factor analysis is a data-reduction technique that deals with the identification of smaller set of dimensions (factors) to account for the interrelationships among a set of variables (Kaplan & Saccuzzo, 2009: 91; Gregory, 1996: 123). There are two types of factor analysis: exploratory and the confirmatory (Foster, 1998: 206).

For Gregory (1996: 291), confirmatory factor analysis is used to confirm (or validate) whether the "test scores and variables fit a specific pattern as predicted by the researcher's theoretical model". For example, the confirmatory factor analysis can be used to verify an underlying theory that specific variables belong to a specific construct (Gregory, 1996: 291). The exploratory factor analysis is used to identify the research's underlying constructs, that will then explain the inter-correlation matrix (Foster, 1998: 206). For the purposes of this study, factor analysis is used as part of research validation, and thus confirmatory factor analysis will be used.

Key to conducting factor analysis, is inducing a factor matrix table consisting of factor loadings. Factor loading depicts the correlation between an individual test against a single factor with a range between -1.00 and +1.00 (Gregory, 1996: 123). Thus, construct validity is then argued based on factorial loadings. In other words, in a factorial loadings table, if items that were intended to measure the Internet's Privacy Risk construct are loading highly on the Leadership Ability factor, then the construct (Privacy Risk) is invalid, as the measurement instrument is measuring something else.

A series of activities, however, are involved before concluding whether a construct is valid based on factor analysis. Pallant (2007: 180-183) provides an overview of guidelines that could be followed when conducting factor analysis, particularly when using the SPSS software. In summarising the guidelines, Pallant (ibid) argues that when factor analysis is conducted, the suitability of the research data should be assessed, factor extraction is necessary, and finally the factor rotation and interpretation is essential.

The assessment for suitability of the research data, involves looking at the sample size and evaluating the correlation matrix. For Pallant (2007: 181), the sample size should no less than 150, for data to be suitable for factor analysis. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity, can be used to examine variables' inter-correlation measurement. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is an index that indicates the proportion of calculated correlation coefficients, to the proportion of partial correlation coefficients - with a minimum index score of 0.60 as acceptable, 0.70 and above as good, 0.80 and above as commendable, and 0.90 and above as exceptional (Pett et al, 2003: 77).

Closely related to KMO is the concept of Bartlett's Test of Sphericity, which examines the null hypotheses that posits that there is no correlation amongst variables (Pett et al, 2003: 73). Thus the aim is to prove the null hypothesis incorrect by obtaining a Bartlett's Test of Sphericity of less or equal to 0.05, which will thereby indicate the presence of significance relationships amongst variables, and further deem the data suitable for conducting factor analysis (Sobh, 2008: 231).

In addition to identifying relationships amongst construct variables, SPSS generates a correlation matrix table, which can be further scrutinised. The correlation matrix is usually a tabular illustration of degrees of association among construct variables, that is expressed in the form of correlation coefficients (Gregory 1996: 292; Field, 2005: 185). The correlation matrix is used to examine the applicability of factor analysis within a study, whereby the stronger the correlations (i.e. coefficients are positive values of 0.60 or more) between variables, the greater the likelihood that the variables will measure an underlying factor (Gregory, 1996: 292).

It must be noted, however, that the correlation matrix table by itself is not sufficient to refute use of factor analysis, as it is used as "presumptive evidence" (Gregory 1996: 292). This means that at times - when there are about 100 items - it is not viable to examine every possible relationship between variables. Hence, a correlation matrix can provide a general overview of the direction that the study could be taking, but it is still necessary to look at other indicators and measures, such as the Anti-Image matrix (Field, 2005: 642).

The anti-image matrix usually yields a table with variables' correlations and covariance values amongst each other and which is measured through an index called Measures of Sampling Adequacy (MSA). Like the KMO, the MSA values should be greater than 0.5 for a sample to be adequate for factor analysis (Field, 2005: 642).

The next step is to extract factors. Factor extraction is a process of identifying the smallest number of factors that can be utilised in representing the inter-correlations among a construct's variables. There are different techniques for extracting factors, including principal component, principal factors, image factoring, and principal axis factoring (Pallant, 2007: 181). This study will use principal axis factoring (PAF) as an extraction method. PAF is the preferred extraction procedure for common factor analysis (Swanson & Holton, 2005: 190), and is classified under descriptive extraction, which "assumes both variables and subjects to be populations" (ibid). PAF advocates the extraction of factors with higher variance. Unlike the principal component analysis, the total variance for a test in PAF, is said to range between 0 and 1 (Bryman & Cramer, 2005: 328).

The PAF further relies on the evaluation of the eigenvalue of a factor. The eigenvalue is used to determine the number of factors that will be retained for further analysis. Usually factors with an eigenvalue of 1 or more are retained (Field, 2005: 644). Furthermore, it is also important to examine the communalities of the factors. Communality refers to the degree of variance in a variable, ranging from 0 to 1 - that is explained by the extracted factor (De Vaus, 2002: 137). The higher the communality index, the higher the higher the factors explaining the variable's variance (De Vaus, 2002: 138; Foster, 1998: 206).

The final step in conducting factor analysis, as listed by Pallant (2007), is doing factor rotation. Factor rotation represents a clear picture of where variables are loading in relation to extracted factors. There are two ways of rotating factors: orthogonal and oblique rotations. Simply put, the orthogonal rotation keeps factors independent (uncorrelated) to each other during rotation, while the oblique rotation allows correlations amongst factors. Orthogonal rotation is divided into varimax, quartimax, and equamax, while oblique is divided into direct oblimin and promax (Field, 2005: 636).

According to Kline, whenever a study employs an orthogonal rotation, the Varimax method is the most popular option, and when the researcher decides to go oblique, Direct Oblimin is the best method (Foster, 1998: 207). The Varimax rotation increases the distribution of loadings within factors by "loading smaller numbers of variables highly onto each factor which then results in increased interpretable clusters of factors" (Field, 2005: 636-637).

On the other hand, with the Direct Oblimin method, a constant referred by delta determines the degree at which factors are permitted to correlate. In most analytical tools, the default value for this delta is zero (Field, 2005: 637). For the purposes of this study, both Varimax and Direct Oblimin rotations will be conducted.

3.4.2. Assessing Normality

Assessing normality involves determining whether a distribution of scores is normal or non-normal. The results for assessing normality can further indicate whether parametric or non-parametric methods should be used for hypothesis testing (Dunn, 2010: 279; Foster, 1998: 16-17). Parametric methods are used when the distribution is normal, whereas non-parametric methods are more applicable in non-normal distributions (ibid). Thus, assessing normality is a pivotal prerequisite for testing a hypothesis. Furthermore, assessing normality can be conducted subjectively and/or objectively (Field, 2005: 93). The following discussion distinguishes subjective and objective ways of assessing normality.

3.4.2.1. Subjective Methods: Histograms and Normal Q-Q Plots

A histogram is a typical subjective way of assessing normality, which largely involves looking at the shape formed by the frequency distribution scores. When histograms are used to assess normality, a distribution is considered normal when a significant portion of the frequency distribution scores appear around the midpoint of a frequency distribution - thereby forming a symmetrical bell-shape (Dunn, 2010: 279). On the other hand, non-normal distribution indicates a frequency distribution shape that is non-unimodal, largely because of skewness and/or kurtosis.

According to Field (2005: 8-9), skewness refers to an asymmetric frequency distribution of scores, whereby most scores are aligned at one end of the scale. Skewed frequency distributions can either be positively or negatively skewed. Positive skewedness refers to a distribution with scores ranging from zero and towards more positive scores, whereas the distribution is negatively skewed when frequency distribution scores range from zero towards more negative scores. The value of skewness for normal distribution should be zero (Foster, 1998: 11-12).

Kurtosis indicates the degree of a pointy or flattened frequency distribution (Field, 2005: 10). Kurtosis can be further distinguished between platykurtic and leptokurtic distributions. A platykurtic distribution indicates a wider, flat-like distribution with a strong distribution of scores on the tails, whereas a leptokurtic distribution is pointy with relatively thin tails. Thus, the value of kurtosis for normal distribution should be zero (Foster, 1998: 11-12).

A common limitation to the histograms, however, is that they are impossible to interpret when there are less than 30 points (Muenchen & Hilbe, 2010: 341). This limitation is easily addressed through an analysis of a normal Q-Q diagram. A normal Q-Q diagram shows values that could be expected (expected values) in a normal distribution against the actual values (observed values) seen in the data (Field, 2005: 96; Muenchen & Hilbe, 2010: 341). The expected values always form a straight diagonal line, whereas observed values can either form a straight line or deviate from it, depending on the individual points.

In a normally distributed sample, the observed values of the normal Q-Q diagram form a straight line. Like the histograms, non-normal distribution in the Q-Q diagram can occur as a result of skewness or kurtosis. In the Q-Q diagram, skewness is represented by an s-shaped curve, whereas kurtosis is represented by individual points forming a somewhat straight line above or below the expected straight line (Field, 2005: 96).

3.4.2.2. Objective Methods: Kolmogorov-Smirnov and Shapiro-Wilk Tests

The Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) tests compare population sample scores against a normally distributed set of scores with a similar mean and standard deviation. If the tests yield a non-significant coefficient value greater than .05, then the sample is normally distributed. Alternatively, if the tests yield a significant coefficient value of .05 or less, then the sample is not normally distributed (Field, 2005: 93). It is further recommended that the K-S test is used when the sample size is greater than 50, while the S-W test is used when the sample size is equal to or less than 50 (Pachepsky & Rawls, 2004: 5).

For the purposes of this study, both subjective and objective methods will be used to assess normality. However, for subjective methods, only the normal Q-Q plots will be used instead of histograms, as they are more reliable. According to Pallant (2007: 58), the SPSS software “Explore” option can conveniently generate both normal Q-Q plots and *Kolmogorov-Smirnov (K-S)* and *Shapiro-Wilk (S-W)* tests. Thus SPSS’s “Explore” option will be used to assess this study’s normality.

3.4.3. Hypothesis Testing

There are numerous ways of conducting parametric and non-parametric tests. Key to conducting parametric and non-parametric tests, is identifying the number of groups being compared (Foster, 1998: 199; de Vaus, 2002: 295). For example, separate parametric and non-parametric test methods are used when mean scores of 2 groups of the population are compared, as well when 3 or more groups are compared.

The following discussion will present possible test options available for parametric and non-parametric tests, when comparing mean scores of 2 groups, as well as 3 or more groups of the population. The options provided below will then be used in this study, to perform hypothesis testing.

3.4.3.1. Comparing 2 Groups: T-Test vs. Mann-Whitney U Test

T-Test is a parametric test which is useful in comparing mean score groups within the same or different conditions (Pallant, 2007: 232), whereas the *Mann-Whitney U Test (M-W Test)* can be employed to conduct non-parametric testing (ibid: 220). The T-Test is divided into independent and paired-samples T-Tests. The paired samples T-Test (also known as repeated or related measures) is used when two different conditions or occasions are tested on a similar sample group (Hinton et al, 2004: 114). The independent samples T-Test, on the other hand, investigates whether statistically, there is a significant difference in the mean scores of two unrelated groups (ibid). For the purposes of this study, only an independent samples T-Test will be conducted.

In order to get started with a T-Test, an independent variable, as well as dependent variable, must be defined (Pallant, 2007: 233). When conducting a T-Test, this study will use SPSS and follow the instructions provided by Pallant (ibid). The procedure for conducting a T-Test using SPSS involves *Analyze - Compare Means - Independent Samples T test*. The *dependent variable* goes into the *test variable* box, whereas the *independent variable* goes into the *grouping variable* box. The next step is to click on *Define groups* and enter the appropriate numbers used to identify each group. Finally, one should click *Continue*, followed by *OK*.

Pallant (ibid: 234) further provides another set of guidelines that need to be followed when interpreting the T-Test result set generated by SPSS. Pallant (ibid) argues that five steps should be covered when conducting a T-Test, and the steps in chronological order, are checking the information about the groups (Step 1), checking assumptions (Step 2), assessing differences between groups (Step 3), calculating the effect size (Step 4), and finally, presenting the results (Step 5).

Step 1 involves checking the *N* column of the result set called *Groups Statistics*, and determining whether the *N* values are accurate. *Step 2* is based on result set called *Independent Samples Test*, and it involves going through a column labelled *Levene's Test for Equality of Variances*. When the *Sig.* value is greater than .05, then *equal variances are assumed*, and the first row of the T-Test table must be used for analysis. The opposite is true when the *Sig.* value is less than .05, and then *equal variances are not assumed* and the second row of the T-Test table must be used for analysis (ibid: 234-235).

Step 3 is also based on the result set *Independent Samples Test*, and it involves going through a column labelled *T-Test for Equality of Means*. When the value of *Sig. (2-tailed)* is equal or less than .05, it indicates a significant difference in the mean scores between the groups, whereas a *Sig. (2-tailed)* value above .05 indicates the lack of significant difference between groups (ibid: 235). *Step 4* is conducted on condition that the value of *Sig. (2-tailed)* is equal or less than .05, and it involves getting an indication of the magnitude of the differences between groups. The popular method of measuring the magnitude of differences (effect size) is Pearson's correlation coefficient *r*. The value of *r* can be classified into small (*r* = .10), medium (*r* = .30), and large (*r* = .50) (Field, 2005: 32). The formula for calculating the effect size is given below (ibid: 294), where *t* is test statistic and *df* is for degrees of freedom (ibid: 292).

$$r = \frac{t}{\sqrt{t^2 + df}}$$

Step 5 involves presenting the results of the T-Test according to the example provided by Pallant (2007: 236).

The Mann-Whitney U Test (M-W Test) is a non-parametric alternative to the parametric T-Test. Instead of comparing the means, the M-W Test compares the medians of the two unrelated groups (Black, 2011: 692). When conducting an M-W Test, this study will use SPSS and follow instructions provided by Pallant (2007: 221). The procedure for conducting an M-W Test using SPSS involves *Analyze - Non-Parametric Tests - 2 Independent Samples*.

The *Dependent Variable* goes into the *Test variable* box, whereas *independent variable* goes into the *grouping variable* box. The next step is to click on *Define groups*, enter the appropriate numbers used to identify each group, and then finish by clicking *Continue*. Finally, prior to clicking *OK*, ensure that the *Mann-Whitney U* is ticked under the *Test Type section* (ibid). The result set generated by SPSS can then be used to assess differences between groups. Such an analysis is based on a result set titled *Test Statistics* (ibid: 222). When the value of *Asymp. Sig. (2-tailed)* is equal to or less than .05, it indicates a significant difference in the median scores between the groups, whereas a value above .05 indicates a lack of significant difference between groups. Furthermore, whenever there is a significant difference between the groups, the direction of the difference must be identified and described.

The procedure for identifying the direction of difference using SPSS, involves *Analyze - Compare means - Means*. *Dependent Variable* goes into *Dependent List* box, whereas the *independent variable* goes into the *Independent List* box.

The next step is to click on *options* and ensure that *Median* and *Number of Cases* are selected under the *Cell Statistics* column. Finally, the buttons *Continue* and *OK* should be clicked. The result set titled *Report* will then provide an indication of the direction of difference for groups (ibid: 223). In addition, the effect size should also be calculated as below, where N represents the total number of cases (ibid):

$$r = \frac{z}{\sqrt{N}}$$

3.4.3.2. Comparing 3 or More Groups: ANOVA vs. Kruskal-Wallis Test

Similarly, when 3 or more groups are compared, there are different methods for conducting parametric and non-parametric tests. The Analysis of Variance (ANOVA) is often a popular parametric test method for comparing 3 or more groups (Field, 2005: 324), whereas the Kruskal-Wallis test is a non-parametric test method suitable for comparing groups of 3 or more (ibid: 542).

Similar to T-Tests, ANOVA is parametric test which is divided into independent and paired-sample tests (Heiman, 2010: 291). For the purposes of this study, only the independent samples ANOVA test will be conducted. This test extends the independent samples t-test by comparing groups of 3 or more against one dependent continuous variable (Leech et al, 2009: 129). The procedure for conducting an independent sample ANOVA test in SPSS, as outlined by Pallant (2007: 244), involves *Analyze - Compare means - One-way ANOVA*. The *Dependent Variable* goes into the *Dependent List* box, whereas the *independent variable* goes into the *Factor* box.

The next step is to click on *Options* and check boxes for *Descriptive*, *Homogeneity of variance test*, *Brown-Forsythe*, *Welsh*, and *Means Plot*. On *Options*, there should be a dot on *Exclude cases analysis by analysis* under the *Missing values* group box. The next step is to click on *Post Hoc - Tukey*. Finally, click on *Continue*, and then *OK* (ibid).

The result sets generated by SPSS are interpreted according to Pallant (ibid: 246), as follows: if the Sig. value for Levene's test from the result set called Test of homogeneity of variances is greater than .05, then the assumption of homogeneity of variance is true, whereas when the value is less or equal to .05, then further analysis should be conducted based on the result set called Robust Tests of Equality of Means. The Result set Robust Tests of Equality of Means shows Sig. values (among other noticeable columns) for Welch and Brown-Forsythe tests, and those Sig. values can be further used to interpret whether the assumption of homogeneity of variance is true or false (ibid).

The next analysis is then based on the result set called ANOVA, particularly in the Sig. column. When the Sig. value is greater than .05, then there are no significant differences on the mean scores on the dependent variable for the tested groups, whereas when the value is less or equal to .05, then there are significant differences on the mean scores of the dependent variable for the groups (ibid). If there are significant differences, the next step is to identify the differing groups by using the result set called Multiple Comparisons under Post Hoc Tests.

If an asterisk (*) can be identified under the column titled Mean Difference, then there is a significant difference between the two groups being compared (ibid: 246-247). The value of this significance is indicated in the column titled Sig. Furthermore, the Mean column in result set *Descriptives* should be used to assess the mean values of the differing groups. Finally, prior to presenting the findings of an ANOVA test, the effect size needs to be determined by using eta squared, which is a dividend of a *Sum of squares* over *Total sum of squares* (ibid).

The *Kruskal-Wallis Test (K-W)* extends the *Mann-Whitney U Test* by comparing the median scores of the dependent variable for 3 or more groups (Comrey & Lee, 2009: 167). The procedure for conducting a K-W test in SPSS, as outlined by Pallant (2007: 226), involves *Analyze - Nonparametric Tests - K Independent Samples*. The *Dependent Variable* goes into the *Test Variable List* box, whereas the *independent variable* goes into the *Grouping Variable* box.

The next step is to click on *Define Range*, and the first value goes into the *Minimum* box, whereas the largest value goes to the *Maximum* box, then Check *Kruskal-Wallis* from the *Test Type* section, and finally click on *Continue*, and then *OK* (ibid). Furthermore, as with the procedure presented in *section 7.1.2*, the median values for each group must be obtained. The result set generated by SPSS can be interpreted, according to Pallant (2007: 227-228,) as follows: if the value of *Asymp. Sig.* from the result set labelled Test Statistics is greater than .05, then there is no significant difference between the groups. The alternative is true when *Asymp. Sig.* value is less or equal to .05, indicating a significant difference between the groups. The column Mean Ranks in result set Ranks, further provides an indication of groups that had highest overall ranking in respect of the highest score on the dependent variable.

If there is a statistically significant difference among groups, then the direction and effect of the difference needs to be determined. A popular method of doing this, is using the Post-hoc tests. According to Field (2005: 339), Post-hoc tests make comparisons between different pairwise combinations of groups being tested. Along with creating pairwise comparisons, a control group must be chosen which gets used in all possible pairs (Field, 2005: 550). For example, groups A, B, and C will yield the combination A vs. B and A vs. C, with group A representing the control group.

Once the pairwise combinations have been identified, they can further be tested by using the Mann-Whitney U Test. However, when analysing the output of the Mann-Whitney U test, the critical value is reduced from .05 to a dividend of .05 against number of comparisons. For example, in the example given above, there are two sets of comparisons (A vs. B and A vs. C), and thus the new critical value would be $.05/2 = .025$. This method of adjusting the critical value is based on Bonferroni correction, and it reduces the possibility of a Type 1 error rate being inflated by the Mann-Whitney U test. A Type 1 error occurs when a null hypothesis (i.e. there is no significant difference among groups) is rejected by the testing method, despite being true (Pagano, 2012: 254). Finally, the effect size should also be calculated as per the formula in section 7.1.2.

3.5. Chapter Summary

The chapter provided a structural framework of how the data will be collected from the target population. It further defined the quantitative research methodology, and how the purposive sampling approach will be utilised to obtain data. The chapter also discussed data collection, data capturing and data analysis techniques, and how they will be used in the study.

Part 4

Analysis and Interpretation

CHAPTER FOUR

This chapter assesses the responses obtained during data collection. The chapter begins by getting a count of respondents for each of the cities in which questionnaires were distributed. It then attempts to get a preliminary understanding of the characteristics of participants, according to such things as gender, age group, marital status, employment status and industry. Grouping variables that will be further used for conducting the testing of hypotheses are also identified. The research reliability and validity is then conducted. Research reliability is established by analysing the Cronbach's alpha values for all constructs. Research validity is conducted through the use of factor analysis. The use of factor analysis further identifies underlying themes to existing constructs, and thus research hypotheses are revised in this chapter.

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4. DESCRIPTIVE ANALYSIS

This chapter assesses the responses obtained during data collection. The chapter begins by getting a count of respondents for each of the cities in which questionnaires were distributed. It then attempts to get a preliminary understanding of the biographics of participants, according to such things as gender, age group, marital status, employment status and industry etc. The chapter concludes by indicating grouping variables that will be further used in this study for conducting hypotheses testing.

This chapter evaluates the reliability and validity of the research. Research reliability is established by analysing the Cronbach's alpha values for all constructs. Research validity is conducted through the use of factor analysis. The use of factor analysis further identifies underlying themes to existing constructs, which in turn leads to a revision of the research hypotheses and conceptual framework.

4.1. Understanding the Data

A total of 350 questionnaires were distributed across seven cities of South Africa's five provinces. These cities were chosen because of the diversity in their banking clients' cultural, demographic and biographic characteristics. The provinces are KwaZulu-Natal, Gauteng, Mpumalanga, North West and Limpopo. During the collection of data in the aforementioned provinces, the researcher was mostly assisted by a group of friends and family members, as acknowledged in the dissertation's Acknowledgements section.

Some 209 questionnaires were successfully captured out of the 350 distributed. The remaining questionnaires were not included for several reasons - mostly because they were incompletely captured, respondents didn't return the questionnaire or could not be reached for collection, or they failed to meet requirements as respondents (did not have a bank account or did not have a mobile phone). Table 4.1.1 provides a summary of cities that had the most responses to the questionnaires. The Zululand District of KwaZulu-Natal had the highest response rate, followed by Gauteng's Sandton and KwaZulu-Natal's Durban as a tie. Mpumalanga's White River came in fourth, Gauteng's Auckland Park fifth, while North West's Kimberly and Limpopo's Polokwane came sixth and seventh respectively.

Table 4.1.1 Questionnaire Completion by City

Where was the questionnaire filled?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sandton	39	18.7	18.7	18.7
	Durban	39	18.7	18.7	37.3
	Polokwane	10	4.8	4.8	42.1
	Kimberly	14	6.7	6.7	48.8
	Zululand	46	22.0	22.0	70.8
	White River	38	18.2	18.2	89.0
	Auckland Park	23	11.0	11.0	100.0
	Total	209	100.0	100.0	

4.2. Biographics of Questionnaire Respondent

At the outset, it was imperative that the correct respondents were identified, and that is why a set of prerequisite questions were provided. Tables 4.2.1.1 to 4.2.1.3 provide a summary of the responses to the prerequisite questions.

Table 4.2.1.1 SA Bank Account Holder

Have you been an account holder at a South African bank?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, I had in the past five years	55	26.3	26.3	26.3
	Yes, I currently do	154	73.7	73.7	100.0
	Total	209	100.0	100.0	

Table 4.2.1.2 Cellphone Owner

Do you own a cellphone?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	209	100.0	100.0	100.0

Table 4.2.1.3 Usage of Cellphone's Internet

Have you used your cellphone's internet for mobile banking?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	209	100.0	100.0	100.0

4.2.1. Gender

Table 4.2.1 summarises the ratio of male to female respondents, for all the cities combined. There were more female respondents than males. Females successfully completed 56 percent of the questionnaires.

Table 4.2.1 Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	92	44.0	44.0	44.0
	Female	117	56.0	56.0	100.0
	Total	209	100.0	100.0	

4.2.2. Age Group

The questionnaire identified six levels of age groups in respondents. Table 4.2.2 provides a summary of these age groups. The age group 21-29 had the most respondents, with the age group 60 or older having the fewest.

Table 4.2.2 Age Group

Age Group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 or younger	36	17.2	17.2	17.2
	21 – 29	81	38.8	38.8	56.0
	30 – 39	56	26.8	26.8	82.8
	40 – 49	23	11.0	11.0	93.8
	50 – 59	11	5.3	5.3	99.0
	60 or older	2	1.0	1.0	100.0
	Total	209	100.0	100.0	

4.2.3. Ethnicity

According to table 4.2.3, Black people responded to the questionnaire than any other race group.

Table 4.2.3 Ethnicity

Ethnicity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Black	141	67.5	67.5	67.5
	Coloured	22	10.5	10.5	78.0
	Indian or Asian	17	8.1	8.1	86.1
	White	29	13.9	13.9	100.0
	Total	209	100.0	100.0	

4.2.4. Marital Status

According to table 4.2.4, single respondents gave the highest response rate of the marital status categories.

Table 4.2.4 Marital Status

Marital status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	120	57.4	57.4	57.4
	Married	63	30.1	30.1	87.6
	Divorced	8	3.8	3.8	91.4
	Living with Partner	13	6.2	6.2	97.6
	Widowed	4	1.9	1.9	99.5
	Engaged	1	.5	.5	100.0
	Total	209	100.0	100.0	

4.2.5. Area of Residence

According to table 4.2.5, the questionnaire was successfully completed by more people who reside in urban areas.

Table 4.2.5 Area of Residence

How would you describe the area in which you are residing?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Urban	154	73.7	73.7	73.7
	Rural	55	26.3	26.3	100.0
	Total	209	100.0	100.0	

4.2.6. Size of Household

Table 4.2.6 shows that the people who comprised a family of 4, were the largest respondent group.

Table 4.2.6 Size of Household

Size of household: the number of people, including yourself, who lived in your dwelling for at least three months of the year					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Live alone	23	11.0	11.0	11.0
	2	36	17.2	17.2	28.2
	3	38	18.2	18.2	46.4
	4	45	21.5	21.5	67.9
	5	27	12.9	12.9	80.9
	6 or more	40	19.1	19.1	100.0
	Total	209	100.0	100.0	

4.2.7. Level of Education

According to table 4.2.7, respondent who had a post-matric diploma or certificate, contributed the most in terms of completing the questionnaires.

Table 4.2.7 Levels of Education

Highest educational qualification achieved					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Grade 11 or lower (std 9 or lower)	20	9.6	9.6	9.6
	Grade 12 (Matric, std 10)	54	25.8	25.8	35.4
	Post-Matric Diploma or Certificate	55	26.3	26.3	61.7
	Baccalaureate Degree(s)	48	23.0	23.0	84.7
	Post-Graduate Degree(s)	32	15.3	15.3	100.0
	Total	209	100.0	100.0	

4.2.8. Employment Status

According to table 4.2.8, there were significantly more employed people than other categories, who responded to the questionnaire.

Table 4.2.8 Employment Status

Employment status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Employed	134	64.1	64.1	64.1
	Self-employed / Independent Consultant	16	7.7	7.7	71.8
	Unemployed	11	5.3	5.3	77.0
	Student	46	22.0	22.0	99.0
	Retired/Pensioner	2	1.0	1.0	100.0
	Total	209	100.0	100.0	

4.2.9. Employment Sector

According to table 4.2.9, people who work in the banking- and finance-related industries, responded more to the questionnaires than any other industry. There were 48 respondents whose employment industry is shown as “Missing” - this indicates “other” in the questionnaire, and refers to employment industries that were not predefined in the questionnaire.

Table 4.2.9 Employment Sector

Employment Sector					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Construction, Trades & Mining	3	1.4	1.9	1.9
	Education and Teaching	15	7.2	9.3	11.2
	Banking & Finance	38	18.2	23.6	34.8
	Media	4	1.9	2.5	37.3
	Telecommunications	1	.5	.6	37.9
	IT	14	6.7	8.7	46.6
	Government	19	9.1	11.8	58.4
	Non-Governmental Organizations	8	3.8	5.0	63.4
	Consulting	7	3.3	4.3	67.7
	Safety and Security	3	1.4	1.9	69.6
	Manufacturing & Production	2	1.0	1.2	70.8
	Legal	3	1.4	1.9	72.7
	Property	4	1.9	2.5	75.2
	Recruitment	2	1.0	1.2	76.4
	Science & Research	1	.5	.6	77.0
	Sports & Lifestyle	2	1.0	1.2	78.3
	Travel, Leisure & Tourism	1	.5	.6	78.9
	Customer Service & Call Centres	3	1.4	1.9	80.7
	Insurance	3	1.4	1.9	82.6
	Retail & Wholesale	4	1.9	2.5	85.1
	Agriculture, Fishing & Forestry	1	.5	.6	85.7
	Catering & Hospitality	4	1.9	2.5	88.2
	Fashion, Art & Design	2	1.0	1.2	89.4
	Health, Medicine & Nursing	6	2.9	3.7	93.2
	Marketing, Advertising & PR	1	.5	.6	93.8
	Sales	3	1.4	1.9	95.7
	Social Services	1	.5	.6	96.3
	Transport & Logistics	1	.5	.6	96.9
	Engineering	3	1.4	1.9	98.8
	Trainee	1	.5	.6	99.4
Worship Arts Pastor	1	.5	.6	100.0	
Total		161	77.0	100.0	
Missing	System	48	23.0		
Total		209	100.0		

4.3. Grouping Variables for Hypothesis Testing

Normality and Hypothesis Testing will be conducted against grouping variables' *gender, age, size of household, and highest education level*. This is because the proportion of responses within these grouping variables is somewhat even. For example, the grouping variable employment status cannot be used, because the number of responses per option varies significantly - there is a significant difference between respondents who were employed compared to those who were unemployed.

Some of the categories in grouping variables *highest education level* and *age group* received fewer responses. These categories will be merged into single categories. Thus, *Highest education level* is recoded to form categories *Grade 12 (Matric, std 10) or lower, Post-Matric Diploma or Certificate, Baccalaureate or Post-Graduate Degree(s)* whereas *age group* is recoded to categories *20 or younger, 21 -29, 30 - 39, and 40 or older*.

Therefore, instead of the 9 research objectives that were derived in chapter 2, after looking at the data collected, the research objectives will now be limited to the below 4 objectives. The same can be said of research hypotheses meaning that only research hypotheses pertaining to the below objectives will now form part of the study:

- 1) To examine the influence of Gender on perceptions of mobile banking.
- 2) To examine the influence of Age Groups on perceptions of mobile banking.
- 3) To examine the influence of Levels of Education Groups on perceptions of mobile banking.
- 4) To examine the influence of Size of Household Groups on perceptions of mobile banking.

4.4. Theoretical Reliability Analysis

Table 4.4 summarises results for the reliability analysis of all five constructs (for detailed results, refer to Appendix B 1 to B 5). The analyses were conducted by grouping all variables pertaining to constructs. Evidently, the Cronbach's alpha for all constructs is greater than 0.7, which indicates that the instrument (in this case, the likert scale) used to measure these constructs was consistent, and thus reliable.

Table 4.4 Reliability Statistics

Reliability statistics		
Construct	Cronbach's Alpha	No of Items
Perceived Ease of Use (PEOU)	.791	16
Perceived Usefulness (PU)	.825	15
Perceived Privacy Risks (PPR)	.900	18
Relevant Social Groups (RSG)	.881	21
Institutional Privacy Assurance (IPA)	.930	20

4.5. Research Validity

4.5.1. Construct: PEOU

Table 4.5.1 PEOU

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.798
Bartlett's Test of Sphericity	Approx. Chi-Square	681.526
	Df	120
	Sig.	.000

There were five factors found to be rotating on the initial run of factor analysis for the construct, Perceived Ease of Use (PEOU). Table 4.5.1 presents results for the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test. The KMO value was at 0.798, which surpassed the minimum required value of 0.6. Furthermore, the Bartlett's Test of Sphericity was at 0.000 - thereby reaching statistical significance and hence indicating that there could be significant relationships between the variables of PEOU.

Table 4.5.1.1.1 PEOU 5 Factors

Factor Transformation Matrix					
Factor	1	2	3	4	5
1	.639	.372	.346	.419	.398
2	-.590	.600	.537	-.020	-.060
3	-.067	.629	-.764	.088	.091
4	.218	.168	.061	-.885	.371
5	-.438	-.278	-.071	.184	.832

Table 4.5.1.1.2 PEOU 4 Factors

Factor Transformation Matrix				
Factor	1	2	3	4
1	.694	.436	.373	.434
2	-.626	.458	.631	-.003
3	-.147	.723	-.670	.084
4	.325	.277	.116	-.897

Table 4.5.1.1.3 PEOU 3 Factors

Factor Transformation Matrix			
Factor	1	2	3
1	.792	.408	.454
2	-.596	.678	.430
3	-.133	-.611	.780

However, as presented in table 4.5.1.1.1, the factors extracted in the initial factor analysis ranged within the not-recommended coefficient values. Thus a second factor analysis had to be conducted - this time with factors to be extracted specified to four (one factor had to be removed to see if items would load higher). The second factor analysis induced stronger coefficient values for four factors, but factor two had an undesirable coefficient value (see table 4.5.1.1.2). Consequently, a third factor analysis for construct PEOU was conducted - this time with three factors specified for extraction. This third factor analysis produced desirable factor coefficient values of 0.792, 0.678 & 0.780 for factors 1, 2 and 3 respectively (see table 4.5.1.1.3).

These factors accounted for 43% of the total variance. Factor 1 had 13 items (PEOU01, PEOU02, PEOU03, PEOU04, PEOU05, PEOU06, PEOU07, PEOU08, PEOU12 and PEOU14) with high loadings whereas factor 2 had 5 items (PEOU09, PEOU10 and PEOU11). Factor 3 had 3 items (PEOU13, PEOU15 and PEOU16). Furthermore, the underlying theme of factor 1 is the functionality of mobile banking, whereas most items within factor 2 seem to be measuring the reliability of mobile banking. The theme of factor 3 is the convenience of mobile banking services and applications.

For further data analysis purposes, new construct variables will be created in SPSS that will combine all items belonging to factors 1, 2 and 3. These variables will be referred to as *Perceived Functionality in PEOU*, *Perceived Reliability in PEOU* and *Perceived Convenience in PEOU*, respectively.

Table 4.5.1.1.4 PEOU Themes

Factor	Item Code	Question	Theme
1	PEOU01	Mobile banking applications behave accordingly.	functionality
1	PEOU02	Mobile banking applications behave in a predictable manner.	functionality
1	PEOU03	Mobile banking applications allow conducting of banking at any time of the day.	functionality
1	PEOU04	Mobile banking applications allow conducting of banking at any place.	functionality
1	PEOU05	Verification process of log-on credentials by mobile banking applications is quick.	functionality
1	PEOU06	Waiting period for authentication into mobile banking applications is short.	functionality
1	PEOU07	Mobile banking applications are convenient.	functionality
1	PEOU08	Mobile banking applications are user-friendly.	functionality
2	PEOU09	Mobile banking applications lead to the capturing of correct amounts.	reliability
2	PEOU10	Doing banking using mobile banking applications is error-free.	reliability
2	PEOU11	Mobile banking applications allow for the undoing of banking errors committed.	reliability
1	PEOU12	Mobile banking applications help me avoid standing in long queues at the bank's branch.	functionality
3	PEOU13	Mobile banking applications offer helpful tips on banking using a mobile device.	convenience
1	PEOU14	Navigating mobile banking applications is convenient.	functionality
3	PEOU15	Mobile banking applications' default screen lists types of banking transactions available.	convenience
3	PEOU16	Online support is available inquires relating to mobile banking applications	convenience

4.5.1.1. Revised Hypotheses for Construct: PEOU

Results for factor analysis on construct PEOU identified three themes in which PEOU can be tested. Therefore, the alternate (H_1) and null (H_0) hypotheses for the corresponding themes are:

Theme - Functionality:

1) Influence of Gender on Perceptions of Mobile Banking

- **H₀**: Mobile banking's functionality in PEOU is perceived negatively across gender.
- **H₁**: Mobile banking's functionality in PEOU is perceived positively across gender.

2) Influence of Age Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's functionality in PEOU is perceived negatively across age groups.
- **H₁**: Mobile banking's functionality in PEOU is perceived positively across age groups.

3) Influence of Size of Household Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's functionality in PEOU is perceived negatively across sizes of household groups.
- **H₁**: Mobile banking's functionality in PEOU is perceived positively across sizes of household groups.

4) Influence of Level of Education Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's functionality in PEOU is perceived negatively across levels of education groups.
- **H₁**: Mobile banking's functionality in PEOU is perceived positively across levels of education groups.

Theme - Reliability:

1) Influence of Gender on Perceptions of Mobile Banking

- **H₀**: Mobile banking's reliability in PEOU is perceived negatively across gender.
- **H₁**: Mobile banking's reliability in PEOU is perceived positively across gender.

2) Influence of Age Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's reliability in PEOU is perceived negatively across age groups.
- **H₁**: Mobile banking's reliability in PEOU is perceived positively across age groups.

3) Influence of Size of Household Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's reliability in PEOU is perceived negatively across sizes of household groups.
- **H₁**: Mobile banking's reliability in PEOU is perceived positively across sizes of household groups.

4) Influence of Level of Education Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's reliability in PEOU is perceived negatively across levels of education groups.
- **H₁**: Mobile banking's reliability in PEOU is perceived positively across levels of education groups.

Theme - Convenience:

1) Influence of Gender on Perceptions of Mobile Banking

- **H₀**: Mobile banking's convenience in PEOU is perceived negatively across gender.
- **H₁**: Mobile banking's convenience in PEOU is perceived positively across gender.

2) Influence of Age Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's convenience in PEOU is perceived negatively across age groups.
- **H₁**: Mobile banking's convenience in PEOU is perceived positively across age groups.

3) Influence of Size of Household Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's convenience in PEOU is perceived negatively across sizes of household groups.
- **H₁**: Mobile banking's convenience in PEOU is perceived positively across sizes of household groups.

4) Influence of Level of Education Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's convenience in PEOU is perceived negatively across levels of education groups.
- **H₁**: Mobile banking's convenience in PEOU is perceived positively across levels of education groups.

4.5.2. Construct: PU

Table 4.5.2.1 PU Factors

Factor Transformation Matrix			
Factor	1	2	3
1	.869	.464	.173
2	-.423	.877	-.228
3	-.257	.125	.958

Table 4.5.2.2 PU

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.841
Bartlett's Test of Sphericity	Approx. Chi-Square	1147.256
	Df	105
	Sig.	.000

Conducting factor analysis for construct and Perceived Usefulness (PU) induced three factors with acceptable coefficient values of 0.869, 0.877 and 0.958 for factors 1, 2 and 3 respectively (see table 4.5.2.1). Table 4.5.2.2 presents results for the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test. The KMO value was 0.841, which surpassed the minimum required value of 0.6. Furthermore, the Bartlett's Test of Sphericity was 0.000, thereby reaching statistical significance and hence indicating that there could be significant relationships between the variables of PU.

The factors accounted for 56 percent of the total variance. Factor 1 had 7 items (PU01, PU02, PU03, PU04, PU05, PU06 and PU07) with high loadings, whereas factor 2 had 8 items (PU08, PU09, PU10, PU11, PU12, PU13, PU14 and PU15). None of the factors were found to be loading highly in Factor 3. Furthermore, the underlying theme of factor 1 is the benefits of mobile banking, whereas most items within factor 2 seem to be measuring the utility of mobile banking services and applications.

For further data analysis, new construct variables will be created in SPSS that will combine all items belonging to factors 1 and 2. These variables will be referred to as *Perceived Benefits in PU* and *Perceived Utility in PU*, respectively.

Table 4.5.2.3 PU Themes

Factor	Item Code	Question	Theme
1	PU01	Mobile banking applications allow for viewing of bank account statements.	Benefit
1	PU02	Mobile banking applications help me avoid standing in long queues at the bank's branch.	Benefit
1	PU03	Mobile banking applications allow for the purchases of prepaid airtime, electricity etc.	Benefit
1	PU04	Mobile banking applications permits the making of payments.	Benefit
1	PU05	Mobile banking applications permits the making cash transfers.	Benefit
1	PU06	Mobile banking applications has reduced the need to physical go to bank's branches.	Benefit
1	PU07	Mobile banking applications improves my banking experience.	Benefit
2	PU08	Mobile banking applications have excellent network connection.	Utility
2	PU09	Mobile banking applications frequently retain network connection throughout my session.	Utility
2	PU10	Mobile banking applications consume insignificant amount of bandwidth.	Utility
2	PU11	Mobile banking applications are free of defaults.	Utility
2	PU12	I have never experienced system timeouts with mobile banking applications.	Utility
2	PU13	Mobile banking applications are always operational.	Utility
2	PU14	Mobile banking applications never crashes.	Utility
2	PU15	I have never experienced system downtown with mobile banking applications.	Utility

4.5.2.1. Revised Hypotheses for Construct: PU

Results for factor analysis on construct PU identified two themes in which PU can be tested. Therefore, the alternate (H_1) and null (H_0) hypotheses for the corresponding themes are:

Theme - Benefit:

1) Influence of Gender on Perceptions of Mobile Banking

- H_0 : Mobile banking's benefit in PU is perceived negatively across gender.
- H_1 : Mobile banking's benefit in PU is perceived positively across gender.

2) Influence of Age Groups on Perceptions of Mobile Banking

- H_0 : Mobile banking's benefit in PU is perceived negatively across age groups.
- H_1 : Mobile banking's benefit in PU is perceived positively across age groups.

3) Influence of Size of Household Groups on Perceptions of Mobile Banking

- H_0 : Mobile banking's benefit in PU is perceived negatively across sizes of household groups.

- **H₁**: Mobile banking's benefit in PU is perceived positively across sizes of household groups.

4) Influence of Level of Education Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's benefit in PU is perceived negatively across levels of education groups.
- **H₁**: Mobile banking's benefit in PU is perceived positively across levels of education groups.

Theme - Utility:

1) Influence of Gender on Perceptions of Mobile Banking

- **H₀**: Mobile banking's utility in PU is perceived negatively across gender.
- **H₁**: Mobile banking's utility in PU is perceived positively across gender.

2) Influence of Age Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's utility in PU is perceived negatively across age groups.
- **H₁**: Mobile banking's utility in PU is perceived positively across age groups.

3) Influence of Size of Household Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's utility in PU is perceived negatively across sizes of household groups.
- **H₁**: Mobile banking's utility in PU is perceived positively across sizes of household groups.

4) Influence of Level of Education Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's utility in PU is perceived negatively across levels of education groups.
- **H₁**: Mobile banking's utility in PU is perceived positively across levels of education groups.

4.5.3. Construct: PPR

Table 4.5.3.1 PPR

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.866
Bartlett's Test of Sphericity	Approx. Chi-Square	1601.710
	Df	153
	Sig.	.000

There were four factors found to be rotating on the initial run of factor analysis for the construct, Perceived Privacy Risks (PPR). Table 4.5.3.1 presents the results for the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test. The KMO value was 0.866, which surpassed the minimum required value of 0.6. Furthermore, the Bartlett's Test of Sphericity was 0.000, thereby reaching statistical significance and hence indicating that there could be significant relationships between the variables of PPR.

Table 4.5.3.2 PPR 4 Factors

Factor Transformation Matrix				
Factor	1	2	3	4
1	.543	.525	.568	.328
2	-.656	.735	.043	-.166
3	-.504	-.418	-.685	.318
4	-.145	.096	-.454	-.874

Table 4.5.3.3 PPR 3 Factors

Factor Transformation Matrix			
Factor	1	2	3
1	.644	.562	.519
2	.035	-.699	.714
3	.764	.442	-.470

Table 4.5.3.4 PPR 2 Factors

Factor Transformation Matrix		
Factor	1	2
1	.713	.701
2	-.701	.713

However, as presented in table 4.5.3.2, the factors extracted in the initial factor analysis ranged within the not-recommended coefficient values, and thus a second factor analysis had to be conducted - this time with factors to be extracted specified to 3 (one factor had to be removed to see if items would load higher). The second factor analysis induced stronger coefficient values for three factors, but factor two had an undesirable coefficient value (see table 4.5.3.3). Consequently, a third factor analysis for construct PPR was conducted - this time with two factors specified for extraction. This third factor analysis produced a desirable factor coefficient value at 0.713, for both factor 1 and 2 (see table 4.5.3.4).

The factors accounted for 47 percent of the total variance. Factor 1 had 9 items (PPR01, PPR02, PPR07, PPR08, PPR09, PPR10, PPR11, PPR12 and PPR13) with high loadings, whereas factor 2 had 9 items (PPR03, PPR04, PPR05, PPR06, PPR14, PPR15, PPR16, PPR17 and PPR18). Furthermore, the underlying theme of factor 1 is security, whereas most items within factor 2 seem to be measuring the subscriber's perception of the way mobile banking protects clients' information.

For further data analysis purposes, new construct variables will be created in SPSS that will combine all items belonging to factors 1 and 2. These variables will be referred to as *Perceived Security in PPR* and *Perceived Protection in PPR* respectively.

Table 4.5.3.5 PPR Themes

Factor	Item Code	Question	Theme
1	PPR01	Mobile banking applications conceal subscriber's personal information.	Security
1	PPR02	Transactions conducted using mobile banking applications are secured.	Security
2	PPR03	Mobile banking applications do not store usage history without subscriber's knowing.	Protection
2	PPR04	Mobile banking applications removes subscriber's browsing history upon log-out.	Protection
2	PPR05	Mobile banking applications prevents the use of cookies to track subscriber's usage history.	Protection
2	PPR06	Mobile banking applications prevent third parties from retrieving subscriber's personal information.	Protection
1	PPR07	Mobile banking applications do not share personal information without subscriber's knowing.	Security
1	PPR08	Mobile banking applications prevent installation of add-ons software that could compromise privacy information.	Security
1	PPR09	Mobile banking applications block installation of third party software that could compromise privacy information.	Security
1	PPR10	Mobile banking applications informs subscriber about ways of reinforcing security.	Security
1	PPR11	Mobile banking applications provide subscribers with security tips.	Security
1	PPR12	Mobile banking applications provide tips on security mechanisms' best practice.	Security

1	PPR13	Mobile banking applications suggest to the subscriber about necessary software upgrades.	Security
2	PPR14	Mobile banking applications are invulnerable to spyware risks.	Protection
2	PPR15	Mobile banking applications are invulnerable to phishing risks.	Protection
2	PPR16	Mobile banking applications are invulnerable to malware risks.	Protection
2	PPR17	Mobile banking applications prevents links to fraudulent sites.	Protection
2	PPR18	Mobile banking applications allow for the protection of sensitive personal information	Protection

4.5.3.1. Revised Hypotheses for Construct: PPR

Results for factor analysis on construct PPR identified two themes in which PPR can be tested. Therefore, the alternate (H_1) and null (H_0) hypotheses for the corresponding themes are:

Theme - Security:

- 1) Influence of Gender on Perceptions of Mobile Banking
 - H_0 : Mobile banking's security in PPR is perceived negatively across gender.
 - H_1 : Mobile banking's security in PPR is perceived positively across gender.
- 2) Influence of Age Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's security in PPR is perceived negatively across age groups.
 - H_1 : Mobile banking's security in PPR is perceived positively across age groups.
- 3) Influence of Size of Household Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's security in PPR is perceived negatively across sizes of household groups.
 - H_1 : Mobile banking's security in PPR is perceived positively across sizes of household groups.
- 4) Influence of Level of Education Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's security in PPR is perceived negatively across levels of education groups.
 - H_1 : Mobile banking's security in PPR is perceived positively across levels of education groups.

Theme - Protection:

- 1) Influence of Gender on Perceptions of Mobile Banking
 - H_0 : Mobile banking's protection in PPR is perceived negatively across gender.
 - H_1 : Mobile banking's protection in PPR is perceived positively across gender.
- 2) Influence of Age Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's protection in PPR is perceived negatively across age groups.
 - H_1 : Mobile banking's protection in PPR is perceived positively across age groups.
- 3) Influence of Size of Household Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's protection in PPR is perceived negatively across sizes of household groups.
- **H₁**: Mobile banking's protection in PPR is perceived positively across sizes of household groups.

4) Influence of Level of Education Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's protection in PPR is perceived negatively across levels of education groups.
- **H₁**: Mobile banking's protection in PPR is perceived positively across levels of education groups.

4.5.4. Construct: RSG

Table 4.5.4 RSG

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.857
Bartlett's Test of Sphericity	Approx. Chi-Square	1611.326
	Df	210
	Sig.	.000

There were five factors found to be rotating on the initial run of factor analysis for the construct, Relevant Social Groups (RSG). Table 4.5.4 presents results for the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test. The KMO value was 0.857, which surpassed the minimum required value of 0.6. Furthermore, the Bartlett's Test of Sphericity was 0.000, thereby reaching statistical significance and hence indicating that there could be significant relationships between the variables of RSG.

Table 4.5.4.1 RSG 5 Factors

Factor Transformation Matrix					
Factor	1	2	3	4	5
1	.689	.397	.437	.283	.311
2	-.108	-.536	-.131	.627	.539
3	-.396	.649	-.226	.585	-.169
4	-.518	.279	.320	-.347	.656
5	.299	.234	-.799	-.253	.393

Table 4.5.4.2 RSG 4 Factors

Factor Transformation Matrix				
Factor	1	2	3	4
1	.788	.420	.292	.344
2	-.158	-.551	.679	.459
3	-.459	.647	.567	-.220
4	-.380	.318	-.363	.789

Table 4.5.4.3 RSG 3 Factors

Factor Transformation Matrix			
Factor	1	2	3
1	.816	.422	.396
2	-.178	.834	-.522
3	-.551	.355	.755

However, as presented in table 4.5.4.1, the factors that were extracted in the initial factor analysis ranged within the not-recommended coefficient values, and thus a second factor analysis had to be conducted - this time with factors to be extracted specified to 4 (one factor had to be removed to see if items would load higher). The second factor analysis induced stronger coefficient values for four factors, but factor two had an undesirable coefficient value (see table 4.5.4.2). Consequently, a third factor analysis for the construct RSG was conducted, this time with three factors specified for extraction. This third factor analysis produced desirable factor coefficient values at 0.816, 0.834 and 0.755 for factors 1, 2 and 3 respectively (see table 4.5.4.3).

The factors accounted for 48 percent of the total variance. Factor 1 had 13 items (RSG01, RSG02, RSG03, RSG04, RSG05, RSG06, RSG07, RSG08, RSG09, RSG10, RSG11, RSG17, & RSG18) with high loadings, whereas factor 2 had 5 items (RSG12, RSG13, RSG14, RSG15, & RSG16). Factor 3 had three items (RSG19, RSG20, & RSG21).). Furthermore, the underlying theme of factor 1 is the sociability of mobile banking, whereas most items within factor 2 seem to be measuring the subscriber’s understanding of mobile banking services. The third factor focuses on measuring the subscriber’s awareness of mobile banking services.

For further data analysis purposes, new construct variables will be created in SPSS that will combine all items belonging to factors 1, 2 and 3. These variables will be referred to as *Sociability by RSG*, *Social Understandability by RSG* and *Social Awareness by RSG* respectively.

Table 4.5.4.4 RSG Themes

Factor	Item Code	Question	Theme
1	RSG01	The design of your bank’s mobile banking application has been aligned with your technological needs.	Sociability
1	RSG02	My friends (that have bank accounts) are aware of mobile banking applications.	Sociability
1	RSG03	My family members (that have bank accounts) are aware of mobile banking applications.	Sociability
1	RSG04	Mobile banking applications meet my expectations.	Sociability
1	RSG05	Mobile banking applications features address my needs.	Sociability
1	RSG06	It is easy to get used to mobile banking applications.	Sociability
1	RSG07	Anyone can easily learn how to navigate through mobile banking applications.	Sociability
1	RSG08	Mobile banking applications improve my family lifestyle.	Sociability
1	RSG09	Mobile banking applications improve my friends’ lifestyle.	Sociability
1	RSG10	My friends’ perception of mobile banking applications is positive.	Sociability
1	RSG11	My family members’ perception of mobile banking applications is positive.	Sociability
2	RSG12	Mobile banking applications are understandable in my home language.	Understandability
2	RSG13	Mobile banking applications are available in my home language.	Understandability
2	RSG14	Mobile banking applications are presented in a language that I understand.	Understandability
2	RSG15	Mobile banking applications are presented in a language that my friends understand.	Understandability
2	RSG16	Mobile banking applications are presented in a language that my siblings understand.	Understandability
1	RSG17	Somebody influenced my adoption of mobile banking applications.	Sociability
1	RSG18	I think my role model uses mobile banking applications.	Sociability
3	RSG19	The usage of mobile banking applications make me look cool.	Awareness
3	RSG20	There is a general understanding of what mobile banking entails across races.	Awareness
3	RSG21	There is a general understanding of what mobile banking entails across cultures.	Awareness

4.5.4.1. Revised Hypotheses for Construct: RSG

Results for factor analysis on construct RSG identified three themes in which RSG can be tested. Therefore, the alternate (H_1) and null (H_0) hypotheses for the corresponding themes are:

Theme - Sociability:

- 1) Influence of Gender on Perceptions of Mobile Banking
 - H_0 : Mobile banking's sociability in RSG is perceived negatively across gender.
 - H_1 : Mobile banking's sociability in RSG is perceived positively across gender.
- 2) Influence of Age Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's sociability in RSG is perceived negatively across age groups.
 - H_1 : Mobile banking's sociability in RSG is perceived positively across age groups.
- 3) Influence of Size of Household Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's sociability in RSG is perceived negatively across sizes of household groups.
 - H_1 : Mobile banking's sociability in RSG is perceived positively across sizes of household groups.
- 4) Influence of Level of Education Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's sociability in RSG is perceived negatively across levels of education groups.
 - H_1 : Mobile banking's sociability in RSG is perceived positively across levels of education groups.

Theme - Understandability:

- 1) Influence of Gender on Perceptions of Mobile Banking
 - H_0 : Mobile banking's understandability in RSG is perceived negatively across gender.
 - H_1 : Mobile banking's understandability in RSG is perceived positively across gender.
- 2) Influence of Age Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's understandability in RSG is perceived negatively across age groups.
 - H_1 : Mobile banking's understandability in RSG is perceived positively across age groups.
- 3) Influence of Size of Household Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's understandability in RSG is perceived negatively across sizes of household groups.
 - H_1 : Mobile banking's understandability in RSG is perceived positively across sizes of household groups.
- 4) Influence of Level of Education Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's understandability in RSG is perceived negatively across levels of education groups.
- **H₁**: Mobile banking's understandability in RSG is perceived positively across levels of education groups.

Theme - Awareness:

1) Influence of Gender on Perceptions of Mobile Banking

- **H₀**: Mobile banking's awareness in RSG is perceived negatively across gender.
- **H₁**: Mobile banking's awareness in RSG is perceived positively across gender.

2) Influence of Age Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's awareness in RSG is perceived negatively across age groups.
- **H₁**: Mobile banking's awareness in RSG is perceived positively across age groups.

3) Influence of Size of Household Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's awareness in RSG is perceived negatively across sizes of household groups.
- **H₁**: Mobile banking's awareness in RSG is perceived positively across sizes of household groups.

4) Influence of Level of Education Groups on Perceptions of Mobile Banking

- **H₀**: Mobile banking's awareness in RSG is perceived negatively across levels of education groups.
- **H₁**: Mobile banking's awareness in RSG is perceived positively across levels of education groups.

4.5.5. Construct: IPA

Table 4.5.5 IPA

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.919
Bartlett's Test of Sphericity	Approx. Chi-Square	2055.951
	Df	190
	Sig.	.000

There were four factors that were found to be rotating on the initial run of factor analysis for the construct, Institutional Privacy Assurance (IPA). Table 4.5.5 presents results for the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test. The KMO value was 0.919, which surpassed the minimum required value of 0.6. Furthermore, the Bartlett's Test of Sphericity was 0.000, thereby reaching statistical significance and hence indicating that there could be significant relationships between the variables of IPA.

Table 4.5.5.1 IPA 4 Factors

Factor Transformation Matrix				
Factor	1	2	3	4
1	.574	.560	.501	.326
2	-.366	.585	-.545	.476
3	.591	-.454	-.474	.470
4	.434	.371	-.477	-.669

Table 4.5.5.2 IPA 3 Factors

Factor Transformation Matrix			
Factor	1	2	3
1	.627	.575	.526
2	.767	-.336	-.547
3	-.138	.746	-.651

Table 4.5.5.3 IPA 2 Factors

Factor Transformation Matrix		
Factor	1	2
1	.749	.663
2	-.663	.749

However, as presented in table 4.5.5.1, the factors extracted in the initial factor analysis ranged within the not-recommended coefficient values, and thus a second factor analysis had to be conducted - this time with factors to be extracted specified to 3 (one factor had to be removed to see if items would load higher). The second factor analysis induced stronger coefficient values for three factors, but factor two had an undesirable coefficient value (see table 4.5.5.2). Consequently, a third factor analysis for the construct IPA was conducted, this time with two factors specified for extraction. This third factor analysis produced desirable factor coefficient values at 0.749, for both factor 1 and 2 (see table 4.5.5.3).

The factors accounted for 51 percent of the total variance. Factor 1 had 12 items (IPA02, IPA03, IPA04, IPA05, IPA06, IPA07, IPA08, IPA09, IPA10, IPA11, IPA14 and IPA20) with high loadings, whereas factor 2 had 8 items (IPA01, IPA12, IPA13, IPA15, IPA16, IPA17, IPA18, & IPA19). Furthermore, the underlying theme that seems to be prevailing in factor 1 is awareness, whereas most items within factor 2 seem to be measuring the subscriber's understanding of Institutional Privacy Assurance.

For further data analysis purposes, new construct variables will be created in SPSS that will combine all items belonging to factors 1 and 2. These variables will be referred to as *Awareness of IPA* and *Understandability of IPA* respectively.

Table 4.5.5.4 IPA Themes

Factor	Item Code	Question	Theme
2	IPA01	Mobile banking application protects the integrity of subscriber's personal information.	Understandability
1	IPA02	I am aware of my bank's mobile banking applications privacy policy.	Awareness
1	IPA03	My bank's mobile banking applications privacy policy is understandable	Awareness
1	IPA04	I am satisfied with my bank's mobile banking application privacy policy	Awareness
1	IPA05	I am pleased with my bank's mobile banking application information privacy assurance	Awareness
1	IPA06	My banks provides explanations for the collection of my personal information	Awareness

1	IPA07	I understand reasons behind collection of personal information by my bank	Awareness
1	IPA08	I can check the accuracy of my collected personal information by my bank	Awareness
1	IPA09	There are avenues to contest the accuracy of my collected personal information from my bank	Awareness
1	IPA10	My bank verifies the accuracy of my personal information	Awareness
1	IPA11	Mobile banking application protects the privacy of subscriber's personal information.	Awareness
2	IPA12	My bank conceals personal information of subscribers of mobile banking applications to third party.	Understandability
2	IPA13	My bank provides information privacy assurance to subscribers of mobile banking applications.	Understandability
1	IPA14	My collected personal information is secure from unauthorised use	Awareness
2	IPA15	Mobile banking information privacy is easily accessible	Understandability
2	IPA16	I trust my bank to abide to stipulated privacy policies	Understandability
2	IPA17	My bank's mobile banking information privacy is representative	Understandability
2	IPA18	My bank's mobile banking information privacy is easy to read	Understandability
2	IPA19	I trust my bank to secure my privacy information obtained from mobile banking applications	Understandability
1	IPA20	My bank's mobile banking information privacy meets my needs	Awareness

4.5.5.1. Revised Hypotheses for Construct: IPA

Results for factor analysis on construct IPA identified two themes in which IPA can be tested. Therefore, the alternate (H_1) and null (H_0) hypotheses for the corresponding themes are:

Theme - Awareness:

- 1) Influence of Gender on Perceptions of Mobile Banking
 - H_0 : Mobile banking's awareness in IPA is perceived negatively across gender.
 - H_1 : Mobile banking's awareness in IPA is perceived positively across gender.
- 2) Influence of Age Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's awareness in IPA is perceived negatively across age groups.
 - H_1 : Mobile banking's awareness in IPA is perceived positively across age groups.
- 3) Influence of Size of Household Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's awareness in IPA is perceived negatively across sizes of household groups.
 - H_1 : Mobile banking's awareness in IPA is perceived positively across sizes of household groups.
- 4) Influence of Level of Education Groups on Perceptions of Mobile Banking
 - H_0 : Mobile banking's awareness in IPA is perceived negatively across levels of education groups.
 - H_1 : Mobile banking's awareness in IPA is perceived positively across levels of education groups.

Theme - Understandability:

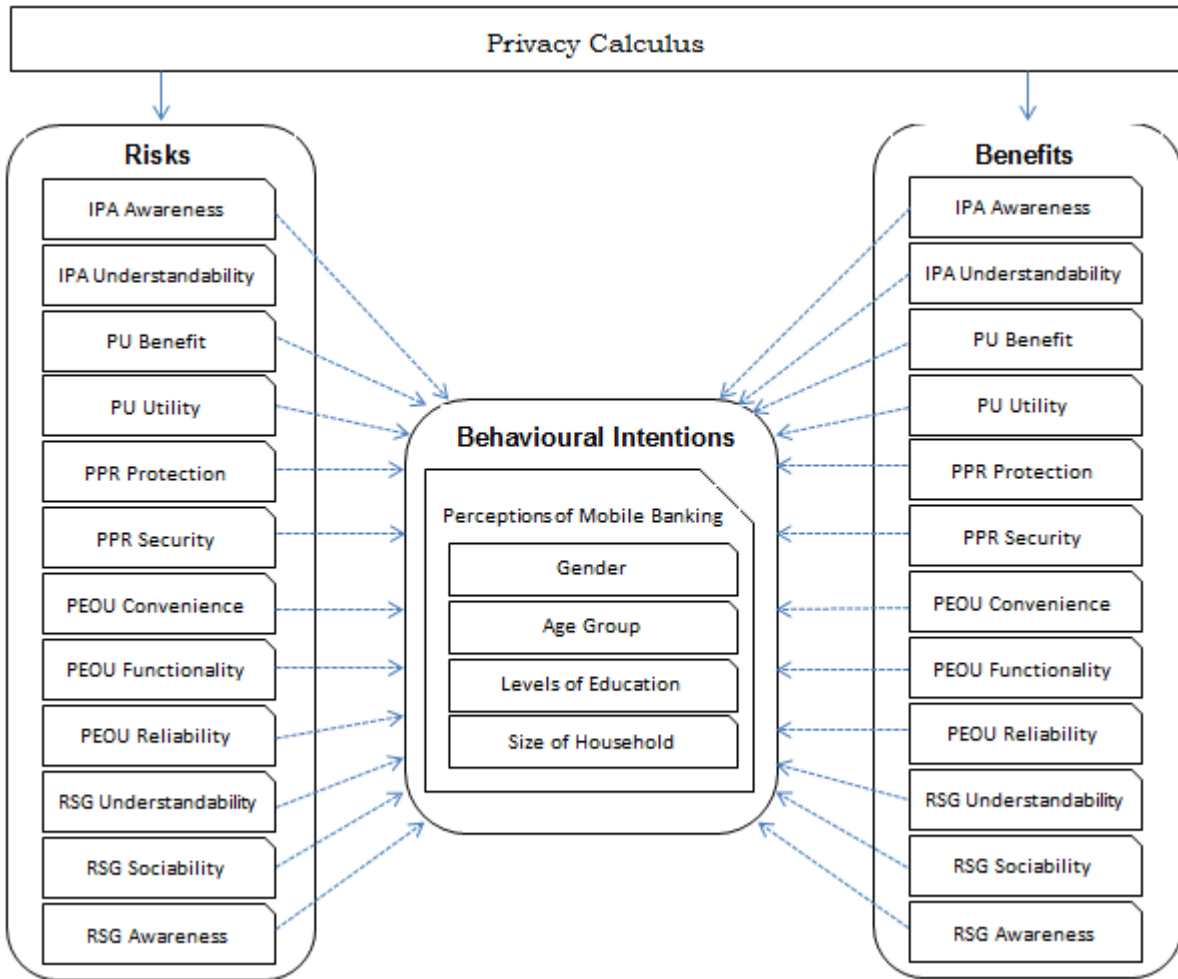
- 1) Influence of Gender on Perceptions of Mobile Banking

- **H₀**: Mobile banking's understandability in IPA is perceived negatively across gender.
 - **H₁**: Mobile banking's understandability in IPA is perceived positively across gender.
- 2) Influence of Age Groups on Perceptions of Mobile Banking
- **H₀**: Mobile banking's understandability in IPA is perceived negatively across age groups.
 - **H₁**: Mobile banking's understandability in IPA is perceived positively across age groups.
- 3) Influence of Size of Household Groups on Perceptions of Mobile Banking
- **H₀**: Mobile banking's understandability in IPA is perceived negatively across sizes of household groups.
 - **H₁**: Mobile banking's understandability in IPA is perceived positively across sizes of household groups.
- 4) Influence of Level of Education Groups on Perceptions of Mobile Banking
- **H₀**: Mobile banking's understandability in IPA is perceived negatively across levels of education groups.
 - **H₁**: Mobile banking's understandability in IPA is perceived positively across levels of education groups.

4.6. Revised Conceptual Framework

The conducting of factor analysis has led to the identification of new constructs and their hypotheses, which in turn influence the original conceptual model that had earlier been formulated for this study. Figure 4.6 illustrates the revised conceptual model that takes into consideration the newly identified constructs.

Figure 4.6 Revised Conceptual Model



4.7. Chapter Summary

This chapter identified the characteristics of the respondents who participated in the study. Although most of the biographic information was completed by the respondents, the ratios of responses per group were such that some were significantly different to others. Thus, the grouping variables *gender*, *age*, *size of household* and *highest education level* were identified as variables that will be used for testing the research hypotheses. The chapter further reviewed the study's reliability and validity based on data collected and the study was found to be reliable and valid. However, there were sub themes that were identified that led to a revision of the conceptual model.

CHAPTER FIVE

This chapter determines whether the frequency distribution is normal or non-normal. The assessment of normality will indicate whether parametric or non-parametric tests should be used during the testing of the hypotheses against grouping variables. This chapter will also give an indication of theories that can be used during hypothesis testing.

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5. ASSESSING NORMALITY

This chapter discusses whether the frequency distribution is normal or non-normal. The assessment of normality will indicate whether parametric or non-parametric tests should be used during the hypothesis testing against grouping variables. The chapter will also give an indication of theories that will be used during hypothesis testing. The analysis in the chapter is based on results presented in Appendix C 1 – C 4.

5.1. Grouping Variable – Gender

The *Kolmogorov-Smirnov (K-S)* test will be used for assessing normality because the sample size in Table 6.1 for both *male* and *female* groups is greater than 50. The results for construct *Perceived Functionality in PEOU* against *male* group, $D(92)=.095$, $p<.05$, and *female* group, $D(116)=.104$, $p<.05$, were both significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* further confirm *K-S* scores because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for both groups, parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Reliability in PEOU* against *male* group, $D(92)=.107$, $p<.05$, and *female* group, $D(117)=.125$, $p<.05$, were both significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for both groups, parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Convenience in PEOU* against *male* group, $D(92)=.121$, $p<.05$, and *female* group, $D(117)=.157$, $p<.05$, were both significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* further confirm *K-S* scores, because the dots deviate substantially from the straight line.

These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for both groups, parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Benefits in PU* against *male* group, $D(92)=.107$, $p<.05$, and *female* group, $D(117)=.132$, $p<.05$, were both significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness.

Furthermore, because the distribution of the sample is not normal for both groups, parametric tests will be used as a means of testing the hypothesis.

The results for construct *Perceived Utility in PU* against *male* group, $D(92)=.112$, $p<.05$, and *female* group, $D(115)=.085$, $p<.05$, were both significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* further confirm *K-S* scores because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for both groups, parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Security in PPR* against *male* group, $D(92)=.128$, $p<.05$, was significantly not normal and *female* group, $D(117)=.075$, $p>.05$, was significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *male* group further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal, non-parametric tests will be used as a means of testing the hypothesis. The plots in the *Normal Q-Q diagram (Table K1)* of the *female* group further confirm *K-S* scores, because most dots are on the straight line - thereby indicating that the distribution is normal. In addition, because the distribution of the sample is not normal for *female* group and normal for the *male* group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Protection in PPR* against *male* group, $D(91)=.070$, $p>.05$, and *female* group, $D(115)=.062$, $p>.05$, were both significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* further confirm *K-S* scores, because most dots are aligned within a straight line. Furthermore, because the distribution of the sample is normal for both groups, non-parametric tests will be used as a means of testing the hypothesis.

The results for construct *Sociability by RSG* against *male* group, $D(92)=.074$, $p>.05$, was significantly normal and whereas *female* group, $D(117)=.087$, $p<.05$, was significantly non-normal. The plots in the *Normal Q-Q diagram (Table K1)* for *male* group further confirm *K-S* scores because the majority of the dots are aligned within a straight line. The plots in the *Normal Q-Q diagram (Table K1)* for *female* group further confirm *K-S* scores because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for *female* group and normal for the *male* group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Social Understandability by RSG* against *male* group, $D(91)=.061$, $p>.05$, was significantly normal, whereas *female* group, $D(116)=.089$, $p<.05$ was significantly non-normal. The plots in the *Normal Q-Q diagram (Table K1)* for *male* group further confirm *K-S* scores, because most dots are aligned within a straight line. The plots in the *Normal Q-Q diagram (Table K1)* for *female* group further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for *female* group, and normal for the *male* group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Social Awareness by RSG* against *male* group, $D(92)=.146$, $p<.05$, and *female* group, $D(115)=.109$, $p<.05$, were both significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for both groups, parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Awareness of IPA* against *male* group, $D(92)=.091$, $p>.05$, was significantly normal, whereas *female* group, $D(117)=.092$, $p<.05$ was significantly non-normal. The plots in the *Normal Q-Q diagram (Table K1)* for *male* group further confirm *K-S* scores, because most dots are aligned within a straight line. The plots in the *Normal Q-Q diagram (Table K1)* for *female* group further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for *female* group, and normal for the *male* group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Understandability of IPA* against *male* group, $D(92)=.104$, $p<.05$, and *female* group, $D(116)=.084$, $p<.05$, were both significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the sample is not normal for both groups, parametric tests will be used as a means of testing the hypothesis.

5.2. Grouping Variable – Age Group

Some of the sample sizes presented in Table 6.1 are less than 50, while others are greater than 50. Thus, both *Kolmogorov-Smirnov (K-S)* and *Shapiro-Wilk (S-W)* tests will be utilised.

The sample sizes for groups *20 or younger* and *40 or older* are less than 50, meaning that the *S-W* test will be used, whereas the *K-S* test will be used for groups *21-29* and *30-39*, as their sample sizes are greater than 50.

The results for the construct *Perceived Functionality in PEOU* against groups *20 or younger* ($D(35)=.947, p>.05$), *30-39* ($D(56)=.091, p>.05$), and *40 or older* ($D(36)=.968, p>.05$), are significantly normal. The *21-29* group ($D(81)=.116, p<.05$), is significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* for the *21-29* group further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *30-39* and *40 or older*, further confirm *K-S* scores because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Reliability in PEOU* against groups *20 or younger* ($D(36)=.948, p>.05$), and *40 or older* ($D(36)=.968, p>.05$), are significantly normal. The groups *21-29* ($D(81)=.116, p<.05$), and *30-39* ($D(56)=.091, p<.05$), are significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *21-29* and *30-39* further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger* and *40 or older*, further confirm *K-S* scores because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for construct *Perceived Convenience in PEOU* against groups *20 or younger* ($D(36)=.953, p>.05$), and *40 or older* ($D(36)=.945, p>.05$), are significantly normal. The groups *21-29* ($D(81)=.159, p<.05$), and *30-39* ($D(56)=.145, p<.05$) are significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *21-29* and *30-39*, further confirm *K-S* scores because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger* and *40 or older*, further confirm *K-S* scores because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Benefits in PU* against groups *20 or younger* ($D(36)=.927, p<.05$), *30-39* ($D(56)=.155, p<.05$), and *40 or older* ($D(36)=.924, p<.05$), are significantly not normal. The *21-29* group ($D(81)=.091, p>.05$), is significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *21-29* group, further confirm *K-S* scores, because most dots are on the straight line - thereby indicating that the distribution is normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *30-39* and *40 or older* further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Utility in PU* against groups *20 or younger* ($D(35)=.989, p>.05$), *21-29* ($D(80)=.085, p>.05$), *30-39* ($D(56)=.108, p>.05$), and *40 or older* ($D(36)=.958, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *21-29*, *30-39*, and *40 or older* further confirm *K-S* scores because the majority of the dots are on the straight line; thereby indicating that the distribution is normal.

The results for the construct *Perceived Security in PPR* against groups *20 or younger* ($D(36)=.943, p>.05$), *30-39* ($D(56)=.109, p>.05$), and *40 or older* ($D(36)=.985, p>.05$), are significantly normal. The *21-29* ($D(81)=.091, p<.05$), is significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *21-29* group, further confirm *K-S* scores because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *30-39* and *40 or older*, further confirm *K-S* scores because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Protection in PPR* against groups *20 or younger* ($D(34)=.976, p>.05$), *21-29* ($D(80)=.055, p>.05$), *30-39* ($D(56)=.094, p>.05$), and *40 or older* ($D(36)=.990, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *21-29*, *30-39*, and *40 or older*, further confirm *K-S* scores because most dots are on the straight line - thereby indicating that the distribution is normal.

The results for the construct *Sociability by RSG* against groups *20 or younger* ($D(36)=.984, p>.05$), *30-39* ($D(56)=.070, p>.05$), and *40 or older* ($D(36)=.968, p>.05$), are significantly normal. The *21-29* group ($D(81)=.107, p<.05$), is significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *21-29* group further confirm *K-S* scores, because the dots deviate substantially from the straight line.

These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *30-39*, and *40 or older*, further confirm *K-S* scores because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Social Understandability by RSG* against groups *20 or younger* ($D(35)=.969$, $p>.05$), *21-29* ($D(81)=.084$, $p>.05$), and *40 or older* ($D(36)=.972$, $p>.05$), are significantly normal. The *30-39* group ($D(55)=.148$, $p<.05$), is significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *30-39* group, further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *21-29* and *40 or older*, further confirm *K-S* scores because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Social Awareness by RSG* against group *20 or younger* ($D(35)=.963$, $p>.05$), *30-39* ($D(56)=.108$, $p>.05$), and *40 or older* ($D(36)=.973$, $p>.05$), are significantly normal. The *21-29* group ($D(80)=.177$, $p<.05$), is significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *21-29* group further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *30-39* and *40 or older*, further confirm *K-S* scores because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Awareness of IPA* against groups *20 or younger* ($D(36)=.968$, $p>.05$), *30-39* ($D(56)=.110$, $p>.05$), and *40 or older* ($D(36)=.963$, $p>.05$), are significantly normal. The *21-29* group ($D(81)=.119$, $p<.05$), is significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *21-29* group further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *30-39* and *40 or older*, further confirm *K-S* scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Understandability of IPA* against groups *20 or younger* ($D(36)=.959, p>.05$), *30-39* ($D(56)=.112, p>.05$), and *40 or older* ($D(35)=.983, p>.05$), are significantly normal. The *21-29* group ($D(81)=.133, p<.05$) is significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *21-29* group, further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *20 or younger*, *30-39* and *40 or older*, further confirm *K-S* scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

5.3. Grouping Variable – Size of Household

The sample sizes for the groups in Table 6.1 range between 23 and 45. Thus, the *Shapiro-Wilk (S-W)* test will be used. The results for the construct *Perceived Functionality in PEOU* against groups *Live alone* ($D(23)=.985, p>.05$), *2* ($D(36)=.975, p>.05$), *3* ($D(38)=.968, p>.05$), *4* ($D(45)=.977, p>.05$), and *5* ($D(26)=.962, p>.05$), are significantly normal. The *6 or more* group ($D(40)=.929, p<.05$), is significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *6 or more* group further confirm *K-S* scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, *2*, *3*, *4* and *5*, further confirm *K-S* scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Reliability in PEOU* against groups *Live alone* ($D(23)=.969, p>.05$), *2* ($D(36)=.966, p>.05$), *3* ($D(38)=.960, p>.05$), *4* ($D(45)=.973, p>.05$), *5* ($D(27)=.961, p>.05$), and *6 or more* ($D(40)=.959, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, *2*, *3*, *4*, *5* and *6 or more*, further confirm *K-S* scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Convenience in PEOU* against *Live alone* group ($D(23)=.934, p>.05$), are significantly normal. The groups *2* ($D(36)=.928, p>.05$), *3* ($D(38)=.918, p>.05$), *4* ($D(45)=.941, p>.05$), *5* ($D(27)=.900, p>.05$), and *6 or more* ($D(40)=.934, p<.05$), are significantly not normal.

The plots in the *Normal Q-Q diagram (Table K1)* of the *6 or more* group further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, 2, 3, 4 and 5, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Benefits in PU* against groups *Live alone* ($D(23)=.921, p>.05$), 2 ($D(36)=.940, p>.05$), 3 ($D(38)=.956, p>.05$), and 5 ($D(27)=.940, p>.05$), are significantly normal. The groups 4 ($D(45)=.908, p>.05$), and *6 or more* ($D(40)=.880, p<.05$), are significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *Live alone*, 2, 3 and 5 groups, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups 4 and *6 or more*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Utility in PU* against groups *Live alone* ($D(23)=.927, p>.05$), 2 ($D(36)=.956, p>.05$), 3 ($D(38)=.954, p>.05$), 4 ($D(45)=.956, p>.05$), 5 ($D(26)=.953, p>.05$), and *6 or more* ($D(39)=.976, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, 2, 3, 4, 5 and *6 or more*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Security in PPR* against 3 group ($D(38)=.931, p<.05$), are significantly not normal. The groups *Live alone* ($D(23)=.973, p>.05$), 2 ($D(36)=.966, p>.05$), 4 ($D(45)=.977, p>.05$), 5 ($D(27)=.970, p>.05$), and *6 or more* ($D(40)=.951, p<.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* of the 3 group, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The results for construct plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, 2, 4, 5 and *6 or more*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal.

Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Protection in PPR* against the 2 group ($D(35)=.935$, $p<.05$), are significantly not normal. The groups *Live alone* ($D(23)=.951$, $p>.05$), 3 ($D(38)=.987$, $p>.05$), 4 ($D(45)=.967$, $p>.05$), 5 ($D(26)=.988$, $p>.05$), and 6 or more ($D(39)=.985$, $p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* of the 2 group, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, 3, 4, 5 and 6 or more, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Sociability by RSG* against the 4 group ($D(45)=.943$, $p<.05$), are significantly not normal. The groups *Live alone* ($D(23)=.949$, $p>.05$), 2 ($D(36)=.967$, $p>.05$), 3 ($D(38)=.980$, $p>.05$), 5 ($D(27)=.982$, $p>.05$), and 6 or more ($D(40)=.980$, $p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* of the 3, further confirm K-S scores because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for the groups *Live alone*, 2, 3, 5 and 6 or more, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Social Understandability by RSG* against the 6 or more group ($D(39)=.942$, $p<.05$), are significantly not normal. The groups *Live alone* ($D(23)=.918$, $p>.05$), 2 ($D(36)=.968$, $p>.05$), 3 ($D(38)=.971$, $p>.05$), 4 ($D(44)=.954$, $p>.05$), and 5 ($D(27)=.956$, $p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* of the 6 or more group, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, 2, 3, 4 and 5, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Social Awareness by RSG*, against groups *Live alone* ($D(23)=.921, p>.05$), *2* ($D(36)=.954, p>.05$), *3* ($D(37)=.974, p>.05$), *4* ($D(45)=.972, p>.05$), *5* ($D(26)=.936, p>.05$), and *6 or more* ($D(40)=.969, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, *2*, *3*, *4*, *5* and *6 or more*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Awareness of IPA* against groups *Live alone* ($D(23)=.975, p>.05$), *2* ($D(36)=.960, p>.05$), *3* ($D(38)=.984, p>.05$), *4* ($D(45)=.966, p>.05$), *5* ($D(27)=.962, p>.05$), and *6 or more* ($D(40)=.973, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, *2*, *3*, *4*, *5* and *6 or more*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Understandability of IPA* against groups *3* ($D(38)=.907, p<.05$), and *4* ($D(45)=.948, p<.05$), are significantly not normal. The groups *Live alone* ($D(23)=.968, p>.05$), *2* ($D(36)=.950, p>.05$), *5* ($D(27)=.958, p>.05$), and *6 or more* ($D(39)=.953, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for the groups *3* and *4*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Live alone*, *2*, *5* and *6 or more*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

5.4. Grouping Variable – Highest Education Level

The sample sizes for all groups in Table 6.1, is greater than 50, which means that the *Kolmogorov-Smirnov (K-S)* test will be utilised.

The results for the construct *Perceived Functionality in PEOU* against groups *Post-Matric Diploma or Certificate* ($D(55)=.089, p>.05$), and *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.080, p>.05$), are significantly normal. The *Grade 12 (Matric, std 10) or Lower* group ($D(73)=.126, p<.05$), are significantly not normal.

The plots in the *Normal Q-Q diagram (Table K1)* of the *Grade 12 (Matric, std 10) or Lower* group, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Post-Matric Diploma or Certificate* and *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Reliability in PEOU* against group *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.090, p>.05$), are significantly normal. The groups *Grade 12 (Matric, std 10) or Lower* ($D(74)=.124, p<.05$), and *Post-Matric Diploma or Certificate* ($D(55)=.135, p<.05$), are significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *Grade 12 (Matric, std 10) or Lower* group and *Post-Matric Diploma or Certificate*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Ease of Use (Convenience)* against groups *Grade 12 (Matric, std 10) or Lower* ($D(74)=.168, p<.05$), *Post-Matric Diploma or Certificate* ($D(55)=.122, p<.05$), and *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.147, p<.05$), are significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* of groups *Grade 12 (Matric, std 10) or Lower*, *Post-Matric Diploma or Certificate* and *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the samples is both non-normal and normal, parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Benefits in PU* against groups *Grade 12 (Matric, std 10) or Lower* ($D(74)=.104, p<.05$), *Post-Matric Diploma or Certificate* ($D(55)=.133, p<.05$), and *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.152, p>.05$), are significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Grade 12 (Matric, std 10) or Lower*, *Post-Matric Diploma or Certificate* and *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because the dots deviate substantially from the straight line.

These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the samples is both non-normal and normal, parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Utility in PU* against groups *Grade 12 (Matric, std 10) or Lower* ($D(74)=.104, p>.05$), *Post-Matric Diploma or Certificate* ($D(55)=.133, p>.05$), and *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.152, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Grade 12 (Matric, std 10) or Lower*, *Post-Matric Diploma or Certificate* and *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Because the distribution of the samples was found to be normal, thus, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Security in PPR* against group *Grade 12 (Matric, std 10) or Lower* ($D(74)=.118, p<.05$), are significantly not normal. The groups *Post-Matric Diploma or Certificate* ($D(55)=.062, p>.05$), and *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.071, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* of the *Grade 12 (Matric, std 10) or Lower* group, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Baccalaureate or Post-Graduate Degree(s)* and *Post-Matric Diploma or Certificate*, further confirm K-S scores, because the most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Perceived Protection in PPR* against groups *Grade 12 (Matric, std 10) or Lower* ($D(71)=.082, p>.05$), *Post-Matric Diploma or Certificate* ($D(55)=.091, p>.05$), and *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.071, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Grade 12 (Matric, std 10) or Lower*, *Post-Matric Diploma or Certificate* and *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Because the distribution of the samples was found to be normal then parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Sociability by RSG* against group *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.100, p<.05$), are significantly not normal. The groups *Post-Matric Diploma or Certificate* ($D(55)=.095, p>.05$), and *Grade 12 (Matric, std 10) or Lower* ($D(74)=.055, p>.05$), are significantly normal.

The plots in the *Normal Q-Q diagram (Table K1)* for group *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Grade 12 (Matric, std 10) or Lower* and *Post-Matric Diploma or Certificate*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Social Understandability by RSG* against group *Post-Matric Diploma or Certificate* ($D(54)=.138, p<.05$), are significantly not normal. The groups *Grade 12 (Matric, std 10) or Lower* ($D(73)=.078, p>.05$), and *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.097, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for group *Post-Matric Diploma or Certificate*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Grade 12 (Matric, std 10) or Lower* and *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Social Awareness by RSG* against groups *Grade 12 (Matric, std 10) or Lower* ($D(73)=.127, p<.05$), *Post-Matric Diploma or Certificate* ($D(55)=.154, p<.05$), and *Baccalaureate or Post-Graduate Degree(s)* ($D(79)=.105, p>.05$), are significantly not normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Grade 12 (Matric, std 10) or Lower*, *Post-Matric Diploma or Certificate* and *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. Furthermore, because the distribution of the samples is both non-normal and normal, parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Awareness of IPA* against group *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.126, p<.05$), are significantly not normal. The groups *Grade 12 (Matric, std 10) or Lower* ($D(74)=.081, p>.05$), and *Post-Matric Diploma or Certificate* ($D(55)=.084, p>.05$), are significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for the group *Baccalaureate or Post-Graduate Degree(s)*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness.

The plots in the *Normal Q-Q diagram (Table K1)* for groups *Grade 12 (Matric, std 10) or Lower* and *Post-Matric Diploma or Certificate*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

The results for the construct *Understandability of IPA* against groups *Baccalaureate or Post-Graduate Degree(s)* ($D(80)=.104, p<.05$), and *Post-Matric Diploma or Certificate* ($D(55)=.159, p<.05$), are significantly not normal. The group *Grade 12 (Matric, std 10) or Lower* ($D(73)=.092, p>.05$), is significantly normal. The plots in the *Normal Q-Q diagram (Table K1)* for groups *Baccalaureate or Post-Graduate Degree(s)* and *Post-Matric Diploma or Certificate*, further confirm K-S scores, because the dots deviate substantially from the straight line. These plots are showing an S-shaped diagram, indicating that the problem for non-normal distribution is due to skewness. The plots in the *Normal Q-Q diagram (Table K1)* for group *Grade 12 (Matric, std 10) or Lower*, further confirm K-S scores, because most dots are on the straight line - thereby indicating that the distribution is normal. Furthermore, because the distribution of the samples is both non-normal and normal, depending on the group, non-parametric tests will be used as a means of testing the hypothesis.

5.5. Chapter Summary

The preceding sections have been used to assess the distribution of the frequencies. Grouping variables that will utilise parametric and non-parametric tests, were also identified.

CHAPTER SIX

This chapter is devoted to testing research hypotheses against the grouping variables gender, age, size of household, and highest education level. The results obtained during assessment of normality are also used in this chapter to determine a method applicable for hypothesis testing. The chapter concludes by providing a summary.

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6. HYPOTHESIS TESTING

The aim of this chapter is to test the study's hypotheses against the grouping variables gender, age, size of household, and highest education level. The results obtained during assessment of normality are used in this chapter to determine a method applicable for hypothesis testing. The chapter concludes with a summary. The analysis in the chapter is based on results presented in Appendix D 1 – D 4.

6.1. Grouping Variable: Gender

The assessment of normality for the grouping variable *gender* indicated that hypothesis testing for constructs should be conducted in both a parametric and non-parametric manner. The constructs that were identified to be applicable to parametric testing were *Understandability of IPA*, *Social Awareness by RSG*, *Perceived Benefits in PU*, *Perceived Utility in PU*, *Perceived Convenience in PEOU*, *Perceived Functionality in PEOU*, and *Perceived Reliability in PEOU*. On the other hand, the constructs *Awareness of IPA*, *Social Understandability by RSG*, *Perceived Protection in PPR*, *Sociability by RSG*, and *Perceived Security in PPR*, were to use the non-parametric procedure of testing hypotheses.

6.1.1. Parametric Test: The T-Test

6.1.1.1. Perceived Functionality in PEOU

Levene's test for Equality of Variances shows that $F(.095)$ is not significant (.759), and therefore the *Equal variances assumed* row will be used for reading test statistics. Table 6.5.1 indicates that participants' perceptions of mobile banking's functionality are slightly more favourable for males ($M = 3.94$, $SE = .051$), than females ($M = 3.92$, $SE = .047$), although this difference is not significant $t(.206) = .210$, $p > .05$.

6.1.1.2. Perceived Reliability in PEOU

Levene's test for Equality of Variances shows that $F(5.647)$ is significant (.018), and therefore the *Equal variances not assumed* row will be used for reading test statistics. Table 6.5.1 indicates that participants' perceptions of mobile banking being reliable, are slightly less favourable for males ($M = 3.18$, $SE = .089$), than females ($M = 3.34$, $SE = .067$), although this difference is not significant $t(.207) = -1.390$, $p > .05$.

6.1.1.3. Perceived Convenience in PEOU

Levene's test for Equality of Variances shows that $F(3.13)$ is not significant (.577), and therefore the *Equal variances assumed* row will be used for reading test statistics. Table 6.5.1 indicates that participants' perceptions of mobile banking being convenient, are slightly less favourable for males ($M = 3.76$, $SE = .073$), than females ($M = 3.81$, $SE = .063$), although this difference is not significant $t(.207) = -.465$, $p > .05$.

6.1.1.4. Perceived Benefits in PU

Levene's test for Equality of Variances shows that $F(2.683)$ is not significant (.103), and therefore the *Equal variances assumed* row will be used for reading test statistics. Table 6.5.1 indicates that participants' perceptions of mobile banking being beneficial, are slightly more favourable for males ($M = 4.17$, $SE = .054$), than females ($M = 4.13$, $SE = .062$), although this difference is not significant $t(.207) = .437$, $p > .05$.

6.1.1.5. Perceived Utility in PU

Levene's test for Equality of Variances shows that $F(.226)$ is not significant (.635), and therefore the *Equal variances assumed* row will be used for reading test statistics. Table 6.5.1 indicates that participants' perceptions of mobile banking's utility are slightly less favourable for males ($M = 3.19$, $SE = .084$), than for females ($M = 3.20$, $SE = .072$), although this difference was not significant $t(.205) = -.072$, $p > .05$.

6.1.1.6. Social Awareness by RSG

Levene's test for Equality of Variances shows that $F(.701)$ is not significant (.403), and therefore the *Equal variances assumed* row will be used for reading test statistics. Table 6.5.1 indicates that participants' perceptions of society being aware of mobile banking, are slightly more favourable for males ($M = 3.35$, $SE = .084$), than females ($M = 3.29$, $SE = .082$), although this difference was not significant $t(.205) = .497$, $p > .05$.

6.1.1.7. Understandability of IPA

Levene's test for Equality of Variances shows that $F(.536)$ is not significant (.465), and therefore the *Equal variances assumed* row will be used for reading test statistics. Table 6.5.1 indicates that participants' perceptions of mobile banking's privacy assurance being understandable, are slightly less favourable for males ($M = 3.75$, $SE = .069$), than females ($M = 3.66$, $SE = .064$), although this difference was not significant $t(.206) = .943$, $p > .05$.

6.1.2. Non-Parametric Test: The Mann-Whitney Test

6.1.2.1. Perceived Security in PPR

A Mann-Whitney U test revealed no significant difference in participants' perceptions of mobile banking being secured, for males ($Md = 3.89, n = 92$) and females ($Md = 3.78, n = 117$), $U = 5238, z = -.332, p = .740$.

6.1.2.2. Perceived Protection in PPR

A Mann-Whitney U test revealed no significant difference in participants' perceptions of mobile banking's protection, for males ($Md = 3.56, n = 91$) and females ($Md = 3.44, n = 115$), $U = 4841, z = -.923, p = .356$. The test also represented a small-sized effect at $.06$.

6.1.2.3. Sociability by RSG

A Mann-Whitney U test revealed no significant difference in participants' perceptions of mobile banking being sociable for males ($Md = 3.69, n = 92$) and females ($Md = 3.85, n = 117$), $U = 4748, z = -1.462, p = .144$. The test also represented a small-sized effect at $.10$.

6.1.2.4. Social Understandability by RSG

A Mann-Whitney U test revealed no significant difference in participants' perceptions of mobile banking being sociable, for males ($Md = 3.69, n = 92$) and females ($Md = 3.85, n = 117$), $U = 4748, z = -1.462, p = .144$. The test also represented a small-sized effect at $.10$.

6.1.2.5. Awareness of IPA

A Mann-Whitney U test revealed no significant difference in participants' perceptions of mobile banking's privacy assurance awareness, for males ($Md = 3.88, n = 92$) and females ($Md = 3.83, n = 117$), $U = 5379.500, z = -.006, p = .995$. The test also represented a large-sized effect at 4.15 .

6.1.3. Summary of Hypothesis Testing

The results for conducting hypothesis testing according to the *gender* group, found that perceptions of mobile banking across gender did not differ significantly. Thus, gender as a demographic factor is not an influence on perceptions of mobile banking.

6.2. Grouping Variable: Age Group

The assessment of normality for the grouping variable age group indicated that hypothesis testing for the constructs, including importance and likert scale, should be conducted in a non-parametric manner. Thus, the aim of this section is to evaluate the positions of age groups (i.e. *20 or younger*, *21-29*, *30-39*, and *40 or older*) against constructs (i.e. *Understandability of IPA*, *Social Awareness by RSG*, *Perceived Benefits in PU*, *Perceived Utility in PU*, *Perceived Convenience in PEOU*, *Perceived Functionality in PEOU*, *Perceived Reliability in PEOU*, *Awareness of IPA*, *Social Understandability by RSG*, *Perceived Protection in PPR*, *Sociability by RSG*, and *Perceived Security in PPR*).

6.2.1. The Kruskal-Wallis Test

6.2.1.1. Perceived Functionality in PEOU

There was a statistically significant difference in likert scale for the perceptions of mobile banking's functionality by the four different age groups (*Gp1*, $n = 35$: *20 or younger*; *Gp2*, $n = 81$: *21 -29*; *Gp3*, $n = 56$: *30-39*; *Gp4*, $n = 36$: *40 or older*) $\chi^2 (2, n = 208) = 7.85, p = .05$. Similar results were obtained for the importance scale as presented in Tables A7-9. Thus, the alternate hypothesis is confirmed, and the perceived functionality of mobile banking in PEOU is perceived positively across age groups.

- **H₁**: Mobile banking's functionality in PEOU is perceived positively across age groups.

In order to determine the direction of this statistical difference, the age group *40 or older* was chosen as a control group. The comparisons below will thus be conducted:

- Test 1: *20 or younger* compared to *40 or older*
- Test 2: *21-29* compared to *40 or older*
- Test 3: *30-39* compared to *40 or older*

The above comparisons resulted in three tests (Test 1, Test 2, and Test 3) with a new critical level of significance at $.05/3 = .0167$. Tables A2 show a p value that is less than 0.0167 , which indicates a statistically significant value. The p values for Table A1 and A3 are greater than 0.0167 , and thus non-significant. Furthermore, table A4 presents the median scores of age groups (recoded), with regard to the construct *Perceived Functionality in PEOU*. Evidently, age group *40 or older* with a median of 4.10 is statistically different from age group *20 or younger*, which has median value of 3.90. The rounding of these median values results in 4.10 becoming 4 and 3.90 becoming 4.

Thus, even though there is a difference between the groups, it is not significant. In the questionnaire used by this study, likert scale 4 indicates, *agree*. Hence, both age groups *40 or older* and *20 or younger* agree on mobile banking's functionality.

The results for evaluating the importance of the construct were similar to those of the likert scale as presented in the appendix. The only difference is that in the questionnaire used by this study, the importance scale 4 indicates *very important*. Thus, for both age groups *40 or older* and *20 or younger*, it is *very important* that mobile banking is functional. The revised for hypothesis based on data analysis is as follows:

- **H₁:** Mobile banking's functionality in PEOU is perceived positively for age groups of *40 or older* and *20 or younger*.

6.2.1.2. Perceived Reliability in PEOU

There was non-significant difference in likert scale for the perceptions of mobile banking being reliable by the four different age groups (*Gp1, n = 36: 20 or younger; Gp2, n = 81: 21 -29; Gp3, n = 56: 30 - 39; Gp4, n = 36: 40 or older*) $\chi^2 (2, n = 209) = 4.82, p = .19$. Similar results were obtained for the importance scale, as presented in Tables A7-9.

6.2.1.3. Perceived Convenience in PEOU

There was a statistically significant difference in likert scale for the perceptions of mobile banking being convenient, by the four different age groups (*Gp1, n = 36: 20 or younger; Gp2, n = 81: 21- 29; Gp3, n = 56: 30 - 39; Gp4, n = 36: 40 or older*) $\chi^2 (2, n = 209) = 7.96, p = .05$. Similar results were obtained for the importance scale as presented in Tables A7-9. Thus, the alternate hypothesis is confirmed, and the perceived convenience of mobile banking in PEOU is perceived positively across age groups.

- **H₁:** Mobile banking's convenience in PEOU is perceived positively across age groups.

In order to determine the direction of this statistical difference, age group *40 or older* was chosen as a control group. The comparisons below will thus be conducted:

- Test 1: *20 or younger* compared to *40 or older*
- Test 2: *21-29* compared to *40 or older*
- Test 3: *30-39* compared to *40 or older*

The above comparisons resulted in three tests (Test 1, Test 2, and Test 3) with a new critical level of significance at $.05/3 = .0167$. *Tables A2* shows a p value that is less than 0.0167 , which indicates a statistically significant value. The p values for *Table A1* and *A3* are greater than 0.0167 , and thus non-significant. Furthermore, *table A4* presents the median scores of age groups (recoded) with regard to the construct, *Perceived Convenience in PEOU*. Evidently, age group *40 or older* with a median of 4.10 , is statistically different from age group *20 or younger*, which has median value of 3.90 . The rounding of these median values results in 4.10 becoming 4 and 3.90 becoming 4 .

Thus, even though there is a difference between the groups, they both had a rounded median value of 4 . In the questionnaire used by this study, likert scale 4 indicates, *agree*. Hence, both age groups *40 or older* and *20 or younger* *agree* on mobile banking's functionality. The results for evaluating the importance of the construct were similar to those of the likert scale as presented in the appendix. The only difference is that in the questionnaire used by this study, the importance scale 4 indicates *very important*. Thus, for both age groups *40 or older* and *20 or younger*, it is *very important* that mobile banking is functional. The revised for hypothesis based on data analysis is as follows:

- **H₁**: Mobile banking's convenience in PEOU is perceived positively for age groups of *40 or older* and *20 or younger*.

6.2.1.4. Perceived Benefits in PU

There was non-significant difference in likert scale for the perceptions of mobile banking being beneficial by the four different age groups (*Gp1*, $n = 36$: *20 or younger*; *Gp2*, $n = 81$: *21 -29*; *Gp3*, $n = 56$: *30 - 39*; *Gp4*, $n = 36$: *40 or older*) $\chi^2 (2, n = 209) = 4.29, p = .23$. Similar results were obtained for the importance scale as presented in *Tables A7-9*.

6.2.1.5. Perceived Utility in PU

There was a statistically significant difference in likert scale for the perceptions of mobile banking's utility by the four different age groups (*Gp1*, $n = 35$: *20 or younger*; *Gp2*, $n = 80$: *21 -29*; *Gp3*, $n = 56$: *30 - 39*; *Gp4*, $n = 36$: *40 or older*) $\chi^2 (2, n = 207) = 10.68, p = .01$. Similar results were obtained for the importance scale as presented in *Tables A7-9*. Thus, the alternate hypothesis is confirmed, and the perceived utility of mobile banking in PU is perceived positively across age groups.

- **H₁**: Mobile banking's utility in PU is perceived positively across age groups.

In order to determine the direction of this statistical difference, age group *40 or older* was chosen as a control group. The comparisons below will thus be conducted:

- Test 1: *20 or younger* compared to *40 or older*
- Test 2: *21-29* compared to *40 or older*
- Test 3: *30-39* compared to *40 or older*

The above comparisons resulted in three tests (Test 1, Test 2, and Test 3) with a new critical level of significance at $.05/3 = .0167$. *Tables A1* and *A2* show p values that are less than 0.0167 , which indicates statistically significant values. The p value for *Table A3* is greater than 0.0167 , and thus non-significant. Furthermore, *table A4* presents the median scores of age groups (recoded) with regard to the construct, *Perceived Utility in PU*. Evidently, age group *40 or older*, with a median of 3.75 , is statistically different from age groups *20 or younger* and *21-29* with a median value of 3.00 . The rounding of these values results in 3.75 becoming 4 and 3.00 becoming 3 . In the questionnaire used by this study, likert scale 4 indicates, *agree*, whereas 3 indicate *neutral*. Thus, for the age group *40 or older*, they *agree* on the utility of mobile banking, whilst age groups *20 or younger* and *21-29* remained *neutral*.

The results for evaluating the importance of the construct were similar to those of the likert scale as presented in the appendix. The only difference is that in the questionnaire used by this study, the importance scale 4 indicates *very important*. Thus, for the age group *40 or older*, the utility feature of mobile banking is *very important* to have, whilst age groups *20 or younger* and *21-29* remained *neutral*. The revised for hypothesis based on data analysis is as follows:

- **H₁:** Mobile banking's utility in PU is perceived positively for age groups of *40 or older*, *20 or younger* and *21-29*.

6.2.1.6. Social Awareness by RSG

There was non-significant difference in likert scale for the perceptions of society being aware of mobile banking, by the four different age groups (*Gp1*, $n = 35$: *20 or younger*; *Gp2*, $n = 80$: *21 -29*; *Gp3*, $n = 56$: *30 - 39*; *Gp4*, $n = 36$: *40 or older*) $\chi^2 (2, n = 207) = 1.58, p = .67$. Similar results were obtained for the importance scale, as presented in *Tables A7-9*.

6.2.1.7. Understandability of IPA

There was a non-significant difference in likert scale for the perceptions of mobile banking's privacy assurance being understandable, by the four different age groups (*Gp1, n = 36: 20 or younger; Gp2, n = 81: 21 -29; Gp3, n = 56: 30 - 39; Gp4, n = 35: 40 or older*) $\chi^2 (2, n = 208) = 1.79, p = .62$. Similar results were obtained for the importance scale, as presented in Tables A7-9.

6.2.1.8. Perceived Security in PPR

There was a non-significant difference in likert scale for the perceptions of mobile banking being secured, by the four different age groups (*Gp1, n = 36: 20 or younger; Gp2, n = 81: 21 -29; Gp3, n = 56: 30 - 39; Gp4, n = 36: 40 or older*) $\chi^2 (2, n = 209) = 1.44, p = .70$. Similar results were obtained for the importance scale, as presented in Tables A7-9.

6.2.1.9. Perceived Protection in PPR

There was a non-significant difference in likert scale for the perceptions of mobile banking's protection, by the four different age groups (*Gp1, n = 34: 20 or younger; Gp2, n = 80: 21 -29; Gp3, n = 56: 30 - 39; Gp4, n = 36: 40 or older*) $\chi^2 (2, n = 206) = 2.56, p = .47$. Similar results were obtained for the importance scale, as presented in Tables A7-9.

6.2.1.10. Sociability by RSG

There was a non-significant difference in likert scale for the perceptions of mobile banking being sociable, by the four different age groups (*Gp1, n = 36: 20 or younger; Gp2, n = 81: 21 -29; Gp3, n = 56: 30 - 39; Gp4, n = 36: 40 or older*) $\chi^2 (2, n = 209) = 1.44, p = .70$. Similar results were obtained for the importance scale, as presented in Tables A7-9.

6.2.1.11. Social Understandability by RSG

There was a non-significant difference in likert scale for the perceptions of mobile banking being understandable, by the four different age groups (*Gp1, n = 35: 20 or younger; Gp2, n = 81: 21 -29; Gp3, n = 55: 30 - 39; Gp4, n = 36: 40 or older*) $\chi^2 (2, n = 207) = 2.57, p = .46$. Similar results were obtained for the importance scale, as presented in Tables A7-9.

6.2.1.12. Awareness of IPA

There was a non-significant difference in likert scale for the perceptions of mobile banking's privacy assurance awareness, by the four different age groups (*Gp1, n = 36: 20 or younger; Gp2, n = 81: 21 -29; Gp3, n = 56: 30 - 39; Gp4, n = 36: 40 or older*) $\chi^2 (2, n = 209) = 3.61, p = .31$.

6.2.2. Summary of Hypothesis Testing

The results for conducting hypothesis testing according to the *age group* reinforced the following alternate hypotheses:

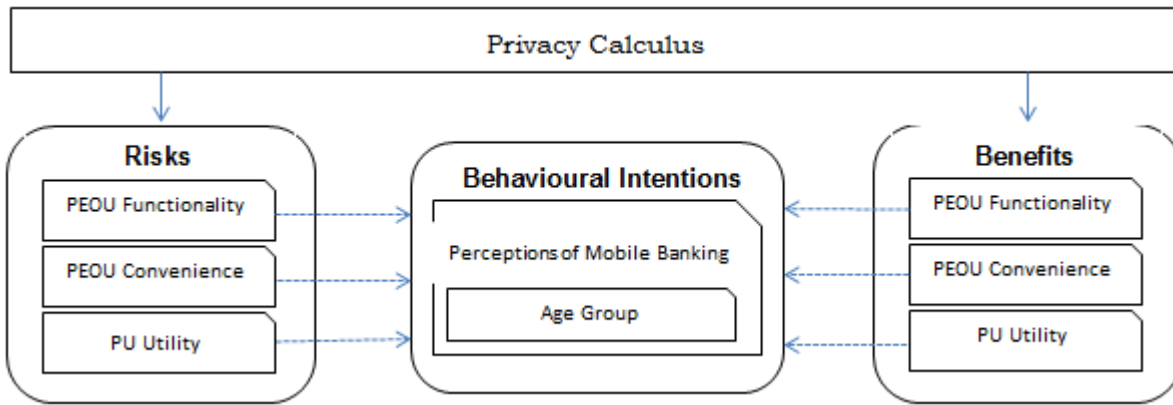
- i. **H₁**: Mobile banking's functionality in PEOU is perceived positively across age groups.
- ii. **H₁**: Mobile banking's convenience in PEOU is perceived positively across age groups.
- iii. **H₁**: Mobile banking's utility in PU is perceived positively across age groups.

Therefore, Mobile banking's perceived functionality, perceived convenience and perceived utility vary based on age groups. Specifically, mobile banking's perceived functionality vary for age groups of *40 or older* and *20 or younger* whereas mobile banking's perceived convenience vary for age groups of *40 or older* and *20 or younger*. Finally, it was also found that mobile banking's perceived convenience vary for age groups of *40 or older, 20 or younger* and *21-29*.

6.2.3. Revised Conceptual Model

The revised conceptual model, which is based on the testing of hypotheses, is depicted in figure 6.2.3. The depiction indicates that banking clients, whose *age group* is *20 or younger, 21 -29, 30-39 or 40 or older*, are influenced by 3 constructs, namely perceived utility of mobile banking's perceived usefulness, functionality, and convenience with regard to mobile banking's perceived ease of use. Thus, in order for South African banks to attract and retain mobile banking clients within the recoded age groups' *20 or younger, 21-29, 30-39 or 40 or older*, they should enhance the perceived utility of mobile banking's perceived usefulness, functionality and convenience, with regard to mobile banking's perceived ease of use.

Figure 6.2.3 Revised Conceptual Model by Age Group



6.3. Grouping Variable: Size of Household

The assessment of normality for the grouping variable *size of household* indicated that hypothesis testing for the constructs, including importance and likert scale, should be conducted in a non-parametric manner. Thus, the aim of this section is to evaluate the positions of *size of household* groups (i.e. *Live Alone, 2, 3, 4, 5, 6 or more*) against constructs (i.e. *Understandability of IPA, Social Awareness by RSG, Perceived Benefits in PU, Perceived Utility in PU, Perceived Convenience in PEOU, Perceived Functionality in PEOU, Perceived Reliability in PEOU, Awareness of IPA, Social Understandability by RSG, Perceived Protection in PPR, Sociability by RSG, and Perceived Security in PPR*).

6.3.1. The Kruskal-Wallis Test

6.3.1.1. Perceived Functionality in PEOU

There was a non-significant difference in likert scale for the perceptions of mobile banking being functional, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 26: 5; Gp6, n = 40: 6 or more*) $\chi^2 (2, n = 208) = 1.94, p = .86$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.2. Perceived Reliability in PEOU

There was a non-significant difference in likert scale for the perceptions of mobile banking being reliable, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 27: 5; Gp6, n = 40: 6 or more*) $\chi^2 (2, n = 209) = 1.02, p = .96$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.3. Perceived Convenience in PEOU

There was a non-significant difference in likert scale for the perceptions of mobile banking being convenient, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 27: 5; Gp6, n = 40: 6 or more*) $\chi^2 (2, n = 209) = 6.03, p = .30$. Similar results were obtained for the importance scale, as presented in Tables A7-9.

6.3.1.4. Perceived Benefits in PU

There was a non-significant difference in likert scale for the perceptions of mobile banking being beneficial, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 27: 5; Gp6, n = 40: 6 or more*) $\chi^2 (2, n = 209) = 2.89, p = .72$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.5. Perceived Utility in PU

There was a non-significant difference in likert scale for the perceptions of mobile banking's utility being reliable, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 26: 5; Gp6, n = 39: 6 or more*) $\chi^2 (2, n = 207) = 6.15, p = .29$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.6. Social Awareness by RSG

There was a non-significant difference in likert scale for the perceptions of society being aware of mobile banking, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 37: 3; Gp4, n = 45: 4; Gp5, n = 26: 5; Gp6, n = 40: 6 or more*) $\chi^2 (2, n = 207) = 9.19, p = .10$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.7. Understandability of IPA

There was a statistically significant difference in likert scale for the perceptions of mobile banking's privacy assurance being understandable, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 27: 5; Gp6, n = 39: 6 or more*) $\chi^2 (2, n = 208) = 13.43, p = .02$. Similar results were obtained for the importance scale as presented in Tables A7-9. Thus, the alternate hypothesis is confirmed, and the perceived understandability of mobile banking in IPA is perceived positively across sizes of household groups.

- **H₁:** Mobile banking's understandability in IPA is perceived positively across sizes of household groups.

In order to determine the direction of this statistical difference, the size of household group *Live Alone* was chosen as a control group. The comparisons below will thus be conducted:

- Test 1: 2 compared to *Live Alone*
- Test 2: 3 compared to *Live Alone*
- Test 3: 4 compared to *Live Alone*
- Test 4: 5 compared to *Live Alone*
- Test 5: 6 or more compared to *Live Alone*

The above comparisons resulted in five tests (Test 1, Test 2, Test 3, Test 4, and Test 5) with a new critical level of significance at $.05/5 = .01$. *Tables A1, A2 and A4* show p values that are less than 0.01 , which indicates statistically significant values. The p values for *Table A3* and *A5* are greater than 0.01 , and thus are non-significant. Furthermore, *table A6* presents the median scores of size of household groups with regard to the construct *Understandability of IPA*.

Evidently, size of household group *Live Alone* with a median of 3.38 , is statistically different from groups 2, 3, and 5, with median values of 3.75 , 3.75 , and 4.13 respectively. The rounding of these median values results in 3.38 becoming 3, 3.75 becoming 4, and 4.13 becoming 4. In the questionnaire used by this study, likert scale 3 and 4 indicates, *neutral* and *agree*, respectively. Thus, while the size of household group *Live Alone* remained *neutral* on the understandability of mobile banking's privacy assurance policies, groups 2, 3, and 5 agreed on mobile banking's privacy assurance policies being understandable.

The results for evaluating the importance of the construct were similar to those of the likert scale as presented in the appendix. The only difference is that in the questionnaire used by this study, the importance scale 4 indicates *very important*. Thus, while the size of household group *Live Alone* remained *neutral* on the importance of the understandability of mobile banking's privacy assurance policies, groups 2, 3, and 5 found it *very important* that mobile banking's privacy assurance policies be understandable. The revised for hypothesis based on data analysis is as follows:

- **H₁:** Mobile banking's understandability in IPA is perceived positively for sizes of household groups of *Live Alone*, 2, 3, and 5.

6.3.1.8. Perceived Security in PPR

There was a non-significant difference in likert scale for the perceptions of mobile banking being secured, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 27: 5; Gp6, n = 40: 6 or more*) $\chi^2 (2, n = 209) = 9.60, p = .09$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.9. Perceived Protection in PPR

There was a non-significant difference in likert scale for the perceptions of mobile banking's protection, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 35: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 26: 5; Gp6, n = 39: 6 or more*) $\chi^2 (2, n = 206) = 10.12, p = .07$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.10. Sociability by RSG

There was a non-significant difference in likert scale for the perceptions of mobile banking being sociable, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 27: 5; Gp6, n = 40: 6 or more*) $\chi^2 (2, n = 209) = 1.61, p = .90$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.11. Social Understandability by RSG

There was a non-significant difference in likert scale for the perceptions of mobile banking being understandable, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 44: 4; Gp5, n = 27: 5; Gp6, n = 39: 6 or more*) $\chi^2 (2, n = 207) = 5.08, p = .41$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.1.12. Awareness of IPA

There was a non-significant difference in likert scale for the perceptions of mobile banking's privacy assurance awareness, by the six different *size of household* groups (*Gp1, n = 23: Live Alone; Gp2, n = 36: 2; Gp3, n = 38: 3; Gp4, n = 45: 4; Gp5, n = 27: 5; Gp6, n = 40: 6 or more*) $\chi^2 (2, n = 209) = 9.93, p = .08$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.3.2. Summary of Hypothesis Testing

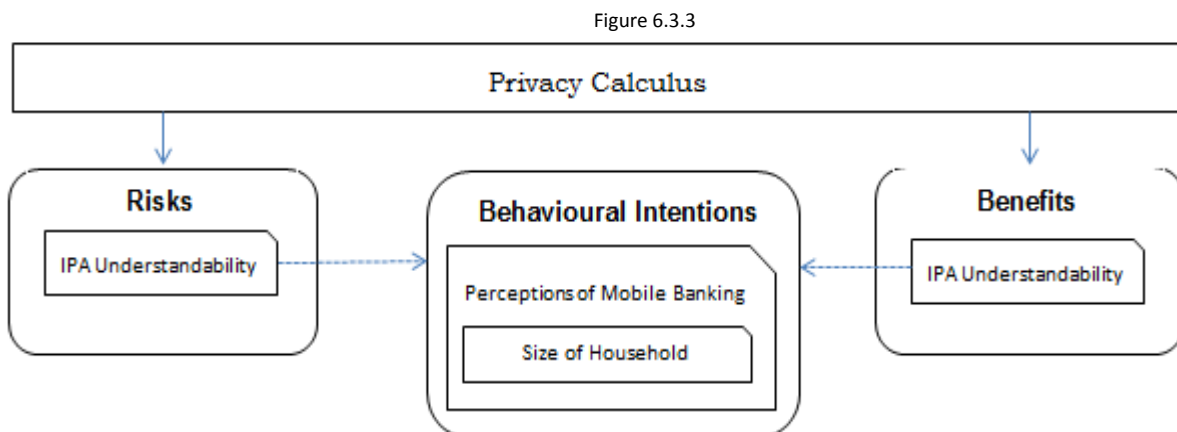
The results for conducting hypothesis testing according to the *size of household* group reinforced the following hypothesis:

- **H₁**: Mobile banking's understandability in IPA is perceived positively across sizes of household groups.

Therefore, Mobile banking's perceived understandability of IPA varies by size of household, particularly by *Live Alone*, 2, 3, and 5 groups.

6.3.3. Revised Conceptual Model

The revised conceptual model which is based on the testing of hypotheses is depicted in figure 6.3.3. The depiction indicates that banking clients, whose *size of household* is *Live Alone*, 2, 3, 4, 5 or 6 or more, are influenced by understandability of information privacy assurances provided by financial institutions (IPA) regarding mobile banking services. Thus, in order for South African banks to attract and retain mobile banking clients within the *size of household*, they should enhance perceived understandability of information privacy assurances provided by financial institutions (IPA) regarding mobile banking services.



6.4. Grouping Variable: Highest Education Level

The assessment of normality for the grouping variable *highest education level* indicated that hypothesis testing for constructs should be conducted in both a parametric and non-parametric manner. The constructs that qualified for parametric testing were *Perceived Convenience in PEOU*, *Perceived Benefits in PU*, and *Social Awareness by RSG*.

Alternatively, the constructs *Understandability of IPA*, *Perceived Utility in PU*, *Perceived Functionality in PEOU*, *Perceived Reliability in PEOU*, *Awareness of IPA*, *Social Understandability by RSG*, *Perceived Protection in PPR*, *Sociability by RSG*, and *Perceived Security in PPR*, were to utilize the non-parametric procedure of hypothesis testing.

6.4.1. Parametric Test: The ANOVA Test

6.4.1.1. Perceived Convenience in PEOU

Table K3 shows that a one-way between-groups analysis of variance was conducted to explore perceptions of mobile banking being convenient, by the three different *highest education level* groups (Group 1, $n = 74$: Grade 12 (Matric, std 10) or lower; Group 2, $n = 55$: Post-Matric Diploma or Certificate; Group 3, $n = 80$: Baccalaureate or Post-Graduate Degree(s)). There was a statistically significant difference at $p < .05$ in likert scores, for the three *highest education level* groups: $F(2, 206) = 3.18, p = .04$. Similar results were obtained for the importance scores as presented in Tables A7-9. Thus, the alternate hypothesis is confirmed, and the perceived convenience of mobile banking in PEOU s perceived positively across levels of education groups.

- **H₁**: Mobile banking's convenience in PEOU is perceived positively across levels of education groups.

Despite reaching statistical significance, the actual difference in median scores between the groups was quite small. The effect size was calculated below, and found to be .03.

Effect Size (Eta squared):

= Sum of squares between-groups / Total sum of squares

= 2.945 / 98.292

= .03

Post-hoc comparisons using the Tukey HSD test, indicated that the mean score for Group 1 ($M = 3.92, SD = .65$) was significantly different from Group 3 ($M = 3.78, SD = .66$). Group 2 ($M = 3.62, SD = .74$) did not differ significantly from either Group 1 or 3. The rounding of these median values resulted in 3.78 becoming 4 and 3.62 becoming 4. Thus, even though differences between the Group 1 and Group 3 were found, the differences were not significant as both groups had a rounded median value of 4. In the questionnaire used by this study, likert and importance scale 4 indicates *agree* and *very important*, respectively.

Hence, both *highest education level* groups *Grade 12 (Matric, std. 10) or lower* and *Baccalaureate or Post-Graduate Degree(s)* agree on mobile banking's convenience, and it is *very important* that mobile banking be convenient. The revised for hypothesis based on data analysis is as follows:

- **H₁:** Mobile banking's convenience in PEOU is perceived positively for levels of education groups of *Grade 12 (Matric, std. 10) or lower* and *Baccalaureate or Post-Graduate Degree(s)*.

6.4.1.2. Perceived Benefits in PU

Table K3 shows that a one-way between-groups analysis of variance was conducted to explore perceptions of mobile banking being beneficial, by the three different *highest education level* groups (*Group 1, n = 74: Grade 12 (Matric, std 10) or lower; Group 2, n = 55: Post-Matric Diploma or Certificate; Group 3, n = 80: Baccalaureate or Post-Graduate Degree(s)*). There was a statistically significant difference at $p < .05$ in likert scores, for the three *highest education level* groups: $F(2, 206) = 3.10, p = .05$. Similar results were obtained for the importance scores as presented in Tables A7-9. Thus, the alternate hypothesis is confirmed, and the perceived benefits of mobile banking in PU are perceived positively across levels of education groups.

- **H₁:** Mobile banking's benefit in PU is perceived positively across levels of education groups.

Despite reaching statistical significance, the actual difference in median scores between the groups was quite small. The effect size was calculated below, and found to be .03.

Effect Size (Eta squared):

$$\begin{aligned} &= \text{Sum of squares between-groups} / \text{Total sum of squares} \\ &= 2.204 / 7827 \\ &= .03 \end{aligned}$$

Post-hoc comparisons using the Tukey HSD test, indicated that the median score for *Group 1 (M = 4.02, SD = .63)* was significantly different from *Group 3 (M = 4.26, SD = .63)*. *Group 2 (M = 4.14, SD = .49)*, and did not differ significantly from either *Group 1* or *3*. The rounding of these median values resulted in 4.02 becoming 4 and 4.26 becoming 4. Thus, even though there is a difference between the groups, they both had a rounded median value of 4. In the questionnaire used by this study, likert and importance scale 4 indicates *agree* and *very important*, respectively. Hence, both *highest education level* groups *Grade 12 (Matric, std. 10) or lower* and *Baccalaureate or Post-Graduate Degree(s)* agree on benefits provided by mobile banking, and it is *very important* that mobile banking be beneficial. The revised for hypothesis based on data analysis is as follows:

- **H₁:** Mobile banking's benefit in PU is perceived positively for levels of education groups of *Grade 12 (Matric, std. 10) or lower and Bacculaureate or Post-Graduate Degree(s)*.

6.4.1.3. Social Awareness by RSG

Table K3 shows that a one-way between-groups analysis of variance was conducted to explore perceptions of society being aware of mobile banking, by the three different *highest education level* groups (*Group 1, n = 73: Grade 12 (Matric, std 10) or lower; Group 2, n = 55: Post-Matric Diploma or Certificate; Group 3, n = 79: Bacculaureate or Post-Graduate Degree(s)*). There was a non-statistically significant difference at $p > .05$ in likert scores for the three *highest education level* groups: $F(2, 204) = 1.61, p = .20$. Similar results were obtained for the importance scores as presented in *Tables A7-9*.

6.4.2. Non-Parametric Test: The Kruskal Wallis Test

6.4.2.1. Perceived Functionality in PEOU

Table K3 shows that there was a non-significant difference in perceptions of mobile banking being functional, by the three different highest education level groups (*Group 1, n = 73: Grade 12 (Matric, std 10) or lower; Group 2, n = 55: Post-Matric Diploma or Certificate; Group 3, n = 80: Bacculaureate or Post-Graduate Degree(s)*) $\chi^2(2, n = 208) = .007, p = .94$. Similar results were obtained for the importance scale as presented in *Tables A7-9*.

6.4.2.2. Perceived Reliability in PEOU

Table K3 shows that there was a non-significant difference in perceptions of mobile banking being reliable, by the three different highest education level groups (*Group 1, n = 74: Grade 12 (Matric, std 10) or lower; Group 2, n = 55: Post-Matric Diploma or Certificate; Group 3, n = 80: Bacculaureate or Post-Graduate Degree(s)*) $\chi^2(2, n = 209) = .02, p = .89$. Similar results were obtained for the importance scale as presented in *Tables A7-9*.

6.4.2.3. Perceived Utility in PU

Table K3 shows that there was a non-significant difference in perceived of mobile banking's utility by the three different *highest education level* groups (*Group 1, n = 73: Grade 12 (Matric, std. 10) or lower; Group 2, n = 55: Post-Matric Diploma or Certificate; Group 3, n = 79: Bacculaureate or Post-Graduate Degree(s)*) $\chi^2(2, n = 207) = 2.88, p = .09$. Similar results were obtained for the importance scale as presented in *Tables A7-9*.

6.4.2.4. Understandability of IPA

Table K3 shows that there was a statistically significant difference in perceptions of mobile banking's privacy assurance being understandable, by the three different *highest education level* groups (Group 1, $n = 73$: Grade 12 (Matric, std. 10) or lower; Group 2, $n = 55$: Post-Matric Diploma or Certificate; Group 3, $n = 80$: Baccalaureate or Post-Graduate Degree(s) $\chi^2 (2, n = 208) = .13, p = .72$). Similar results were obtained for the importance scale as presented in Tables A7-9. Thus, the alternate hypothesis is confirmed and the perceived understandability of mobile banking in IPA is perceived positively across levels of education groups.

- **H₁**: Mobile banking's understandability in IPA is perceived positively across levels of education groups.

This homogeneity in groups' perceptions is further explained by the median values, which are averaging at 4 (rounding the total median value of 3.75 to the nearest tenth) for both the likert and importance scale. In the questionnaire used for this study, value 4 for likert and the importance scale indicates *agree* and *very importance*, respectively. Therefore, although significant differences were not found, the homogeneity in responses indicates that all groups of *highest education level* agree on the understandability of privacy assurance provided by mobile banking, and it is *very important* that mobile banking's privacy assurance be understandable. The revised for hypothesis based on data analysis is as follows:

- **H₁**: Mobile banking's understandability in IPA is perceived positively for levels of education groups of *Grade 12 (Matric, std. 10) or lower, Post-Matric Diploma or Certificate and Baccalaureate or Post-Graduate Degree(s)*.

6.4.2.5. Perceived Security in PPR

The results presented in Table K3 (Likert Scale Scores) shows that there was a non-significant difference in the perceptions of mobile banking being secured, by the three different *highest education level* groups (Group 1, $n = 74$: Grade 12 (Matric, std. 10) or lower; Group 2, $n = 55$: Post-Matric Diploma or Certificate; Group 3, $n = 80$: Baccalaureate or Post-Graduate Degree(s) $\chi^2 (2, n = 209) = 2.10, p = .15$). Similar results were obtained for the importance scale as presented in Tables A7-9.

6.4.2.6. Perceived Protection in PPR

Table K3 shows that there was a non-significant difference in perceptions of mobile banking's protection, by the three different *highest education level* groups (Group 1, $n = 71$: Grade 12 (Matric, std. 10) or lower; Group 2, $n = 55$: Post-Matric Diploma or Certificate; Group 3, $n = 80$: Baccalaureate or Post-Graduate Degree(s) $\chi^2 (2, n = 206) = 10.12, p = .07$. Similar results were obtained for the importance scale as presented in Tables A7-9.

6.4.2.7. Sociability by RSG

The results presented in Table K3 (Likert Scale Scores) shows that there was a statistically significant difference in perceptions of mobile banking's sociability, by the three different *highest education level* groups (Group 1, $n = 74$: Grade 12 (Matric, std. 10) or lower; Group 2, $n = 55$: Post-Matric Diploma or Certificate; Group 3, $n = 80$: Baccalaureate or Post-Graduate Degree(s) $\chi^2 (2, n = 209) = 6.14, p = .01$. Similar results were obtained for the importance scale as presented in Tables A7-9. Thus, the alternate hypothesis is confirmed, and the perceived sociability of mobile banking in RSG is perceived positively across levels of education groups.

- **H₁**: Mobile banking's sociability in RSG is perceived positively across levels of education groups.

In order to determine the direction of this statistical difference, *highest education level* group Grade 12 (Matric, std. 10) or lower was chosen as a control group. The comparisons below will thus be conducted:

- Test 1: Post-Matric Diploma or Certificate compared to Grade 12 (Matric, std. 10) or lower
- Test 2: Baccalaureate or Post-Graduate Degree(s) compared to Grade 12 (Matric, std. 10) or lower

The above comparisons resulted in Test 1 and Test 2 having a new critical level of significance at $.05/2 = .025$. Tables A1 shows p values that are less than .025, which indicates statistically significant values. The p value for Table A2 is greater than .025, and thus is non-significant. Furthermore, table A3 presents the median scores of *highest education level* groups with regard to the construct, *Sociability by RSG*.

Effect size:

$$r = z / \text{square root of } N$$

$$r = -2.477 / \sqrt{209}$$

$$r = .17$$

Evidently, *highest education level* group *Grade 12 (Matric, std. 10) or lower* with a median of 3.85 is statistically different from group *Post-Matric Diploma or Certificate* with a median value of 3.69. The rounding of these median values (3.85 and 3.69) results in 4. In the questionnaire used by this study, likert and importance scale 4 indicates *agree* and *very important*, respectively. Thus, though there is a difference amongst the groups, it is not significant as both groups *agree* on mobile banking being sociable, and it is *very important* that mobile banking be sociable. The test also represented a large-sized effect at .17. The revised for hypothesis based on data analysis is as follows:

- **H₁:** Mobile banking's sociability in RSG is perceived positively for levels of education groups of *Post-Matric Diploma or Certificate* and *Baccalaureate or Post-Graduate Degree(s)*.

6.4.2.8. Social Understandability by RSG

The results presented in *Table K3 (Likert Scale Scores)* shows that there was a statistically significant difference in society's perceptions of mobile banking's understandability, by the three different *highest education level* groups (*Group 1, n = 73: Grade 12 (Matric, std. 10) or lower; Group 2, n = 54: Post-Matric Diploma or Certificate; Group 3, n = 80: Baccalaureate or Post-Graduate Degree(s)* $\chi^2 (2, n = 207) = 6.06, p = .01$). Similar results were obtained for the importance scale as presented in *Tables A7-9*. Thus, the alternate hypothesis is confirmed, and the perceived understandability of mobile banking in RSG is perceived positively across levels of education groups.

- **H₁:** Mobile banking's understandability in RSG is perceived positively across levels of education groups.

In order to determine the direction of this statistical difference, *highest education level* group *Grade 12 (Matric, std. 10) or lower* was chosen as a control group. The comparisons below will thus be conducted:

- Test 1: *Post-Matric Diploma or Certificate* compared to *Grade 12 (Matric, std. 10) or lower*
- Test 2: *Baccalaureate or Post-Graduate Degree(s)* compared to *Grade 12 (Matric, std. 10) or lower*

The above comparisons resulted in Test 1 and Test 2 having a new critical level of significance at $.05/2 = .025$. *Tables A1* and *A2* show p values that are less than .025, which indicates statistically significant values. Furthermore, *table A3* presents the median scores of *highest education level* groups, with regard to the construct *Understandability by RSG*.

Effect size:

$$r = z / \text{square root of } N$$

$$r = -2.462 / \sqrt{207}$$

$$r = .17$$

Evidently, *highest education level* group *Grade 12 (Matric, std. 10) or lower* with a median of 3.80, is statistically different from group *Post-Matric Diploma or Certificate* with a median value of 3.40. The test also represented a large-sized effect at .17. The rounding of the median values 3.80 and 3.40 results in 4 and 3, respectively. In the questionnaire used by this study, likert and importance scale 4 indicates *agree* and *very important*, respectively, while value 3 indicates *neutral* to both importance and the likert scale. Thus, group *Grade 12 (Matric, std. 10) or lower* *agree* on mobile banking being understandable to society, and it is *very important* that mobile banking be understandable to society. On the other hand, with regard to evaluating the importance and likert scales, the group *Post-Matric Diploma or Certificate* remained *neutral* on mobile banking being understandable to society.

Effect size:

$$r = z / \text{square root of } N$$

$$r = -2.286 / \sqrt{207}$$

$$r = .16$$

Similarly, *highest education level* group *Grade 12 (Matric, std. 10) or lower* with a median of 3.80, is statistically different from group *Baccalaureate or Post-Graduate Degree(s)* with a median value of 3.60. The test also represented a large-sized effect at .16. The rounding of the median values (3.80 and 3.60) resulted in 4. In the questionnaire used by this study, likert and importance scale 4 indicate *agree* and *very important*, respectively. Thus, though there is a difference between *highest education level* and the *Baccalaureate or Post-Graduate Degree(s)*, the difference is not significant as both groups *agree* on mobile banking being understandable to society, and it is *very important* that mobile banking be understandable to society. The revised for hypothesis based on data analysis is as follows:

- **H₁:** Mobile banking's understandability in RSG is perceived positively for levels of education groups of *Post-Matric Diploma or Certificate* and *Baccalaureate or Post-Graduate Degree(s)*.

6.4.2.9. Awareness of IPA

The results presented in *Table K3 (Likert Scale Scores)* shows that there was a statistically significant difference in perceptions of mobile banking's privacy assurance awareness, by the three different *highest education level* groups (*Group 1, n = 74: Grade 12 (Matric, std. 10) or lower; Group 2, n = 55: Post-Matric Diploma or Certificate; Group 3, n = 80: Baccalaureate or Post-Graduate Degree(s)*) $\chi^2 (2, n = 209) = 5.03, p = .03$. Similar results were obtained for the importance scale as presented in *Tables A7-9*. Thus, the alternate hypothesis is confirmed, and the perceived awareness of mobile banking in IPA is perceived positively across levels of education groups.

- **H₁:** Mobile banking's awareness in IPA is perceived positively across levels of education groups.

In order to determine the direction of this statistical difference, *highest education level* group *Grade 12 (Matric, std. 10) or lower* was chosen as a control group. The comparisons below will thus be conducted:

- Test 1: *Post-Matric Diploma or Certificate* compared to *Grade 12 (Matric, std. 10) or lower*
- Test 2: *Baccalaureate or Post-Graduate Degree(s)* compared to *Grade 12 (Matric, std. 10) or lower*

The above comparisons resulted in Test 1 and Test 2 having a new critical level of significance at $.05/2 = .025$. *Tables A1* shows p values less than $.025$, which indicates statistically significant values. The p value for *Table A2* is greater than $.025$, and thus non-significant. Furthermore, *table A3* presents the median scores of *highest education level* groups, with regard to the construct *Awareness of IPA*.

Effect size:

$$r = z / \text{square root of } N$$

$$r = -2.244 / \sqrt{209}$$

$$r = .16$$

Evidently, *highest education level* group *Grade 12 (Matric, std. 10) or lower* with a median of 3.92, is statistically different from the group *Post-Matric Diploma or Certificate* with a median value of 3.58. The test also represented a large-sized effect at $.16$. The rounding of these median values (3.92 and 3.58) resulted in 4. In the questionnaire used by this study, likert and importance scale 4 indicate *agree* and *very important*, respectively. Thus, although there is a difference amongst the groups, it is not significant as both groups *agree* on mobile banking's privacy assurance awareness, and it is *very important* that there is an awareness of mobile banking's privacy assurance.

The revised for hypothesis based on data analysis is as follows:

- **H₁**: Mobile banking's awareness in IPA is perceived positively for levels of education groups of *Post-Matric Diploma or Certificate and Baccaulaureate or Post-Graduate Degree(s)*.

6.4.3. Summary of Hypothesis Testing

The results for conducting hypothesis testing according to the *highest education level* reinforced the following alternate hypotheses:

- i. **H₁**: Mobile banking's convenience in PEOU is perceived positively across levels of education groups.
- ii. **H₁**: Mobile banking's benefit in PU is perceived positively across levels of education groups.
- iii. **H₁**: Mobile banking's understandability in IPA is perceived positively across levels of education groups.
- iv. **H₁**: Mobile banking's sociability in RSG is perceived positively across levels of education groups.
- v. **H₁**: Mobile banking's understandability in RSG is perceived positively across levels of education groups.
- vi. **H₁**: Mobile banking's awareness in IPA is perceived positively across levels of education groups.

Therefore, Mobile banking's perceived convenience, perceived benefit, perceived understanding of IPA, perceived sociability by RSG, perceived social awareness by RSG and perceived social understandability vary based on levels of education groups. Specifically, mobile banking's perceived convenience and perceived benefit vary for levels of education groups of *Grade 12 (Matric, std. 10) or lower and Baccaulaureate or Post-Graduate Degree(s)* whereas mobile banking's perceived sociability and understandability by Relevant Social Groups vary for levels of education groups of *Post-Matric Diploma or Certificate and Baccaulaureate or Post-Graduate Degree(s)*.

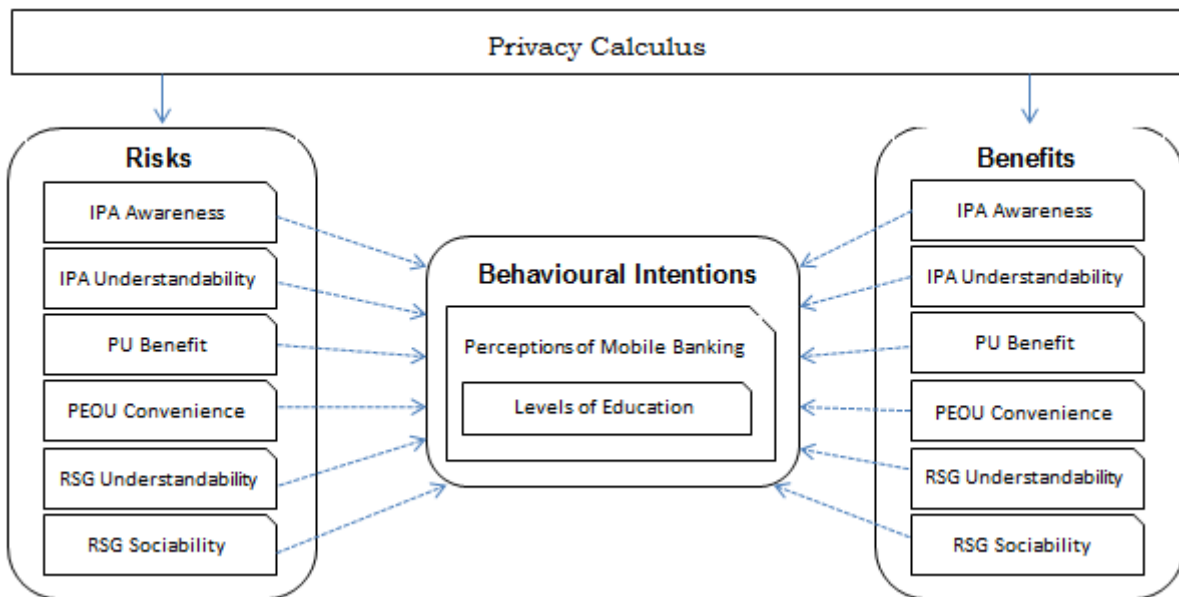
In terms of IPA, it was found that mobile banking's perceived understandability of IPA vary for levels of education groups of *Grade 12 (Matric, std. 10) or lower, Post-Matric Diploma or Certificate and Baccaulaureate or Post-Graduate Degree(s)* while mobile banking's perceived awareness of IPA vary for levels of education groups of *Post-Matric Diploma or Certificate and Baccaulaureate or Post-Graduate Degree(s)*.

6.4.4. Revised Conceptual Model

The revised conceptual model, which is based on the testing of hypotheses, is depicted in figure 6.4.4. The depiction indicates that banking clients, whose *highest education level is Grade 12 (Matric, std. 10) or lower, or Post-Matric Diploma or Certificate, or Baccalaureate or Post-Graduate Degree(s)*, are influenced by six constructs, namely perceived benefits of mobile banking (PU); understandability and awareness of information privacy assurances provided by financial institutions (IPA) regarding mobile banking services; sociability and understandability of mobile banking by social groups (RSG); and perceived convenience of mobile banking services (PEOU) in terms of subscribing to mobile banking services.

Thus, in order for South African banks to attract and retain mobile banking clients within the highest education level, they ought to enhance perceived benefits of mobile banking (PU); understandability and awareness of information privacy assurances provided by financial institutions (IPA) regarding mobile banking services; sociability and understandability of mobile banking by social groups (RSG); as well as perceived convenience of mobile banking services (PEOU).

Figure 6.4.4



6.5. Chapter Summary

The preceding sections have been used to test hypotheses, against the grouping variables gender, age, size of household, and highest education level. The testing of the hypotheses confirmed some of the alternate hypotheses in the grouping variables *age group, size of household, and highest education level*.

The findings were such that in order for South African banks to attract and retain mobile banking clients within the recoded age groups' *20 or younger, 21-29, 30-39 or 40 or older*, they should enhance the perceived utility of mobile banking's perceived usefulness, functionality and convenience, with regard to mobile banking's perceived ease of use.

Furthermore, it was also found that in order for South African banks to attract and retain mobile banking clients within the *size of household*, they should enhance perceived understandability of information privacy assurances provided by financial institutions (IPA) regarding mobile banking services. Finally, in order for South African banks to attract and retain mobile banking clients within the highest education level, they ought to enhance perceived benefits of mobile banking (PU); understandability and awareness of information privacy assurances provided by financial institutions (IPA) regarding mobile banking services; sociability and understandability of mobile banking by social groups (RSG); as well as perceived convenience of mobile banking services (PEOU).

Part 5

Research Impact, Shortcomings & Conclusion

CHAPTER SEVEN

This chapter summarises the overall research objectives and findings, and suggests future research and enhancements.

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7. CONCLUSION AND FUTURE WORK

This chapter summarises the overall research objectives and findings. It further postulates on the possible implication to theory and practice, pertaining to mobile banking within a South African context. The research shortcomings are also highlighted.

7.1. Summary of Research Findings

The research initially set out to examine the influence of demographic factors on perceptions of mobile banking. However, after having gained more insight on scholarly understanding of concept such as demographic factors, this study's objectives were then revised to the following:

- i. To examine the influence of Gender on perceptions of mobile banking.
- ii. To examine the influence of Age Groups on perceptions of mobile banking.
- iii. To examine the influence of Levels of Education Groups on perceptions of mobile banking.
- iv. To examine the influence of Race Groups on perceptions of mobile banking.
- v. To examine the influence of Size of Household Groups on perceptions of mobile banking.
- vi. To examine the influence of Level of Income Groups on perceptions of mobile banking.
- vii. To examine the influence of Religion Groups on perceptions of mobile banking.
- viii. To examine the influence of Occupation Groups on perceptions of mobile banking.
- ix. To examine the influence of Marital status Groups on perceptions of mobile banking.

The above objectives were further revised after an initial data analysis found that only four of the nine aforementioned objectives could be investigated. The four objectives that were going to be the focus of the research were the following:

- i. To examine the influence of Gender on perceptions of mobile banking.
- ii. To examine the influence of Age Groups on perceptions of mobile banking.
- iii. To examine the influence of Levels of Education Groups on perceptions of mobile banking.
- iv. To examine the influence of Size of Household Groups on perceptions of mobile banking.

Consequently data analysis and testing of hypotheses was conducted with an aim of investigating the aforementioned four objectives. The findings were that:

- i. Perceptions of mobile banking by gender did not vary

- ii. Mobile banking's perceived functionality, perceived convenience and perceived utility vary according to age groups
- iii. Mobile banking's perceived understandability of Institutional Privacy Assurance (IPA) by size of household groups varies
- iv. Finally, mobile banking's perceived convenience, perceived benefits, perceived understandability, sociability, social understandability and awareness vary per highest education level group

7.2. Implication to Theory

The current study contributed towards the construction of a broader knowledge base related to understanding the psyche of South African banking consumers. The theoretical advances made in the study, as espoused by the conceptual model, advance the study of Privacy (and Security risk). From a consumer perspective, the use of Privacy Calculus Model offers a new way of conceptualising the psyche of a banking South African consumer, in light of other existing theories. The study highlights that there are different dynamics such as age groups, size of household and highest education levels that influence perceptions towards mobile banking.

7.3. Implication to Practice

Drawing on the insights from Privacy Calculus Model (PCM), the study provides empirical evidence that perceptions of mobile banking is directly influenced by consumers' perceived ease of use (functionality, convenience), perceived usefulness (utility and benefits), institutional privacy assurance (understandability and awareness), and relevant social groups (sociability and social understandability) - across age, size of household, and highest education level groups.

A noticeable exclusion, though, is the perceived privacy risk (PPR) construct, as being influential to consumers' WtS. Thus, the study provides empirical evidence of a weak relationship between consumers' perceived privacy risk (PPR) as an influence towards mobile banking perceptions. This is an interesting finding, because it suggests that consumers' conscientious understanding of privacy and security might not dampen their perceptions of mobile banking, if there is a perceived technological utility for instance.

The theory of privacy calculus argues that in order for a consumer to risk disclosure of privacy, the said consumer constantly compares the perceived benefits against the perceived risks. Empirical data show that both Perceived Convenience in PEOU and Understandability of IPA, are the only constructs that influence more than one grouping of variables, which indicates a stronger relationship with perceptions of mobile banking than all other constructs. Thus, although mobile banking subscribers in age, size of household, and highest education level groups are influenced by different variables, Perceived Convenience in PEOU and Understandability of IPA, seem to dominate consumers' privacy calculus process, and ultimately their mobile banking perceptions.

Therefore, the implication to practice is that as long as a consumer's mobile banking perceptions is derived from the perceived usefulness of the technology and institutional privacy assurance, this might mitigate their worry about privacy and security. So, in order for one of South Africa's big banks to maintain and attract new mobile banking customers, they need to direct their focus (i.e. marketing strategy) to selling to the user the usefulness of mobile banking, as well as providing privacy assurances to all potential mobile banking subscribers.

7.4. Research Shortcomings

The results obtained during the testing of hypotheses indicate that different population groups have varying influences to mobile banking subscriptions but it is not clear as to whether these influences are applicable to people subscribing to mobile banking applications; the mobile banking web; or SMS banking. In other words, although the findings are that perceived ease of use and institutional privacy assurances are underlying influencers, the research couldn't distinguish whether those influences are for consumers who are considering subscribing to the mobile banking web, SMS banking, or mobile banking applications.

7.5. Research Conclusion

This research began by providing a background to mobile technology and mobile banking. The background to mobile banking indicated that there were rapid increases in the number of people subscribing to mobile banking services around the world. Thus, the research set out to examine the influence of demographic factors on perceptions of mobile banking. The South African banking environment, specifically the big four banks (FNB, ABSA, Standard Bank, and Nedbank) was chosen as the context in which the study would focus.

The literature review was then conducted to acquire an academic understanding of concepts such as *demographics, mobile banking, mobile banking security, and information privacy*. Three channels of mobile banking were identified: SMS banking, mobile web, and mobile banking applications. Examples were also provided of how South Africa's banks have implemented these mobile banking channels. Despite the benefits derived from these different channels, the issue of security (or lack thereof) in mobile banking is still contentious. If mobile banking suffered from security-related threats, why then were there rapid subscription increases? The findings of the literature review further justified the need for the research to specifically examine the key influences behind mobile banking subscription.

The theoretical orientation which included the Privacy Calculus Model, technology acceptance model, and the social construction of technology, further provided reasons for what could be influencing people towards perceptions of mobile banking. Theoretical and conceptual frameworks were then formulated, based on the literature review. Research methodology was then discussed. Given the theoretical understanding of what research methodology entails, this research opted for a quantitative research approach and a purposive sample was chosen as a data sampling method. Questionnaires were chosen as the data collection instrument, while the SPSS software was used for data capturing and analysis. The first phase of data analysis found that the research instrument was reliable and valid. Furthermore, hypothesis testing was to be conducted against the grouping variables *gender, age group, size of household and highest education level*.

The testing of the hypotheses confirmed some of the alternate hypotheses in the grouping variables *age group, size of household and highest education level*. Furthermore, revised conceptual models were given for all grouping variables that confirmed alternate hypotheses. Noticeably, the alternate hypotheses across the grouping variables *age group, size of household and highest education level*, identified the following constructs as influencing consumers' perceptions towards mobile banking:

- i. Perceived Functionality in PEOU
- ii. Perceived Convenience in PEOU
- iii. Perceived Utility in PU
- iv. Understandability of IPA
- v. Perceived Benefits in PU
- vi. Sociability by RSG
- vii. Social Understandability by RSG
- viii. Awareness of IPA.

The implication to theory was that the current study contributed to the construction of a broader knowledge base related to understanding the psyche of South African banking consumers, and that there were far more dynamics that affect consumers' privacy calculus in relation to mobile banking. The implication to practice was that in order for one of South Africa's big banks to maintain and attract new mobile banking customers, they need to direct their focus (i.e. marketing strategy) to selling to the user the usefulness of mobile banking, as well as provide privacy assurances to all potential mobile banking subscribers.

Part 6

Reference List

REFERENCE LIST

- ABSA. [2012]. *Cellphone Banking*. Available from: <http://www.absa.co.za/Absacoza/Individual/Ways-to-Bank/Anytime,-Anywhere/Cellphone-Banking> (Accessed 30 July 2012).
- Abraham, A., Mauri, J. L., Buford, J. F., Suzuki, J. & Thampi, S. M. (eds.) (2011). *Advances in Computing and Communications. Communications in Computer and Information Science, Volume 193*. Heidelberg: Springer.
- Adagunodo, E. R., Awodele, O. & Ajayi, O. B. (2007). SMS Banking Services: A 21st Century Innovation in Banking Technology. *Issues in Informing Science and Information Technology*, 4:227-234.
- Adler, E. S. & Clark, R. (2011). *An Invitation to Social Research: How it's Done, 4th edition*. California: Wadsworth.
- Agarwal, B. L. (2005). *Programmed Statistics: Question-Answers, 3rd edition*. New Delhi: New Age International.
- Alfreds, D. (2011). *FNB Launches Mobile Banking App*. Available from: <http://www.fin24.com/Money/FNB-launches-mobile-banking-app-20110720-2> (Accessed 30 July 2012).
- Anon – Data Collection Methods. [2012]. *Data Collection: Primary Research Methods*. Available from: <http://www.knowthis.com/principles-of-marketing-tutorials/data-collection-primary-research-methods/data-collection-primary-research-methods/> (Accessed 30 July 2012).
- Anon – Ohio. [2012]. *The Ohio State University*. Available from: <http://ohioline.osu.edu/b868/pdf/b868.pdf> (Accessed 30 July 2012).
- Asrar, I. [2009]. *Could Sexy Space be the Birth of the SMS Botnet?* Available from: <http://www.symantec.com/connect/blogs/could-sexy-space-be-birth-sms-botnet> (Accessed 30 July 2012).
- Babbie, E. (2011). *The Basics of Social Research, 5th edition*. California: Wadsworth.
- Bansal, G., Zahedi, M. F. & Gefen, D. (2010). The Impact of Personal Dispositions on Information Sensitivity, Privacy Concern and Trust in Disclosing Health Information Online. *Decision Support Systems*, 49: 138-150.
- Barman, S. (2002). *Writing Information Security Policies*. Indiana: New Riders.

Bijker, W. E., Hughes, T. P. & Pinch, T. (1987). *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Massachusetts: The MIT Press.

Black, K. (2011). *Business Statistics: For Contemporary Decision Making, 7th edition*. New Jersey: Wiley & Sons

Brace, N., Kemp, R. & Snelgar, R. (2006). *SPSS for Psychologists, 3rd edition*. Hampshire: Palgrave Macmillan.

Britten, N. (2011). Qualitative Research on Health Communication: What Can it Contribute? *Patient Education and Counseling*, 82: 384–388.

Bryman, A. & Cramer, D. (2005). *Quantitative Data Analysis with SPSS 12 and 13: A Guide for Social Scientists*. London: Routledge.

Burns, N. & Grove, S. K. (2005). *The Practice of Nursing Research: Conduct, Critique, and Utilization, 5th edition*. Missouri: Elsevier Saunders.

Business Dictionary. [2013]. *Demographic Factors*. Available from: <http://www.businessdictionary.com/definition/demographic-factors.html> (Accessed 10 April 2013).

Business Wire. (2012). *US Mobile Banking Adoption on the Rise as Range of Services Grows*. Available from: <http://www.finextra.com/News/FullStory.aspx?newsitemid=24337> (Accessed 10 April 2013).

Cate, F. H. (1997). *Privacy in the Information Age*. Washington: The Brookings Institution.

Chikomo, K., Chong, K. M., Arnab, A. & Hutchison, A. (2006). *Security of Mobile Banking*. Available from: http://pubs.cs.uct.ac.za/archive/00000347/01/Security_of_Mobile_Banking_paper.pdf (Accessed 30 July 2012).

Comrey, A. L. & Lee, H. B. (2009). *Elementary Statistics: A Problem Solving Approach, 4th edition*. North Carolina: Lulu.com.

Cremin, R., Rabin, J., Fling, B., & Robinson, D. K. (2007). *Mobile Web Developer's Guide - Part 1: Creating Simple Mobile Sites for Common Handsets*. Available from: <http://www.networksolutions.com/help/mobi-guide.pdf> (Accessed 30 July 2012).

Dawson, C. (2006). *A Practical Guide to Research Methods: A User-Friendly Manual for Mastering Research Techniques and Projects (2nd ed)*. Oxford: How to Books Ltd.

Deans, P. C. (2005). *E-Commerce and M-Commerce Technologies*. Hershey: IRM Press.

De Jode, M. (2004). *Programming Java 2 Micro Edition on Symbian OS*. Chichester: John Wiley & Sons.

De Vaus, D. (2002). *Analyzing Social Science Data: 50 Key Problems in Data Analysis*. London: SAGE.

Dinev, T., Hart, P. & Mullen, M. R. (2008). Internet Privacy Concerns and Beliefs about Government Surveillance - An Empirical Investigation. *Journal of Strategic Information Systems*, 17: 214-233.

Dlamini, S. N. (2005). *Youth and Identity Politics in South Africa, 1990-1994*. Toronto: University of Toronto.

Dunn, D. S. (2010). *The Practical Researcher: A Student Guide to Conducting Psychological Research, 2nd edition*. West Sussex: Wiley-Blackwell.

Elliot, G. & Phillips, N. (2004). *Mobile Commerce and Wireless Computing Systems*. Harlow: Pearson.

Field, A. (2005). *Discovering Statistics Using SPSS, 2nd edition*. London: SAGE.

FNB. [2012]. *Mobile Banking*. Available from: <https://www.fnb.co.za/cellphone-banking/mobile-banking.html> (Accessed 30 July 2012).

FNB App. [2012]. *FNB Banking App*. Available from: <https://www.fnb.co.za/fnbapp/banking-app.html> (Accessed 30 July 2012).

Forlano, L. [2012]. *Social Construction of Technology*. Available from: <http://mediaresearchhub.ssrc.org/icdc-content-folder/social-construction-of-technology/> (Accessed 30 July 2012).

Foster, J. J. (1998). *Data Analysis Using SPSS for Windows: A Beginner's Guide*. London: SAGE.

Freeman, L. & Peace, A. G. (2005). *Information Ethics: Privacy and Intellectual Property*. Hershey: Information Science Publishing.

Gonzales, [2010]. *What Is a SIM Clone?* Available from: <http://www.wisegeek.com/what-is-a-sim-clone.htm> (Accessed 30 July 2012).

Greene, T. (2010). *Zeus Botnet has a New Use: Stealing bank access codes via SMS.* Available from: <http://www.networkworld.com/news/2010/092910-zeus-botnet-sms-banks.html> (Accessed 30 July 2012).

Gregory, R. J. (1996). *Psychological Testing: History, Principles, and Applications, 2nd edition.* Boston: Allyn & Bacon

Gustke, C. [2012]. *5 Reasons to Use Mobile Banking.* Available from: <http://www.bankrate.com/finance/savings/5-reasons-to-use-mobile-banking-1.aspx> (Accessed 30 July 2012).

Heiman, G. (2010). *Basic Statistics for the Behavioral Sciences, 6th edition.* California: Wadsworth Publishing.

Hinton, P., Brownlow, C. & McMurray, I. (2004). *SPSS Explained.* London: Routledge.

Icicibank [2012]. *USSD.* Available from: <http://www.icicibank.com/Personal-Banking/onlineservice/mobile-banking/ussd.html> (Accessed 30 July 2012).

Investor Glossary. [2013]. *Demographics.* Available from: <http://www.investorglossary.com/demographics.htm> (Accessed 10 April 2013).

iPad. (2012). *iPad.* Available from: <http://www.apple.com/ipad/> (Accessed 30 July 2012).

Jacobs, J. K., Kawanaka, T. & Stigler, J. W. (1999). Integrating Qualitative and Quantitative Approaches to the Analysis of Video Data on Classroom Teaching. *International Journal of Educational Research*, 31: 717–724.

Kamhunga, S. (2012). *Cellphone Banking - Tool of the Future.* Available from: <http://www.businessday.co.za/Articles/Content.aspx?id=168952> (Accessed 30 July 2012).

Kaplan, R. M. & Saccuzzo, D. P. (2009). *Psychological Testing: Principles, Applications and Issues, 7th edition.* California: Wadsworth.

Kayne, R. (2011). *What is a Botnet?* Available from: <http://www.wisegeek.com/what-is-a-botnet.htm> (Accessed 30 July 2012).

Kim, E. & Lee, B. (2009). E-Service Quality Competition Through Personalization Under Consumer Privacy Concerns. *Electronic Commerce Research and Applications*, 8: 182-190.

Kipper, G. (2007). *Wireless Crime and Forensic Investigation*. London: Auerbach Publications.

Kirk, J. (2010). *Android Mobile Malware Has Botnet-like Traits*. Available from: <http://www.pcworld.com/businesscenter/article/215132/android-mobile-malware-has-botnetlike-traits.html> (Accessed 30 July 2012).

Klein, H. K. & Kleinman, D. L. (2002). *The Social Construction of Technology: Structural Considerations*. *Science, Technology, & Human Values*, 27(1): 28-52.

Kumar, R. (2005). *Research Methodology: A Step-by-Step Guide for Beginners, 2nd edition*. London: SAGE Publications.

Laerd. [2012]. *Types of Quantitative Research Question*. Available from: <http://dissertation.laerd.com/articles/types-of-quantitative-research-question.php> (Accessed 30 July 2012).

Lee. (2010). *Did You Know that Botnets are Being Spread by Mobile Phone Apps?* Available from: <http://www.security-fags.com/did-you-know-that-botnets-are-being-spread-by-mobile-phone-apps.html> (Accessed 30 July 2012).

Leech, N. L., Barrett, K. C., Morgan, G. A., Clay J. N. & Quick, D. (2009). *SPSS for Intermediate Statistics: Use and Interpretation, 2nd edition*. New Jersey: Lawrence Erlbaum Associates, Inc.

Legris, P., Ingham, J. & Colletette, P. (2003). Why Do People Use Information Technology? A Critical Review of the Technology Acceptance Model. *Information & Management*, 40: 191-204.

Lin, H. (2010). An Empirical Investigation of Mobile Banking Adoption: The Effect of Innovation Attributes and Knowledge-Based Trust. *Internal Journal of Information Management*, 2010: 1-9.

Maduku, D. K. (2011). *Understanding Retail Bank Customer's Attitude Towards and Usage of Cell Phone and Internet Banking Services in Gauteng, South Africa*. Johannesburg: University of Johannesburg.

Mills, E. (2009). *SMS Messages Could be Used to Hijack a Phone*. Available from: http://news.cnet.com/8301-1009_3-10222921-83.html (Accessed 30 July 2012).

MMA. (2009). *Mobile Banking Overview*. Available from: <http://www.mmaglobal.com/mbankingoverview.pdf> (Accessed 30 July 2012).

Mobile Website Designer. [2012]. *.mobi Domain Name Information Guide*. Available from: <http://www.mobilewebsitedesigner.com/articles/> (Accessed 30 July 2012).

Mokhonoana, P. M. & Olivier, M. S. (2007). *Acquisition of a Symbian Smart Phone's Content with an On-Phone Forensic Tool*. Available from: <http://mo.co.za/open/symbianfor.pdf> (Accessed 30 July 2012).

Muenchen, R. A. & Hilbe, J. M. (2010). *R for Stata Users (Statistics and Computing)*. New York: Springer.

Muir, C. (2006). *ABSA's Implementation of Mobile Banking as a Value-Added Mobile Business Offering*. Johannesburg: University of Johannesburg.

Muravitskaya, I. [2009]. *Sexy Space Infects Symbian Mobile Phones*. Available from: <http://www.sotovik.com/news/hi-techweek/sexy-space-symbian-phones.html> (Accessed 30 July 2012).

Nedbank. [2012]. *Cellphone Banking*. Available from: http://www.nedbank.co.za/website/content/Products/product_detail.asp?SubSubcatid=1865&Subcatid=501&ProductID=102 (Accessed 30 July 2012).

Nessiaprincess. (2009). *Technological Determinism vs Social Construction of Technology*. Available from: <http://communicationista.wordpress.com/2009/12/16/technological-determinism-vs-social-construction-of-technology/> (Accessed 30 July 2012).

Network Solutions. [2012]. *Getting Started: Setting Up Your .MOBI Website*. Available from: <http://www.networksolutions.com/support/setting-up-your-mobi-website/> (Accessed 30 July 2012).

Nunes, R. (2008). *Taking a New Look at USSD for Mobile Banking*. Available from: <http://www.mihswat.com/2008/10/09/sometimes-old-technologies-are-good-and-%E2%80%9Cnew-%E2%80%9D-or-ussd-can-change-everything-for-mobile-banking/> (Accessed 30 July 2012).

OBSSA. [2012]. *Code of Banking Practice*. Available from: http://www.obssa.co.za/documents/code_of_banking_practice.pdf (Accessed 30 July 2012).

Olsen, O. E. & Engen, O. A. (2007). *Technological Change as a Trade-off between Social Construction and Technological Paradigms*. *Technology in Society*, 29: 456–468.

Oxford Business Group. (2008). *The Report: South Africa*. Oxford: Oxford Business Group.

Pachepsky, Ya. & Rawls, W. J. (2004). *Development of Pedotransfer Functions in Soil Hydrology, Volume 30 (Development in Soil Science)*. Amsterdam: Elsevier.

Pagano, R. R. (2012). *Understanding Statistics in the Behavioral Sciences, 10th edition*. California: Wadsworth Publishing

Pai, F. & Huang, K. (2011). Applying the Technology Acceptance Model to the Introduction of Healthcare Information Systems. *Technological Forecasting & Social Change*, 78: 650-660.

Pallant, J. (2007). *SPSS Survival Manual 3rd edition*. New South Wales: Allen and Unwin.

Park, S. Y. (2009). An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use e-Learning. *Educational Technology & Society*, 12(3): 150-162.

Peevers, G., Douglas, G., & Jack, M. A. (2008). A Usability Comparison of Three Alternative Message Formats for an SMS Banking Service. *International Journal of Human-Computer Studies*, 66: 113-123.

Pett, M. A., Lackey, N. R. & Sullivan, J. J. (2003). *Making Sense of Factor Analysis: The Use of Factor Analysis for Instrument Development in Health Care Research*. California: SAGE.

Punithavathi, R. & Duraiswamy, K. (2011). Secured Authenticated Mobile Agent Based Mobile Banking System. *European Journal of Scientific Research*, 57(3).

Puri, R. (2003). *Bots and Botnet: An Overview*. Available from: http://www.sans.org/reading_room/whitepapers/malicious/bots-botnet-overview_1299 (Accessed 30 July 2012).

Rothman, K. J., Greenland, S. & Lash, T. L. (2008). *Modern Epidemiology, 3rd edition*. Philadelphia: Lippincott Williams & Wilkins.

SAInfo. (2012). *South Africa's population*. Available from: <http://www.southafrica.info/about/people/population.htm> (Accessed 10 April 2013).

Shanmuga. [2010]. *Find and Remove Zeus (Zbot) Banking Trojan*. Available from: <http://www.malwarehelp.org/find-and-remove-zeus-zbot-banking-trojan-2009.html> (Accessed 30 July 2012).

Shaw, P. (2001). *E-Business Privacy and Trust: Planning and Management Strategies*. New York: John Wiley & Sons.

Sobh, T. (ed). (2008). *Advances in Computer and Information Sciences Engineering*. Bridgeport: Springer.

Solovo, D. J., Rotenberg, M. & Schwartz, P. M. (2006). *Privacy, Information, and Technology*. New York: Aspen Publishers.

Southalabama. [2012]. *Writing Quantitative Research Questions*. Available from: http://www.southalabama.edu/coe/bset/johnson/oh_master/Ch3/Tab03-07.pdf (Accessed 30 July 2012).

Staff Writer. (2012). *FNB Banking App Hits Transactions Landmark*. Available from: <http://businesstech.co.za/news/general/16525/fnb-banking-app-hits-transactions-landmark/> (Accessed 30 July 2012).

Standard Bank. [2012]. *Banking on your Cellphone*. Available from: http://standardbank.co.sz/SBIC/Frontdoor_02_02/0,2454,3447_27200558_0,00.html (Accessed 30 July 2012).

Statkon. [2013]. *Questionnaire Design*. Available from: <http://www.uj.ac.za/EN/Research/Statkon/Documents/Statkon%20Questionnaire%20Design.pdf> (Accessed 10 April 2013).

Statistics South Africa. (2012). *Census 2011: Methodology and Highlights of Key Results*. Available from: http://www.statssa.gov.za/Census2011/Products/Census_2011_Methodology_and_Highlights_of_key_results.pdf (Accessed 10 April 2013).

Suttle, R. (2011). *Types of Questions in Quantitative Research*. Available from: http://www.ehow.com/info_7737070_types-questions-quantitative-research.html (Accessed 30 July 2012).

Swanson, R. A. & Holton, E. F. (2005). *Research in Organisations: Foundations and Methods of Inquiry*. California: Berrett-Koehler Publishers.

Szewczak, E. & Snodgrass, C. (2002). *Managing the Human Side of Information Technology: Challenges and Solutions*. Hershey: Idea Group Publishing.

Thomson, I. (2010). *Symbian Malware Creating Mobile Botnet*. Available from: <http://www.v3.co.uk/v3/news/2266108/symbian-malware-creating-mobile> (Accessed 30 July 2012).

Turner, M., Kitchenham, B., Brereton, P., Charters, S. & Budgen, D. (2010). Does The Technology Acceptance Model Predict Actual Use? A Systematic Literature Review. *Information and Software Technology*, 52: 463-479.

UJ-Statkon. [2013]. *Statkon*. Available from: <http://www.uj.ac.za/EN/Research/Statkon/Pages/home.aspx> (Accessed 10 April 2013).

Van der Merwe, J. P. (2010). *South African Banks Capturing the African Market*. Available from: http://www.tradeinvestsa.co.za/feature_articles/776572.htm (Accessed 30 July 2012).

Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integration Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model. *Information Systems Research*, 11(4): 342-365.

Walliman, N. (2011). *Your Research Project: Designing and Planning Your Work*, 3rd edition. London: SAGE.

Whitehead, H. (2008). *Analyzing Animal Societies: Quantitative Methods for Vertebrate Social Analysis*. Chicago: University of Chicago Press.

Wilkinson, D. (ed.) (2000). *The Researcher's Toolkit: The Complete Guide to Practitioner Research*. London: Routledge.

Xu, H., Luo, X. R., Carroll, J. M. & Rosson, M. B. (2011). The Personalization Privacy Paradox: An Exploratory Study of a Decision Making Process for Location-Aware Marketing. *Decision Support Systems*, 51: 42-52.

Yoo, Y., Lee, J. & Rowley, C. (2008). *Trends in Mobile Technology and Business in the Asia-Pacific Region*. Oxford: Chandos Publishing.

Part 7

Appendix A

APPENDIX A

The Research Questionnaire.

Appendix A

Dear Sir / Madam,

My name is Sifiso and I am Master's student at the University of Johannesburg. I am undertaking a research project to examine the influence of privacy risks/benefits trade-off on banking clients' willingness to subscribe to mobile banking applications.

I kindly request that you complete the following short questionnaire regarding your perceptions of mobile banking and information privacy. It should take no longer than 15 minutes of your time. Your response is of the utmost importance.

Participation in this survey is voluntary and anonymous and hence request that you do not enter your name or contact details on the questionnaire. The results of the project may be published, but you may be assured that any information obtained in connection with this study that may identify you will remain confidential and will not be disclosed.

If at any stage you have any queries or concerns regarding your participation, please feel free to contact me directly at 0729828439 or mafiswana@hotmail.com.

Thank you for your willingness to participate in this study.

Yours sincerely,
Sifiso W Ndlovu

Section A

Background Information

Please answer the following questions by making an **X** in the relevant block or writing down your answer in the space provided.

Example of how to complete this questionnaire:

If your gender is male:

Male	1
Female	2

This questionnaire targets specifically respondents who have been holders of account(s) at South African banks. Therefore this section attempts to identify such respondents.

1. Background Information

1.1. Have you been an account holder of a South African bank?

Yes, I had in the past five years	1
Yes, I currently do	2
No, I didn't in the past five years	3

If you marked 1 or 2, then proceed to the below questions, else your participation in this questionnaire ends here. Thank you for participating.

1.2. Do you own a cellphone?

Yes	1
No	2

If you marked 1, then proceed to the below questions, else your participation in this questionnaire ends here. Thank you for participating.

1.3. Could your cellphone launch an internet browser?

Yes	1
No	2
Not sure	3

If you marked 1 or 3, then proceed to the below questions, else your participation in this questionnaire ends here. Thank you for participating.

1.4. Have you used your cellphone's internet to receive and perform any of the below? (Please indicate with an **X** where applicable)

RSS Feeds	
Mobile banking	
Online Streaming (i.e. audio, TV, Film, etc.)	
Downloads (i.e. Games, Music, etc.)	
Social Networks (i.e. Facebook, Twitter, BBM, etc.)	
Email	
Modem & Hotspot	
Content Subscriptions (i.e. Magazines, News, etc.)	
File Sharing	
Other, please specify:	

Section B

Biographic Information

This section of the questionnaire refers to background (biographical) information. Although we are aware of the sensitivity of the questions in this section, the information will allow us to compare groups of respondents. Once again, we assure that your response will remain confidential yet anonymous. Your cooperation is appreciated.

2. Biographic Information

2.1. Gender

Male	1
Female	2

2.2. Age Group

20 or younger	1
21 – 29	2
30 – 39	3
40 – 49	4
50 – 59	5
60 or older	6

2.3. Ethnicity

Black	1
Coloured	2
Indian or Asian	3
White	4

2.4. Marital Status

Single	1
Married	2
Divorced	3
Living with Partner	4
Widowed	5
Other, please specify:	6

2.5. Highest educational qualification achieved

Grade 11 or lower (std 9 or lower)	1
Grade 12 (Matric, std 10)	2
Post-Matric Diploma or Certificate	3
Baccalaureate Degree(s)	4
Post-Graduate Degree(s)	5

2.6. How would you describe the area in which you are residing?

Urban	1
Rural	2

2.7. Size of your household, i.e. the number of people, including yourself, who live in your house/dwellings for at least three months of the year

Live alone	1
2	2
3	3
4	4
5	5
6 or more	6

2.8. Employment status

Employed	1
Self-employed / Independent Consultant	2
Unemployed	3
Student	4
Other, please specify:	5

If you marked 1, 2 or 5, then proceed to the below question (2.9.), else proceed to Section C.

2.9. Employment industry

Construction, Trades & Mining	1
Education and Teaching	2
Banking & Finance	3
Media	4
Automotive	5
Telecommunications	6
IT	7
Government	8
Non-Governmental Organization	9
Consulting	10
Safety and Security	11
Manufacturing & Production	12
Legal	13
Property	14
Recruitment	15
Science & Research	16
Sports & Lifestyle	17
Travel, Leisure & Tourism	18
Aerospace & Aviation	19
Customer Service & Call Centre	20
Insurance	21
Retail & Wholesale	22
Agriculture, Fishing & Forestry	23
Catering & Hospitality	24
Fashion, Art & Design	25
Health, Medicine & Nursing	26
Marketing, Advertising & PR	27
Oil, Gas & Alternative Energy	28
Purchasing & Supply Chain	29
Sales	30
Social Services	31
Transport & Logistics	32
Installation, Maintenance & Repair	33
Warehousing & Distribution	34
Other, please specify:	35

Section C

Mobile Banking and Perceptions

Please note that every question in this section and sections to follow is associated with two scales: the first part seeks your level of agreement or disagreement towards the given statement; the second part aims to identify your level of importance towards the given statement.

3. Perceived Ease of Use (Please indicate by making an **X** in the relevant column)

Item	Question	Current					Level of Importance				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Important	Somewhat Important	Neutral	Very Important	Essential
PEOU01	Mobile banking applications behave accordingly.	1	2	3	4	5	1	2	3	4	5
PEOU02	Mobile banking applications behave in a predictable manner.	1	2	3	4	5	1	2	3	4	5
PEOU03	Mobile banking applications allow conducting of banking at any time of the day.	1	2	3	4	5	1	2	3	4	5
PEOU04	Mobile banking applications allow conducting of banking at any place.	1	2	3	4	5	1	2	3	4	5
PEOU05	Verification process of log-on credentials by mobile banking applications is quick.	1	2	3	4	5	1	2	3	4	5
PEOU06	Waiting period for authentication into mobile banking applications is short.	1	2	3	4	5	1	2	3	4	5
PEOU07	Mobile banking applications are convenient.	1	2	3	4	5	1	2	3	4	5
PEOU08	Mobile banking applications are user-friendly.	1	2	3	4	5	1	2	3	4	5
PEOU09	Mobile banking applications lead to the capturing of correct amounts.	1	2	3	4	5	1	2	3	4	5
PEOU10	Doing banking using mobile banking applications is error-free.	1	2	3	4	5	1	2	3	4	5
PEOU11	Mobile banking applications allow for the undoing of banking errors committed.	1	2	3	4	5	1	2	3	4	5
PEOU12	Mobile banking applications help me avoid standing in long queues at the bank's branch.	1	2	3	4	5	1	2	3	4	5
PEOU13	Mobile banking applications offer helpful tips on banking using a mobile device.	1	2	3	4	5	1	2	3	4	5
PEOU14	Navigating mobile banking applications is convenient.	1	2	3	4	5	1	2	3	4	5
PEOU15	Mobile banking applications' default screen lists types of banking transactions available.	1	2	3	4	5	1	2	3	4	5
PEOU16	Online support is available inquires relating to mobile banking applications	1	2	3	4	5	1	2	3	4	5

4. Perceived Usefulness (Please indicate by making an **X** in the relevant column)

Item	Question	Current					Level of Importance				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Important	Somewhat Important	Neutral	Very Important	Essential
PU01	Mobile banking applications allow for viewing of bank account statements.	1	2	3	4	5	1	2	3	4	5
PU02	Mobile banking applications help me avoid standing in long queues at the bank's branch.	1	2	3	4	5	1	2	3	4	5
PU03	Mobile banking applications allow for the purchases of prepaid airtime, electricity etc.	1	2	3	4	5	1	2	3	4	5
PU04	Mobile banking applications permits the making of payments.	1	2	3	4	5	1	2	3	4	5
PU05	Mobile banking applications permits the making cash transfers.	1	2	3	4	5	1	2	3	4	5
PU06	Mobile banking applications has reduced the need to physical go to bank's branches.	1	2	3	4	5	1	2	3	4	5
PU07	Mobile banking applications improves my banking experience.	1	2	3	4	5	1	2	3	4	5
PU08	Mobile banking applications have excellent network connection.	1	2	3	4	5	1	2	3	4	5
PU09	Mobile banking applications frequently retain network connection throughout my session.	1	2	3	4	5	1	2	3	4	5
PU10	Mobile banking applications consume insignificant amount of bandwidth.	1	2	3	4	5	1	2	3	4	5
PU11	Mobile banking applications are free of defaults.	1	2	3	4	5	1	2	3	4	5
PU12	I have never experienced system timeouts with mobile banking applications.	1	2	3	4	5	1	2	3	4	5
PU13	Mobile banking applications are always operational.	1	2	3	4	5	1	2	3	4	5
PU14	Mobile banking applications never crashes.	1	2	3	4	5	1	2	3	4	5
PU15	I have never experienced system downtime with mobile banking applications.	1	2	3	4	5	1	2	3	4	5

5. Perceived Privacy Risks (Please indicate by making an **X** in the relevant column)

Item	Question	Current					Level of Importance				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Important	Somewhat Important	Neutral	Very Important	Essential
PPR01	Mobile banking applications conceal subscriber's personal information.	1	2	3	4	5	1	2	3	4	5
PPR02	Transactions conducted using mobile banking applications are secured.	1	2	3	4	5	1	2	3	4	5
PPR03	Mobile banking applications do not store usage history without subscriber's knowing.	1	2	3	4	5	1	2	3	4	5
PPR04	Mobile banking applications removes subscriber's browsing history upon log-out.	1	2	3	4	5	1	2	3	4	5
PPR05	Mobile banking applications prevents the use of cookies to track subscriber's usage history.	1	2	3	4	5	1	2	3	4	5
PPR06	Mobile banking applications prevent third parties from retrieving subscriber's personal information.	1	2	3	4	5	1	2	3	4	5
PPR07	Mobile banking applications do not share personal information without subscriber's knowing.	1	2	3	4	5	1	2	3	4	5
PPR08	Mobile banking applications prevent installation of add-ons software that could compromise privacy information.	1	2	3	4	5	1	2	3	4	5
PPR09	Mobile banking applications block installation of third party software that could compromise privacy information.	1	2	3	4	5	1	2	3	4	5
PPR10	Mobile banking applications informs subscriber about ways of reinforcing security.	1	2	3	4	5	1	2	3	4	5
PPR11	Mobile banking applications provide subscribers with security tips.	1	2	3	4	5	1	2	3	4	5
PPR12	Mobile banking applications provide tips on security mechanisms' best practice.	1	2	3	4	5	1	2	3	4	5
PPR13	Mobile banking applications suggest to the subscriber about necessary software upgrades.	1	2	3	4	5	1	2	3	4	5
PPR14	Mobile banking applications are invulnerable to spyware risks.	1	2	3	4	5	1	2	3	4	5

PPR15	Mobile banking applications are invulnerable to phishing risks.	1	2	3	4	5	1	2	3	4	5
PPR16	Mobile banking applications are invulnerable to malware risks.	1	2	3	4	5	1	2	3	4	5
PPR17	Mobile banking applications prevents links to fraudulent sites.	1	2	3	4	5	1	2	3	4	5
PPR18	Mobile banking applications allow for the protection of sensitive personal information	1	2	3	4	5	1	2	3	4	5

6. Relevant Social Groups (Please indicate by making an **X** in the relevant column)

Item	Question	Current					Level of Importance				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Important	Somewhat Important	Neutral	Very Important	Essential
RSG01	The design of your bank's mobile banking application has been aligned with your technological needs.	1	2	3	4	5	1	2	3	4	5
RSG02	My friends (that have bank accounts) are aware of mobile banking applications.	1	2	3	4	5	1	2	3	4	5
RSG03	My family members (that have bank accounts) are aware of mobile banking applications.	1	2	3	4	5	1	2	3	4	5
RSG04	Mobile banking applications meet my expectations.	1	2	3	4	5	1	2	3	4	5
RSG05	Mobile banking applications features address my needs.	1	2	3	4	5	1	2	3	4	5
RSG06	It is easy to get used to mobile banking applications.	1	2	3	4	5	1	2	3	4	5
RSG07	Anyone can easily learn how to navigate through mobile banking applications.	1	2	3	4	5	1	2	3	4	5
RSG08	Mobile banking applications improve my family lifestyle.	1	2	3	4	5	1	2	3	4	5
RSG09	Mobile banking applications improve my friends' lifestyle.	1	2	3	4	5	1	2	3	4	5
RSG10	My friends' perception of mobile banking applications is positive.	1	2	3	4	5	1	2	3	4	5
RSG11	My family members' perception of mobile banking applications is positive.	1	2	3	4	5	1	2	3	4	5

RSG12	Mobile banking applications are understandable in my home language.	1	2	3	4	5	1	2	3	4	5
RSG13	Mobile banking applications are available in my home language.	1	2	3	4	5	1	2	3	4	5
RSG14	Mobile banking applications are presented in a language that I understand.	1	2	3	4	5	1	2	3	4	5
RSG15	Mobile banking applications are presented in a language that my friends understand.	1	2	3	4	5	1	2	3	4	5
RSG16	Mobile banking applications are presented in a language that my siblings understand.	1	2	3	4	5	1	2	3	4	5
RSG17	Somebody influenced my adoption of mobile banking applications.	1	2	3	4	5	1	2	3	4	5
RSG18	I think my role model uses mobile banking applications.	1	2	3	4	5	1	2	3	4	5
RSG19	The usage of mobile banking applications make me look cool.	1	2	3	4	5	1	2	3	4	5
RSG20	There is a general understanding of what mobile banking entails across races.	1	2	3	4	5	1	2	3	4	5
RSG21	There is a general understanding of what mobile banking entails across cultures.	1	2	3	4	5	1	2	3	4	5

Section D

Financial Institutions and Information Privacy Guarantees

7. Institutional Privacy Assurance (Please indicate by making an X in the relevant column)

Item	Question	Current					Level of Importance				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Important	Somewhat Important	Neutral	Very Important	Essential
IPA01	Mobile banking application protects the integrity of subscriber's personal information.	1	2	3	4	5	1	2	3	4	5
IPA02	I am aware of my bank's mobile banking applications privacy policy.	1	2	3	4	5	1	2	3	4	5
IPA03	My bank's mobile banking applications privacy policy is understandable	1	2	3	4	5	1	2	3	4	5
IPA04	I am satisfied with my bank's mobile banking application privacy policy	1	2	3	4	5	1	2	3	4	5
IPA05	I am pleased with my bank's mobile banking application information privacy	1	2	3	4	5	1	2	3	4	5

	assurance										
IPA06	My banks provides explanations for the collection of my personal information	1	2	3	4	5	1	2	3	4	5
IPA07	I understand reasons behind collection of personal information by my bank	1	2	3	4	5	1	2	3	4	5
IPA08	I can check the accuracy of my collected personal information by my bank	1	2	3	4	5	1	2	3	4	5
IPA09	There are avenues to contest the accuracy of my collected personal information from my bank	1	2	3	4	5	1	2	3	4	5
IPA10	My bank verifies the accuracy of my personal information	1	2	3	4	5	1	2	3	4	5
IPA11	Mobile banking application protects the privacy of subscriber's personal information.	1	2	3	4	5	1	2	3	4	5
IPA12	My bank conceals personal information of subscribers of mobile banking applications to third party.	1	2	3	4	5	1	2	3	4	5
IPA13	My bank provides information privacy assurance to subscribers of mobile banking applications.	1	2	3	4	5	1	2	3	4	5
IPA14	My collected personal information is secure from unauthorised use	1	2	3	4	5	1	2	3	4	5
IPA15	Mobile banking information privacy is easily accessible	1	2	3	4	5	1	2	3	4	5
IPA16	I trust my bank to abide to stipulated privacy policies	1	2	3	4	5	1	2	3	4	5
IPA17	My bank's mobile banking information privacy is representative	1	2	3	4	5	1	2	3	4	5
IPA18	My bank's mobile banking information privacy is easy to read	1	2	3	4	5	1	2	3	4	5
IPA19	I trust my bank to secure my privacy information obtained from mobile banking applications	1	2	3	4	5	1	2	3	4	5
IPA20	My bank's mobile banking information privacy meets my needs	1	2	3	4	5	1	2	3	4	5

Part 8

Appendix B

APPENDIX B

Reliability Analysis.

Appendix B 1

Scale: Reliability-PEOU

Case Processing Summary			
		N	%
Cases	Valid	208	99.5
	Excluded ^a	1	.5
	Total	209	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.791	16

Appendix B 2

Scale: Reliability-PU

Case Processing Summary			
		N	%
Cases	Valid	207	99.0
	Excluded ^a	2	1.0
	Total	209	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.825	15

Appendix B 3

Scale: Reliability-PPR

Case Processing Summary			
		N	%
Cases	Valid	206	98.6
	Excluded ^a	3	1.4
	Total	209	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.900	18

Appendix B 4

Scale: Reliability-RSG

Case Processing Summary			
		N	%
Cases	Valid	205	98.1
	Excluded ^a	4	1.9
	Total	209	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.881	21

Appendix B 5

Scale: Reliability-IPA

Case Processing Summary			
		N	%
Cases	Valid	208	99.5
	Excluded ^a	1	.5
	Total	209	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.930	20

Part 9

Appendix C

APPENDIX C

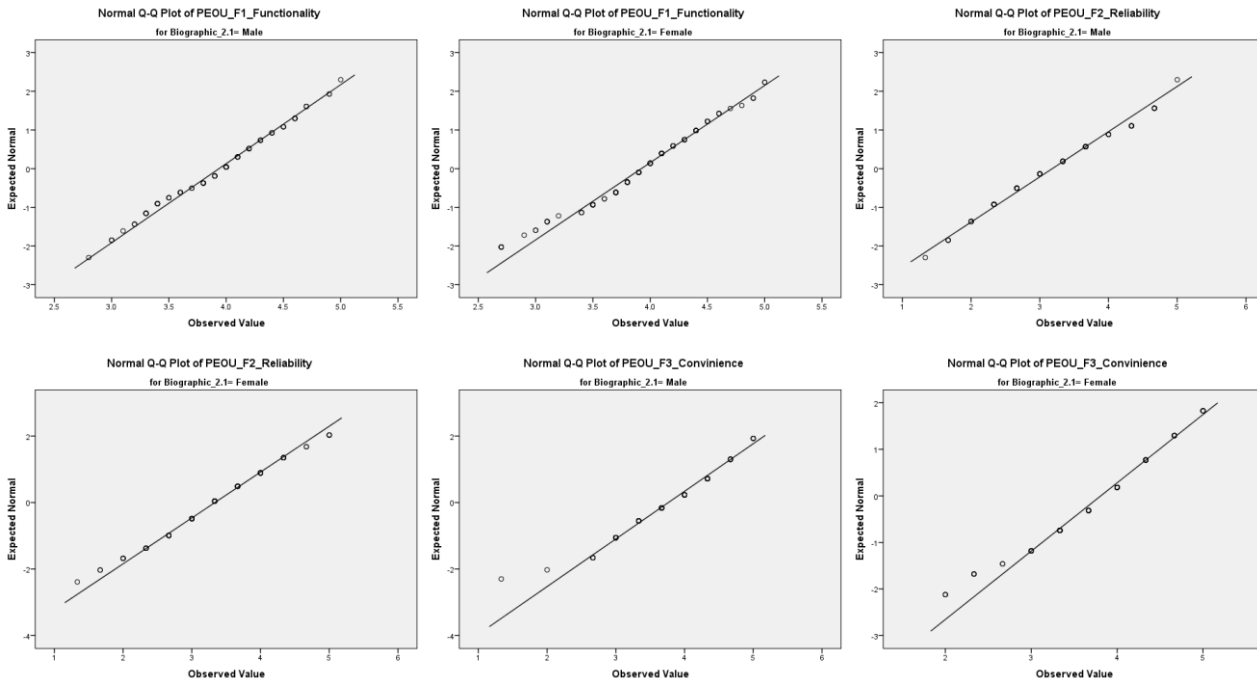
Tests for Normality.

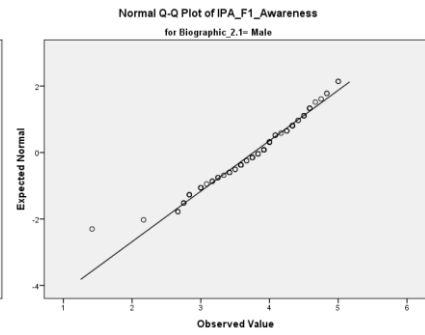
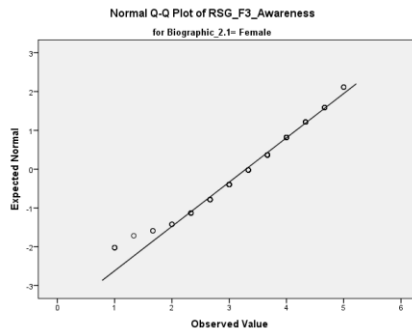
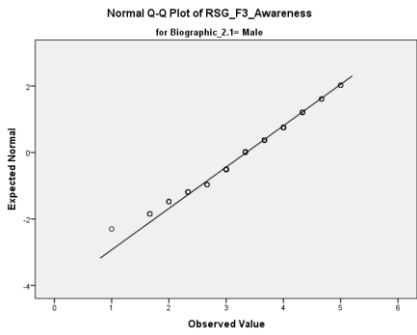
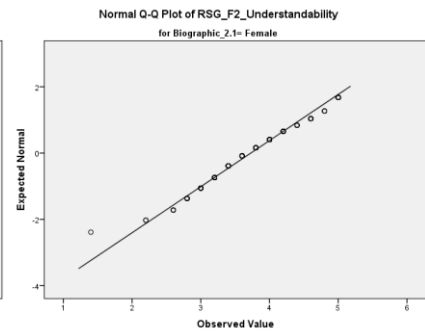
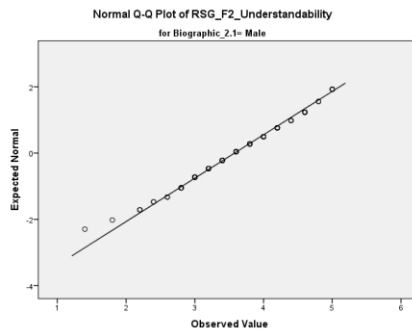
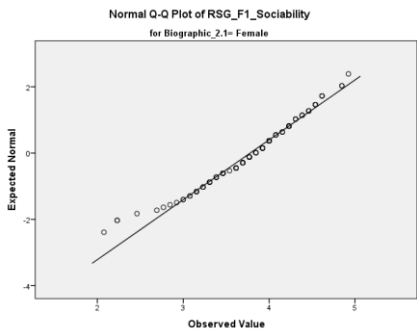
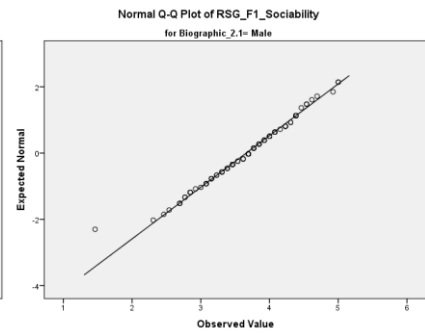
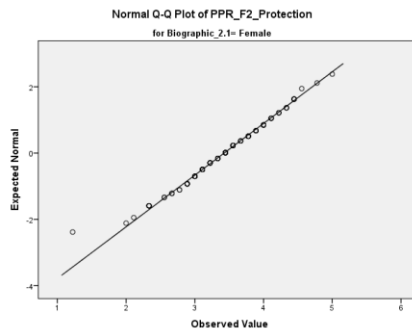
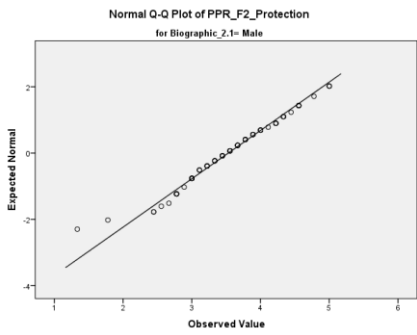
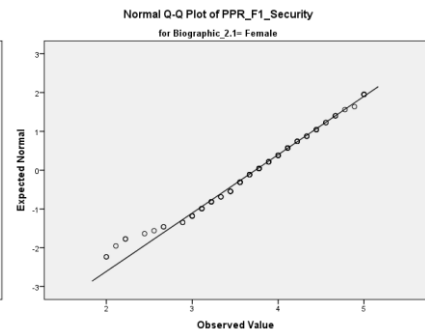
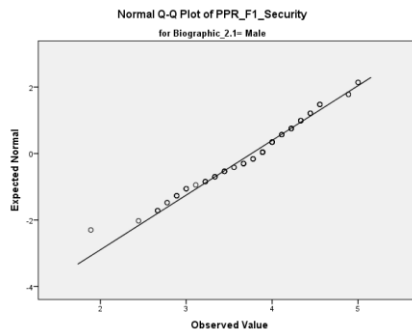
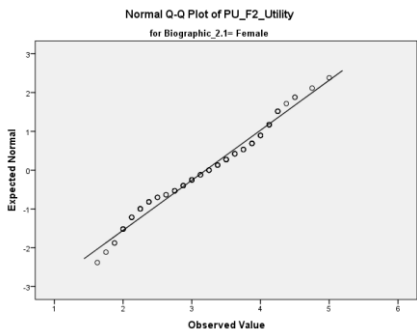
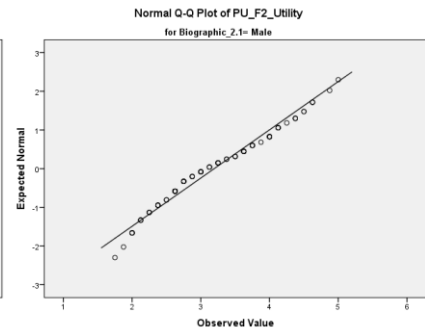
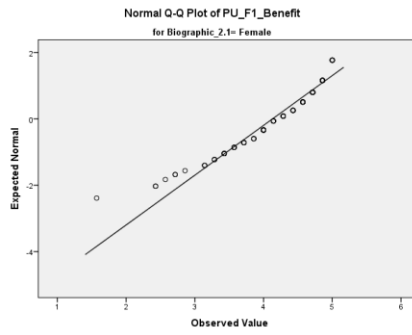
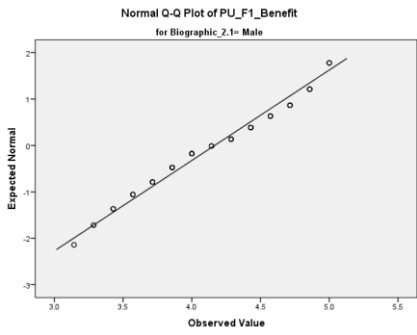
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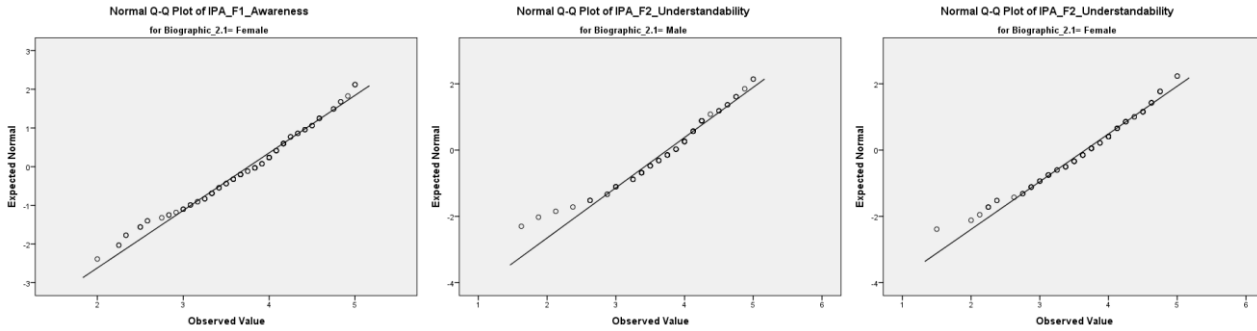
Table 6.1

Tests of Normality							
	Gender	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Perceived Functionality in PEOU	Male	.095	92	.041	.984	92	.301
	Female	.104	116	.003	.975	116	.028
Perceived Reliability in PEOU	Male	.107	92	.012	.968	92	.025
	Female	.125	117	.000	.974	117	.025
Perceived Convenience in PEOU	Male	.121	92	.002	.954	92	.003
	Female	.157	117	.000	.950	117	.000
Perceived Benefits in PU	Male	.107	92	.011	.958	92	.005
	Female	.132	117	.000	.925	117	.000
Perceived Utility in PU	Male	.112	92	.006	.966	92	.018
	Female	.085	115	.038	.971	115	.013
Perceived Security in PPR	Male	.128	92	.001	.977	92	.100
	Female	.075	117	.155	.979	117	.068
Perceived Protection in PPR	Male	.070	91	.200*	.979	91	.143
	Female	.062	115	.200*	.988	115	.406
Sociability by RSG	Male	.074	92	.200*	.985	92	.362
	Female	.087	117	.029	.973	117	.018
Social Understandability by RSG	Male	.061	91	.200*	.983	91	.273
	Female	.089	116	.023	.970	116	.011
Social Awareness by RSG	Male	.146	92	.000	.970	92	.034
	Female	.109	115	.002	.964	115	.004
Awareness of IPA	Male	.091	92	.059	.971	92	.037
	Female	.092	117	.016	.977	117	.041
Understandability of IPA	Male	.104	92	.016	.962	92	.009
	Female	.084	116	.043	.978	116	.050

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction







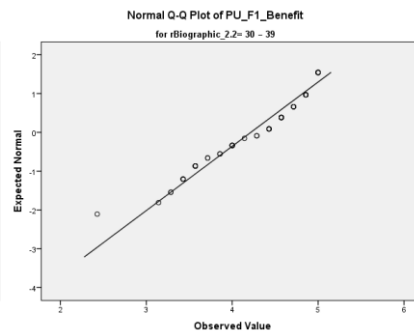
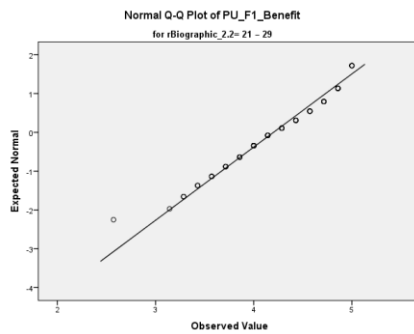
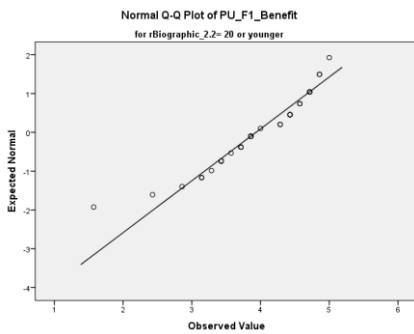
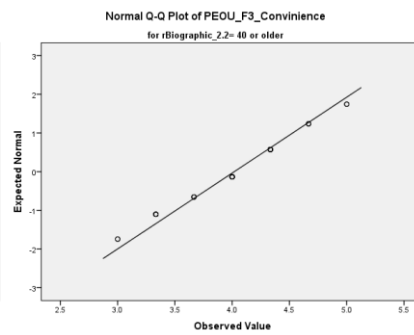
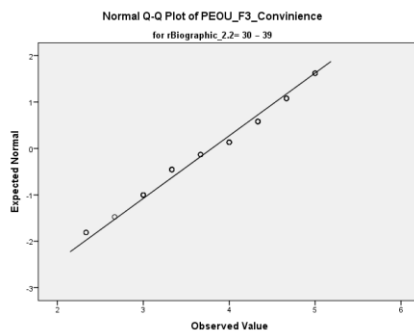
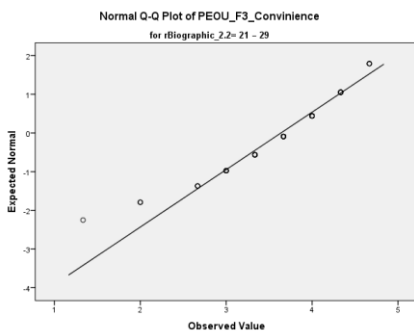
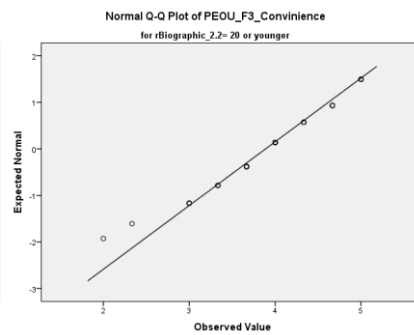
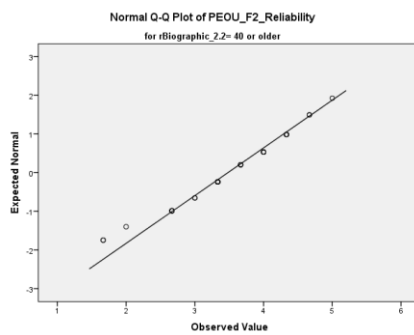
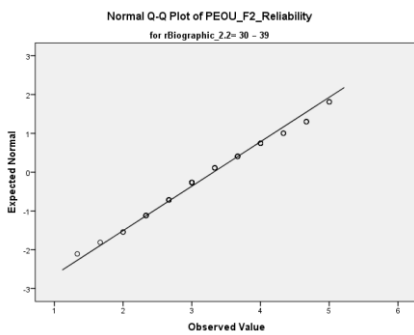
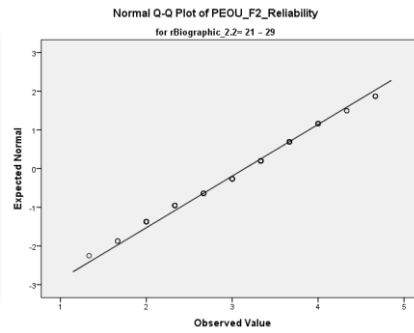
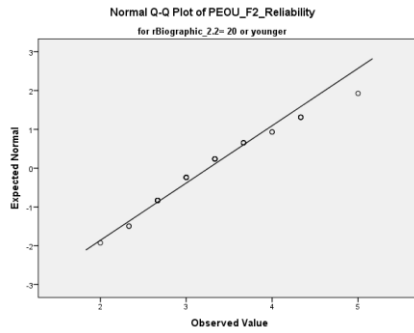
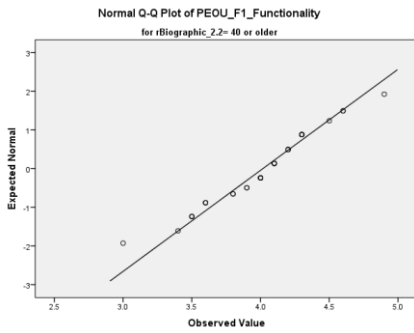
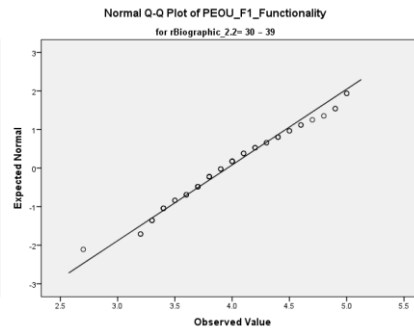
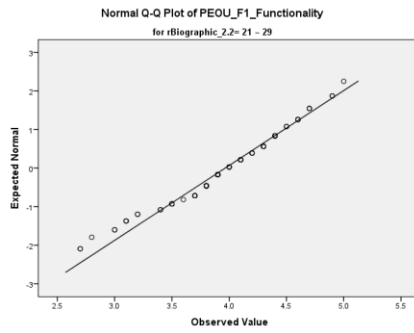
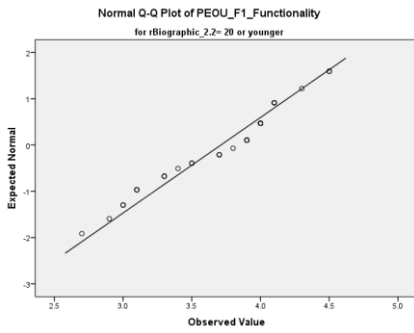
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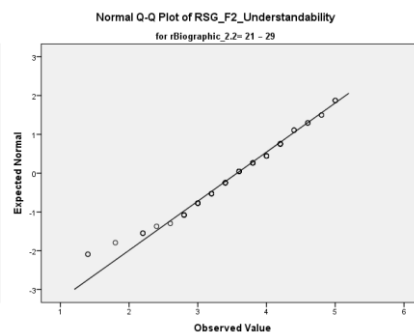
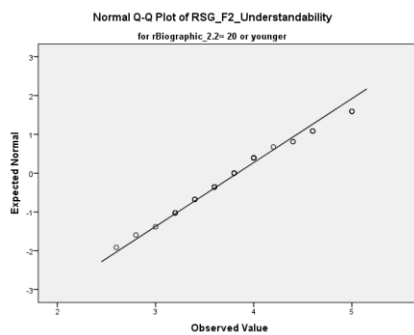
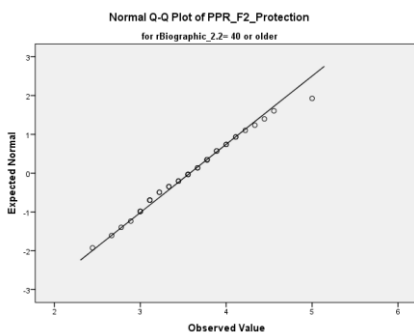
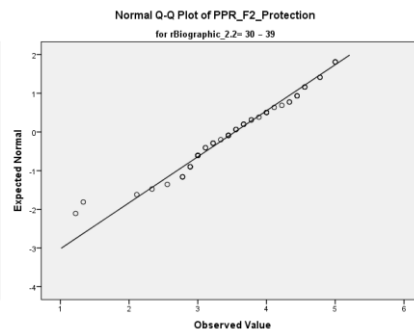
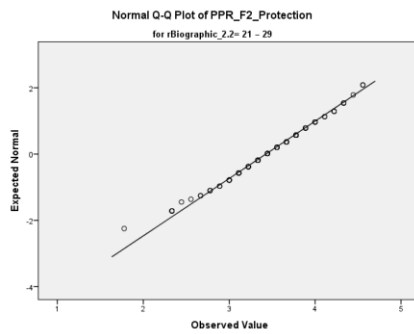
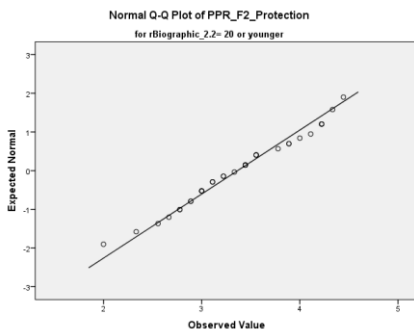
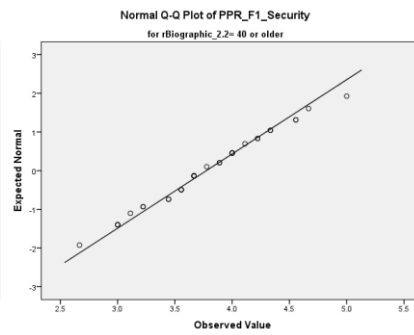
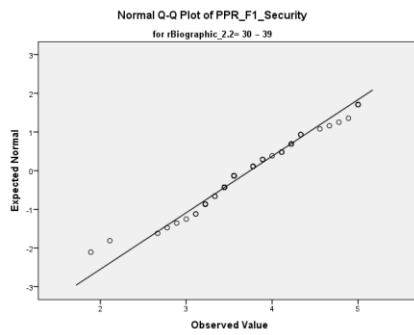
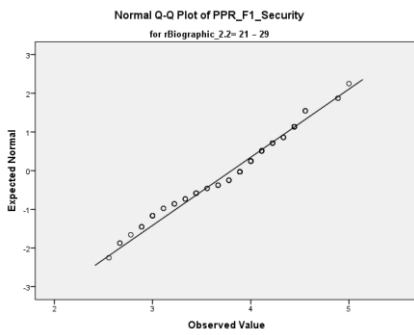
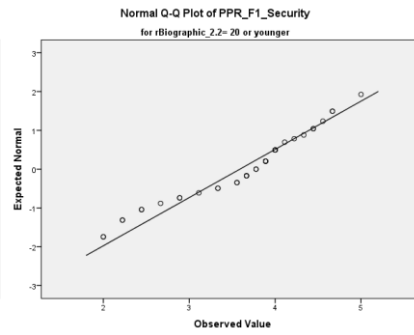
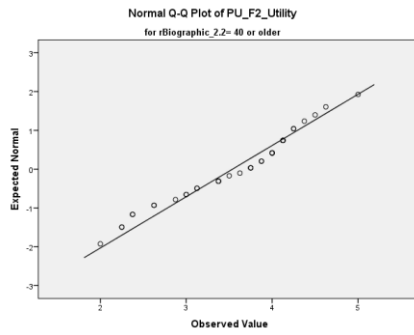
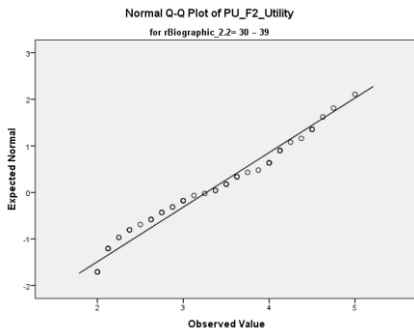
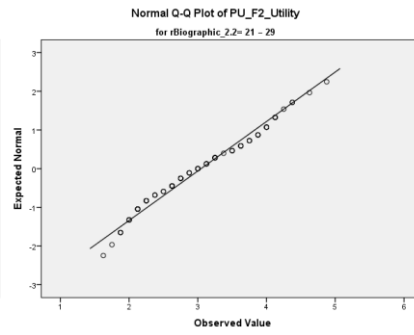
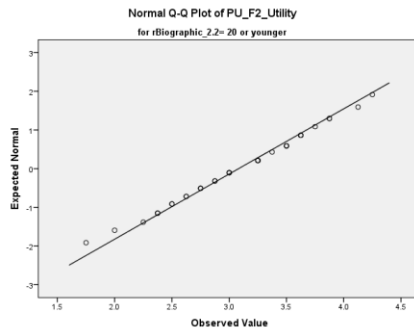
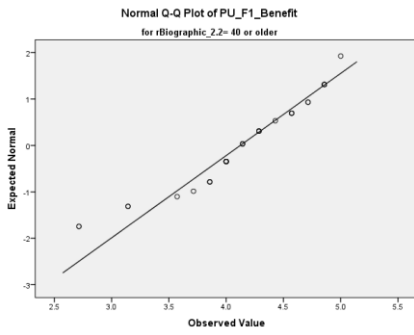
Table 6.1

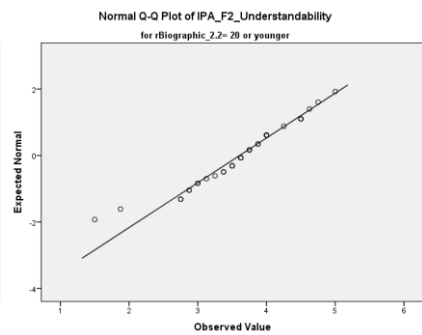
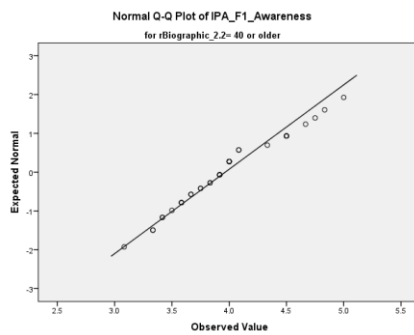
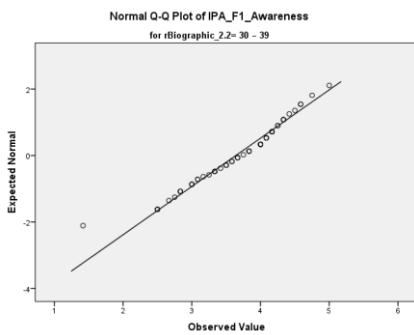
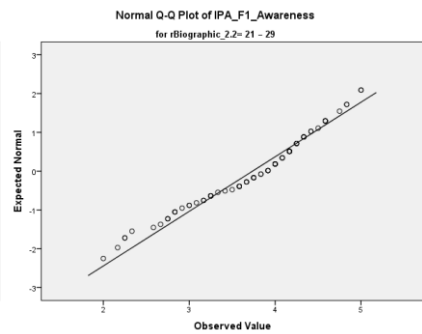
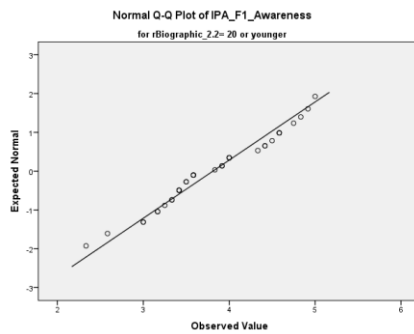
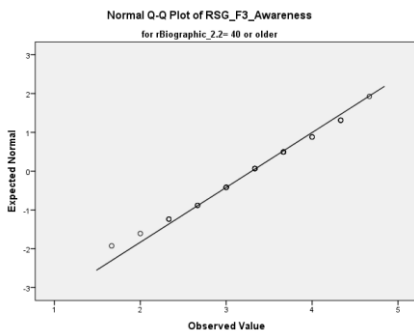
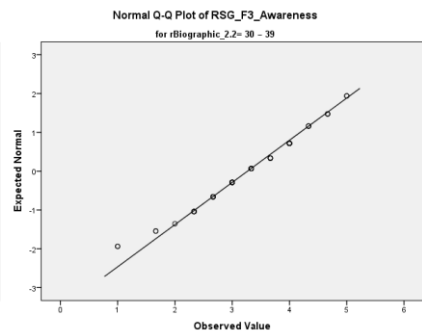
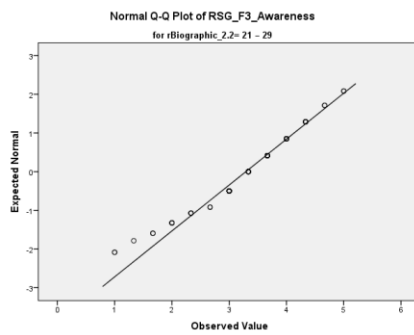
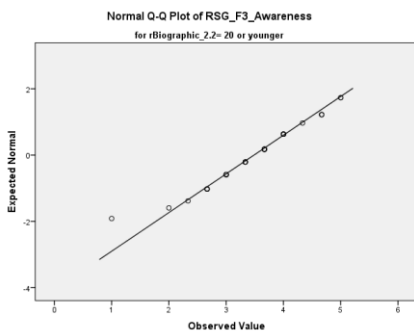
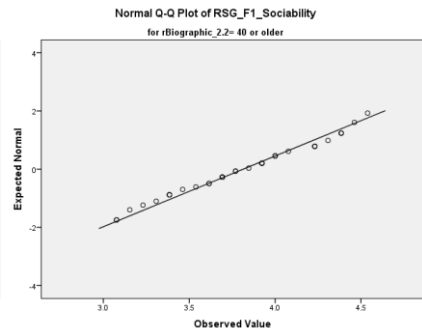
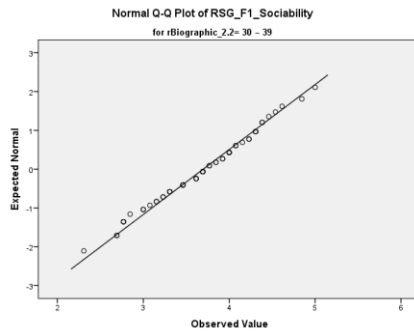
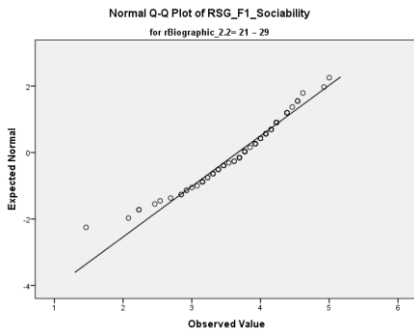
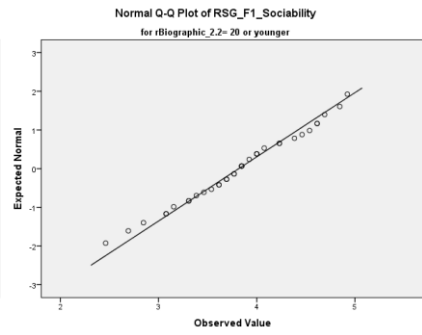
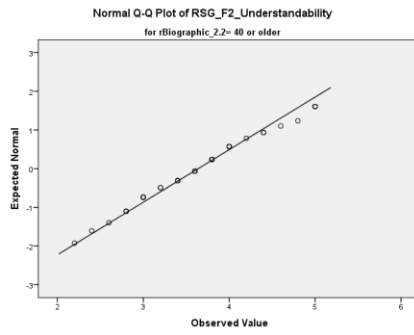
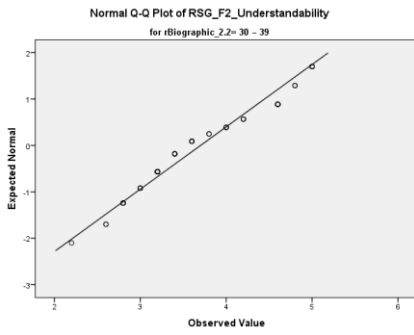
Tests of Normality							
	Age Group (recoded)	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Perceived Functionality in PEOU	20 or younger	.166	35	.016	.947	35	.093
	21 – 29	.116	81	.009	.972	81	.070
	30 – 39	.091	56	.200*	.979	56	.443
	40 or older	.149	36	.041	.968	36	.384
Perceived Reliability in PEOU	20 or younger	.151	36	.037	.948	36	.092
	21 – 29	.118	81	.007	.972	81	.075
	30 – 39	.141	56	.007	.971	56	.204
	40 or older	.150	36	.040	.958	36	.191
Perceived Convenience in PEOU	20 or younger	.130	36	.126	.953	36	.126
	21 – 29	.159	81	.000	.929	81	.000
	30 – 39	.145	56	.005	.946	56	.015
	40 or older	.180	36	.005	.945	36	.072
Perceived Benefits in PU	20 or younger	.135	36	.094	.927	36	.021
	21 – 29	.091	81	.094	.963	81	.019
	30 – 39	.155	56	.002	.932	56	.004
	40 or older	.164	36	.016	.924	36	.016
Perceived Utility in PU	20 or younger	.097	35	.200*	.989	35	.970
	21 – 29	.085	80	.200*	.972	80	.075
	30 – 39	.108	56	.161	.951	56	.023
	40 or older	.138	36	.081	.958	36	.189
Perceived Security in PPR	20 or younger	.150	36	.040	.943	36	.061
	21 – 29	.127	81	.002	.970	81	.057
	30 – 39	.109	56	.098	.970	56	.171
	40 or older	.110	36	.200*	.985	36	.890
Perceived Protection in PPR	20 or younger	.083	34	.200*	.976	34	.652
	21 – 29	.055	80	.200*	.986	80	.544
	30 – 39	.094	56	.200*	.966	56	.111
	40 or older	.072	36	.200*	.990	36	.982
Sociability by RSG	20 or younger	.075	36	.200*	.984	36	.863
	21 – 29	.107	81	.023	.964	81	.023
	30 – 39	.070	56	.200*	.987	56	.802
	40 or older	.094	36	.200*	.968	36	.365
Social Understandability by RSG	20 or younger	.135	35	.105	.969	35	.404
	21 – 29	.084	81	.200*	.971	81	.066
	30 – 39	.148	55	.004	.941	55	.010
	40 or older	.090	36	.200*	.972	36	.481
Social Awareness by RSG	20 or younger	.103	35	.200*	.963	35	.289
	21 – 29	.177	80	.000	.955	80	.007
	30 – 39	.108	56	.099	.972	56	.214
	40 or older	.115	36	.200*	.973	36	.513
Awareness of IPA	20 or younger	.133	36	.107	.968	36	.372
	21 – 29	.119	81	.007	.962	81	.016
	30 – 39	.110	56	.087	.969	56	.160
	40 or older	.164	36	.015	.963	36	.258
Understandability of IPA	20 or younger	.109	36	.200*	.959	36	.199
	21 – 29	.133	81	.001	.967	81	.036
	30 – 39	.112	56	.077	.965	56	.101
	40 or older	.112	35	.200*	.983	35	.843

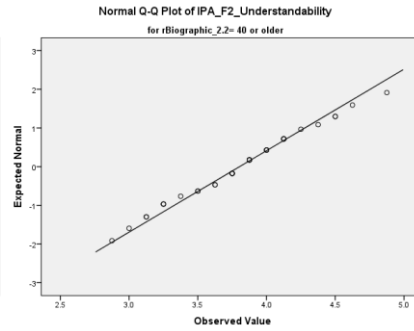
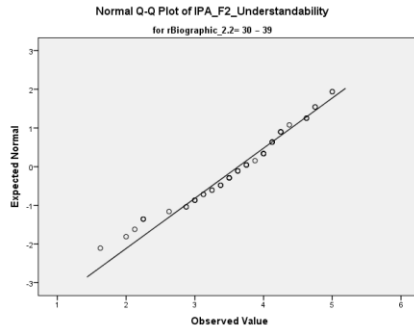
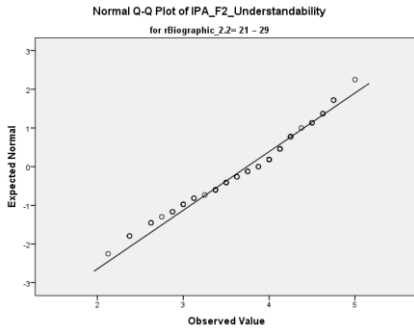
*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction









Appendix C 3

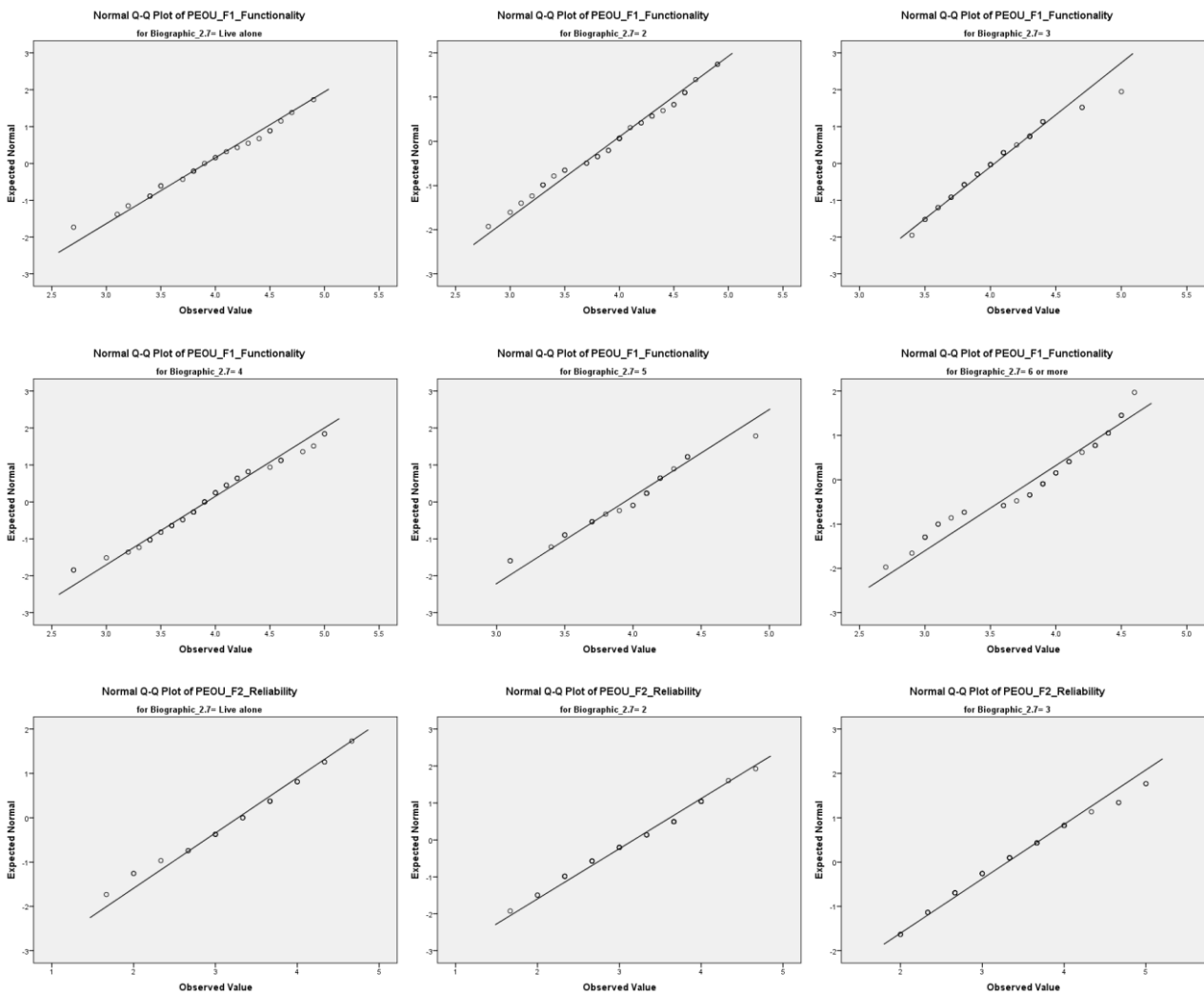
Table 6.1

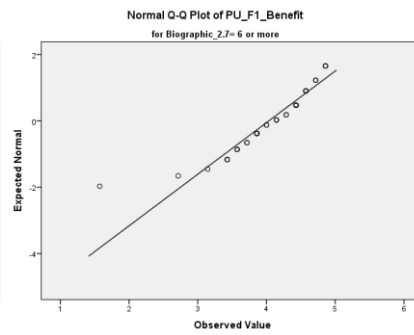
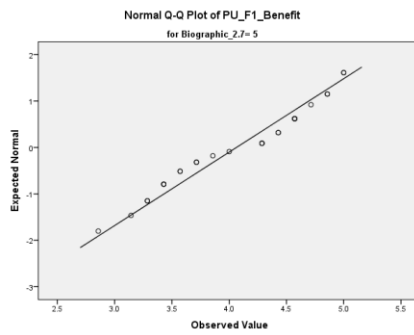
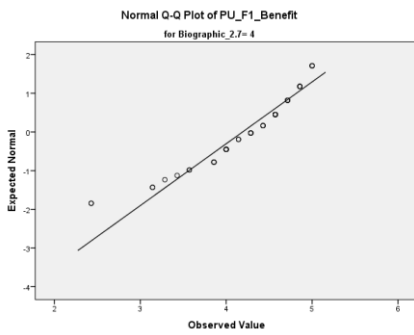
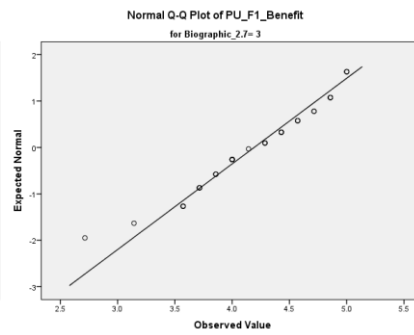
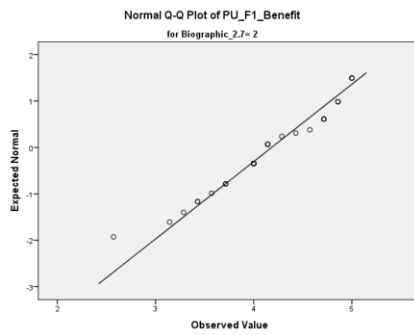
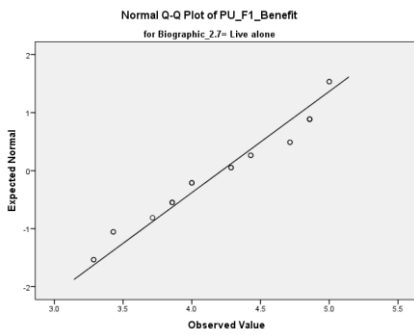
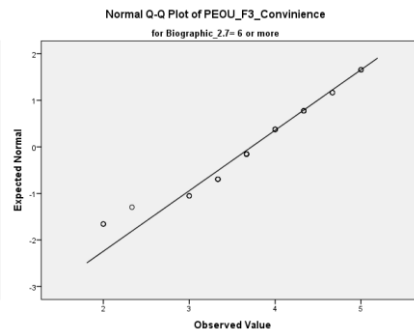
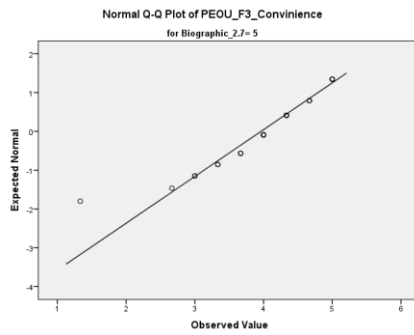
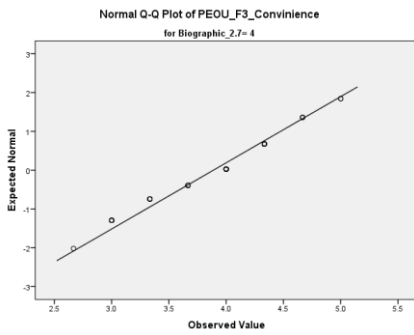
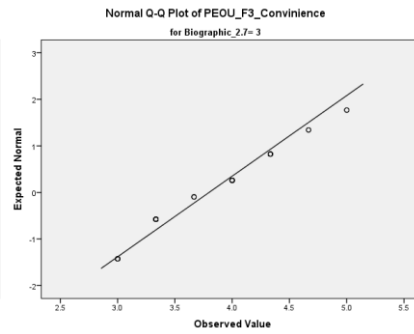
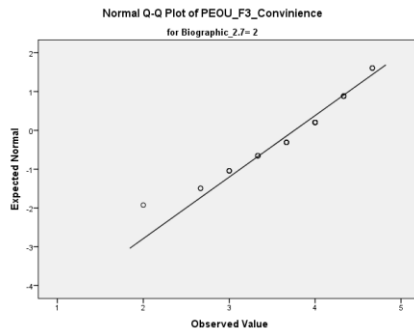
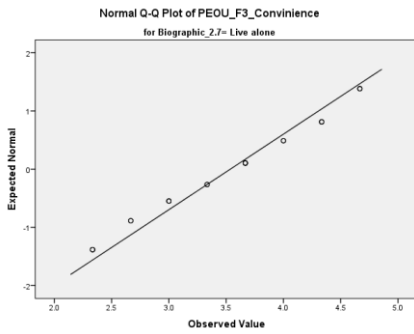
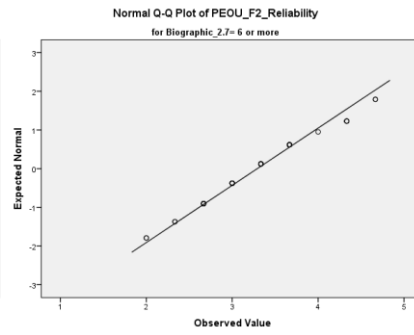
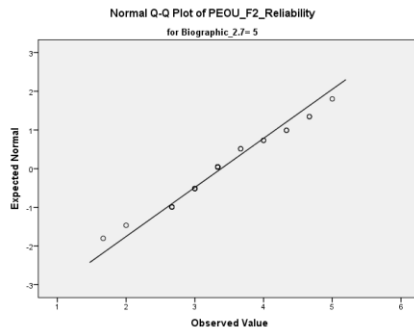
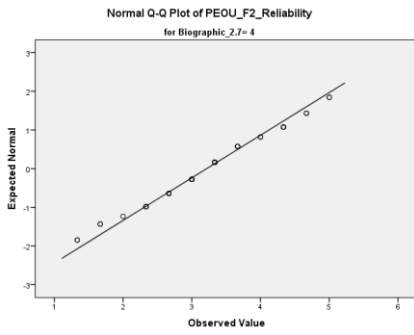
Tests of Normality							
	Size of your household, i.e. the number of people, including yourself, who live in your house/dwellings for at least three months of the year	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Perceived Functionality in PEOU	Live alone	.075	23	.200*	.985	23	.972
	2	.096	36	.200*	.975	36	.566
	3	.108	38	.200*	.968	38	.353
	4	.084	45	.200*	.977	45	.492
	5	.148	26	.146	.962	26	.437
	6 or more	.152	40	.021	.929	40	.015
Perceived Reliability in PEOU	Live alone	.122	23	.200*	.969	23	.657
	2	.136	36	.089	.966	36	.323
	3	.121	38	.178	.960	38	.187
	4	.115	45	.167	.973	45	.375
	5	.192	27	.012	.961	27	.380
	6 or more	.125	40	.114	.959	40	.160
Perceived Convenience in PEOU	Live alone	.132	23	.200*	.934	23	.133
	2	.204	36	.001	.928	36	.022
	3	.211	38	.000	.918	38	.009
	4	.175	45	.001	.941	45	.024
	5	.184	27	.019	.900	27	.014
	6 or more	.170	40	.005	.934	40	.022
Perceived Benefits in PU	Live alone	.155	23	.160	.921	23	.069
	2	.146	36	.052	.940	36	.051
	3	.112	38	.200*	.956	38	.143
	4	.136	45	.036	.908	45	.002
	5	.156	27	.090	.940	27	.119
	6 or more	.131	40	.080	.880	40	.001
Perceived Utility in PU	Live alone	.127	23	.200*	.927	23	.095
	2	.098	36	.200*	.956	36	.161
	3	.135	38	.080	.954	38	.121
	4	.109	45	.200*	.956	45	.085
	5	.162	26	.077	.953	26	.266
	6 or more	.120	39	.167	.976	39	.562
Perceived Security in PPR	Live alone	.134	23	.200*	.973	23	.764
	2	.131	36	.119	.966	36	.336
	3	.109	38	.200*	.931	38	.021
	4	.089	45	.200*	.977	45	.514
	5	.090	27	.200*	.970	27	.601
	6 or more	.091	40	.200*	.951	40	.085
Perceived Protection in PPR	Live alone	.141	23	.200*	.951	23	.307
	2	.159	35	.024	.935	35	.040
	3	.083	38	.200*	.987	38	.920
	4	.128	45	.061	.967	45	.226
	5	.093	26	.200*	.988	26	.985
	6 or more	.101	39	.200*	.985	39	.879
Sociability by RSG	Live alone	.123	23	.200*	.949	23	.276
	2	.122	36	.192	.967	36	.355
	3	.095	38	.200*	.980	38	.732
	4	.117	45	.144	.943	45	.028
	5	.091	27	.200*	.982	27	.909
	6 or more	.107	40	.200*	.980	40	.683
Social Understandability by RSG	Live alone	.148	23	.200*	.918	23	.059
	2	.150	36	.040	.968	36	.385
	3	.093	38	.200*	.971	38	.407
	4	.104	44	.200*	.954	44	.081
	5	.120	27	.200*	.956	27	.295
	6 or more	.094	39	.200*	.942	39	.043

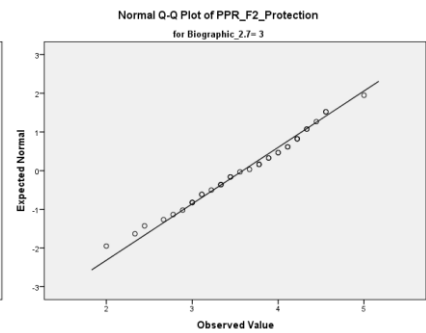
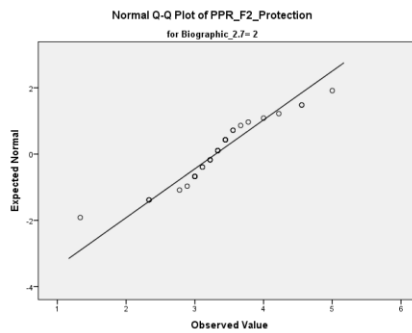
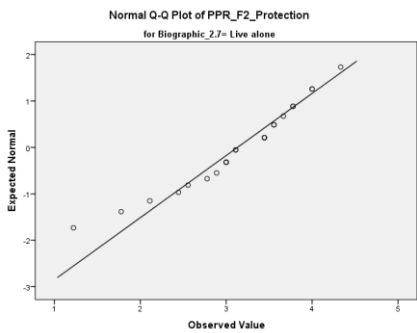
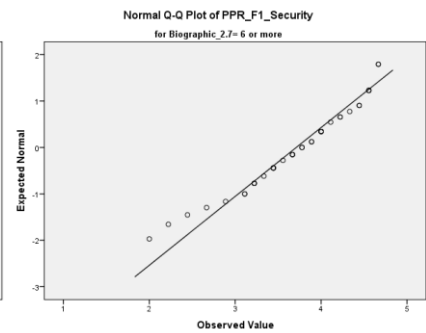
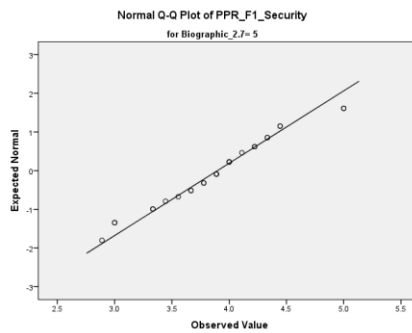
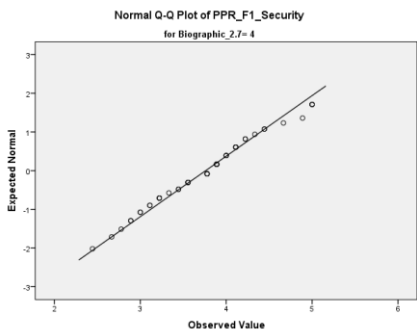
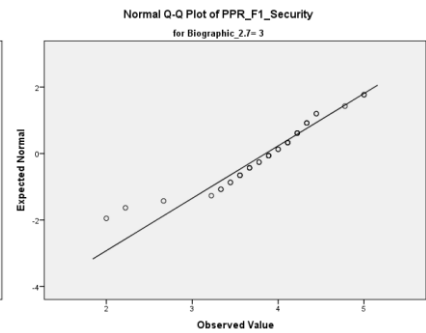
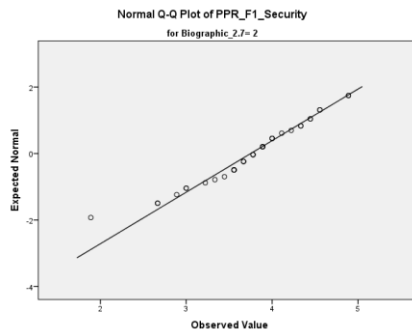
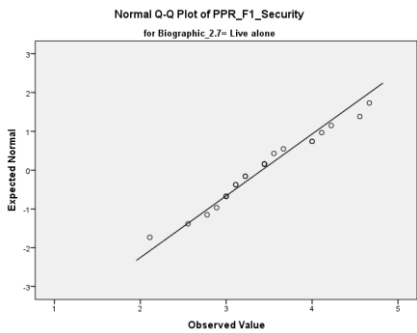
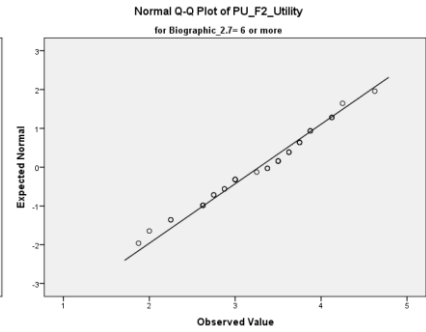
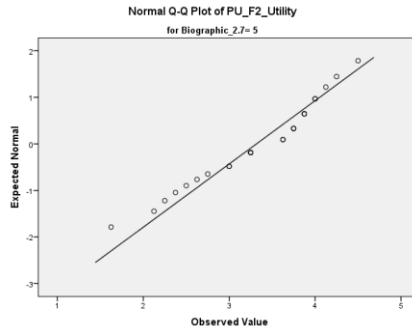
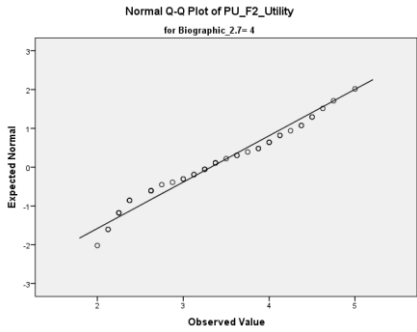
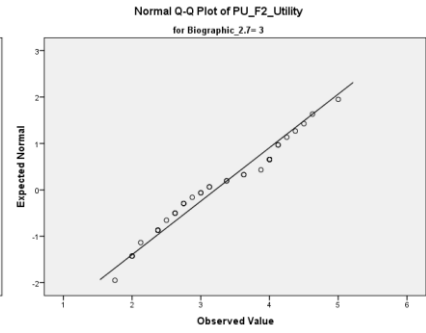
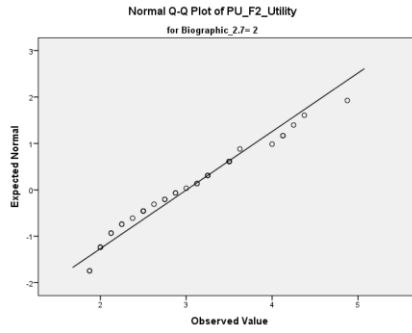
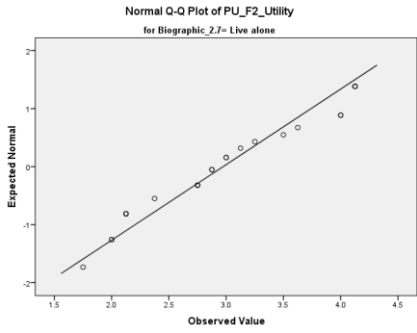
Social Awareness by RSG	Live alone	.152	23	.180	.921	23	.069
	2	.160	36	.021	.954	36	.140
	3	.124	37	.166	.974	37	.514
	4	.130	45	.055	.972	45	.333
	5	.167	26	.059	.936	26	.109
	6 or more	.110	40	.200*	.969	40	.328
Awareness of IPA	Live alone	.111	23	.200*	.975	23	.813
	2	.122	36	.192	.960	36	.216
	3	.110	38	.200*	.984	38	.840
	4	.110	45	.200*	.966	45	.214
	5	.145	27	.152	.962	27	.418
	6 or more	.086	40	.200*	.973	40	.447
Understandability of IPA	Live alone	.123	23	.200*	.968	23	.641
	2	.158	36	.024	.950	36	.104
	3	.147	38	.039	.907	38	.004
	4	.157	45	.007	.948	45	.041
	5	.153	27	.105	.958	27	.340
	6 or more	.101	39	.200*	.953	39	.103

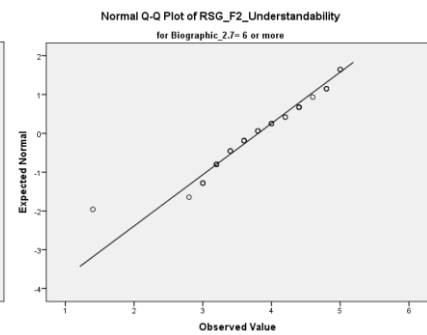
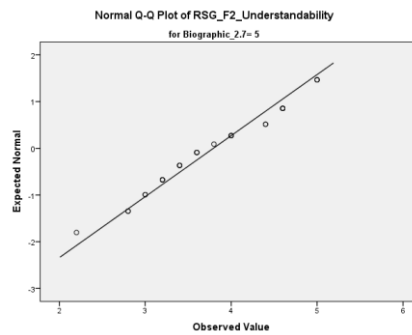
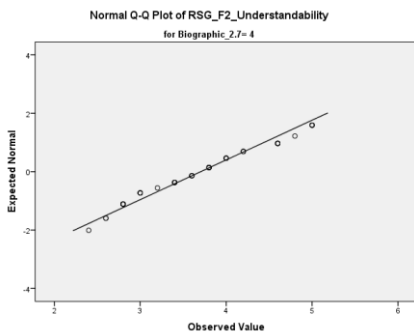
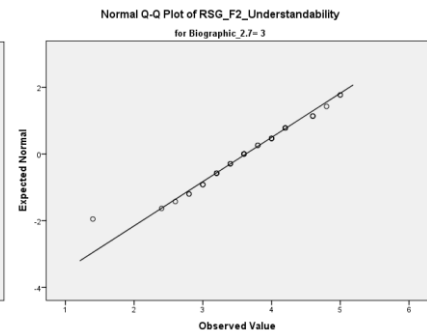
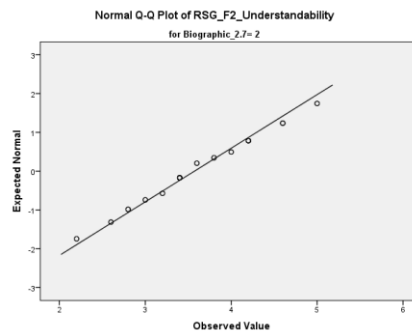
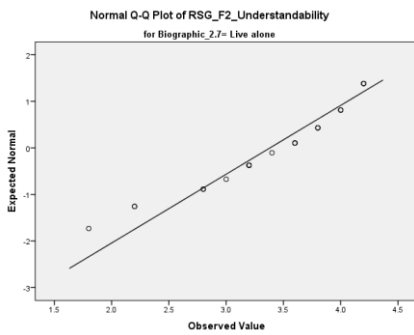
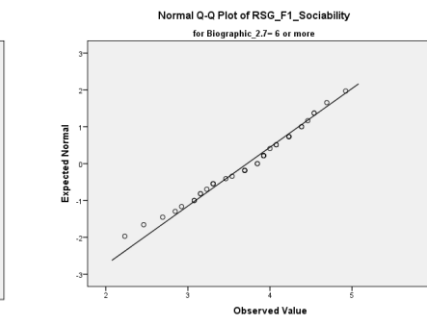
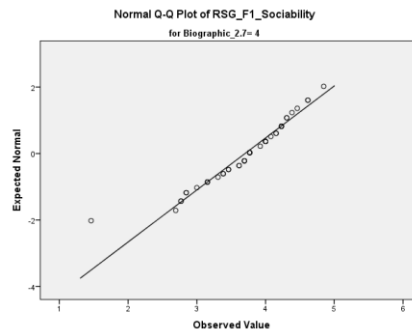
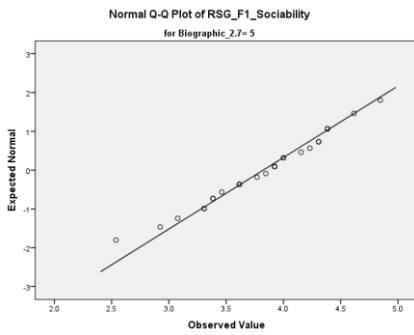
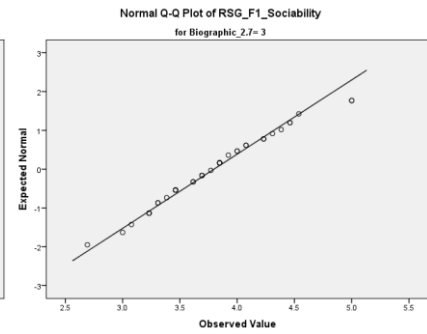
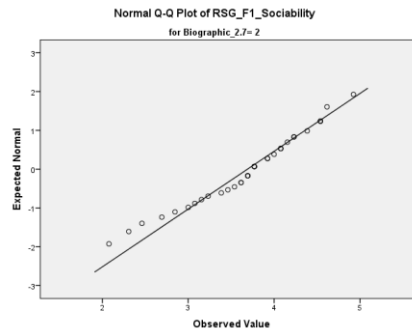
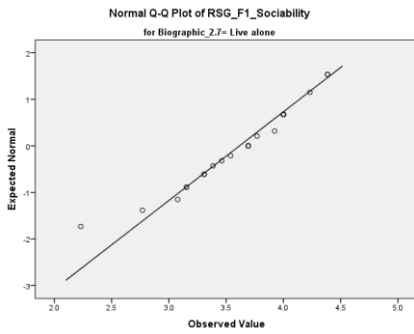
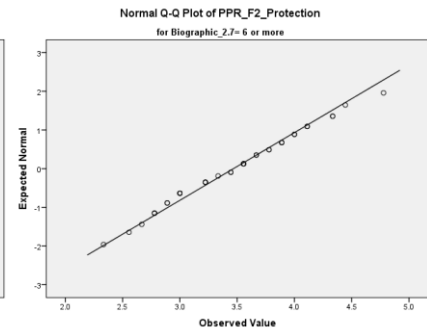
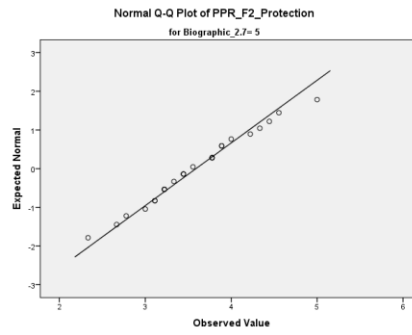
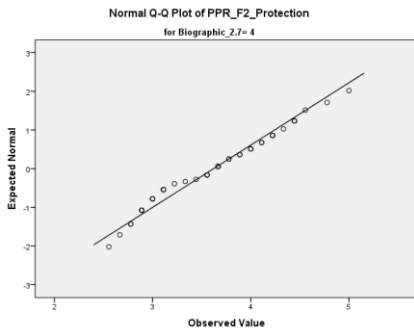
*. This is a lower bound of the true significance.

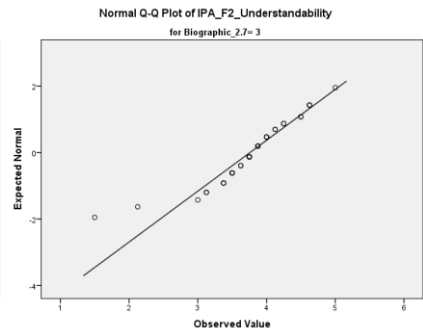
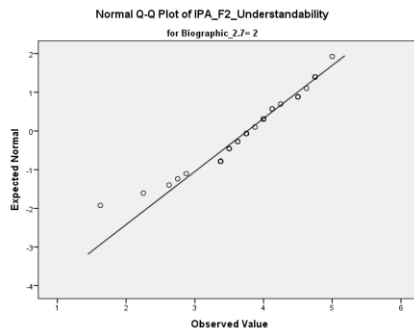
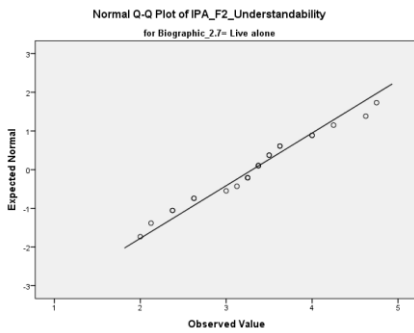
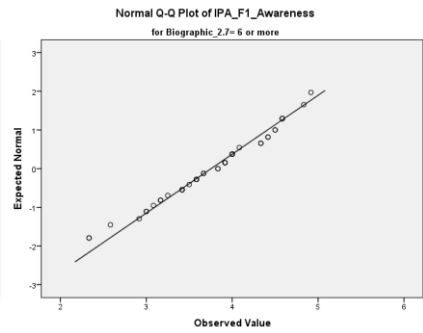
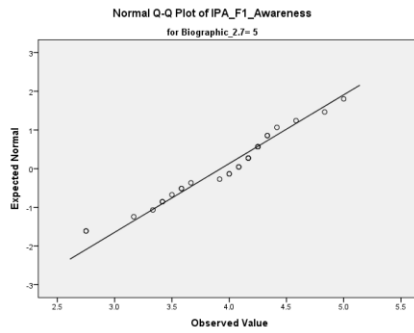
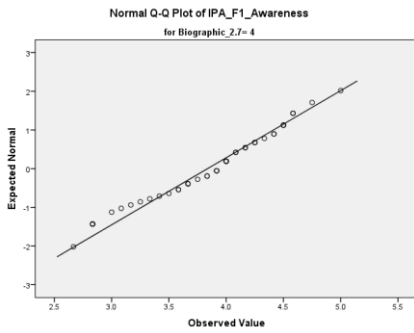
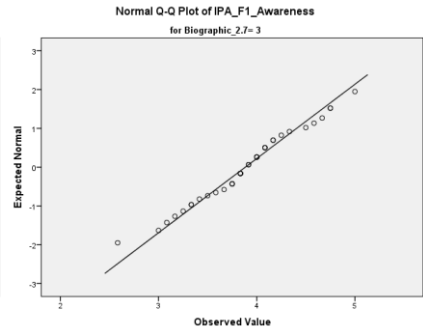
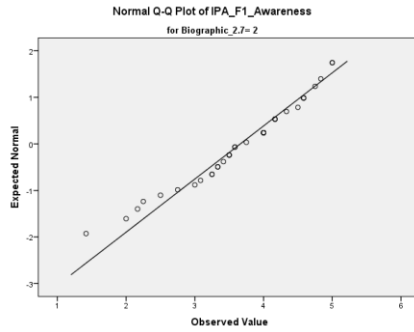
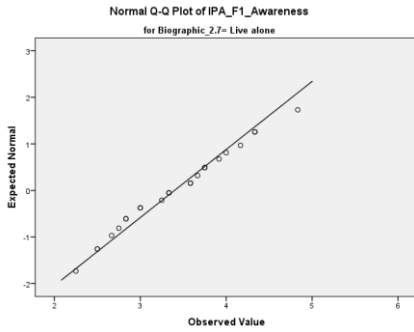
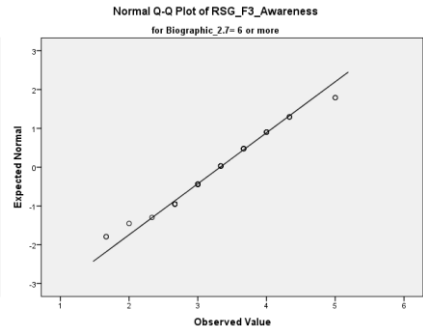
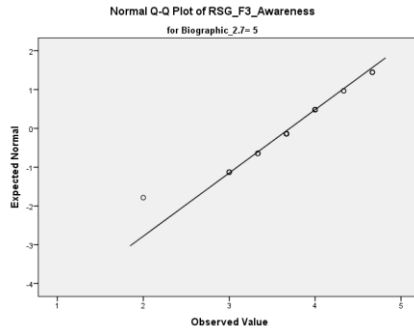
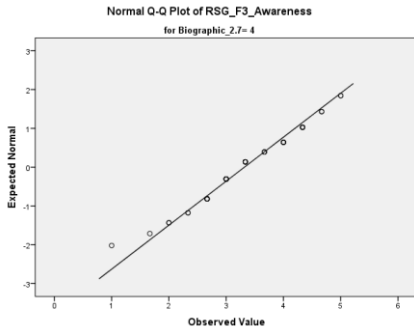
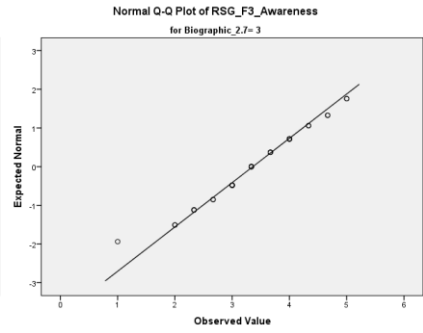
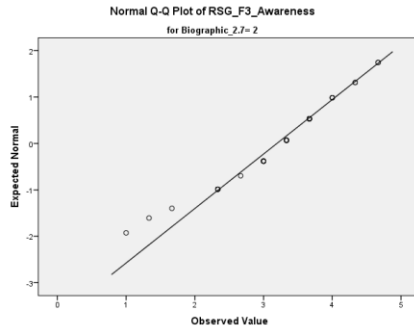
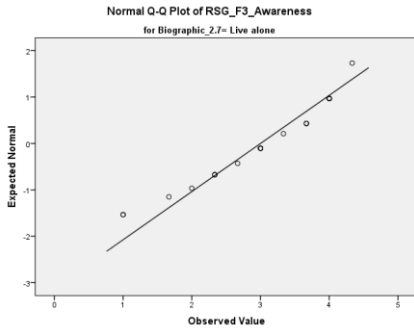
a. Lilliefors Significance Correction

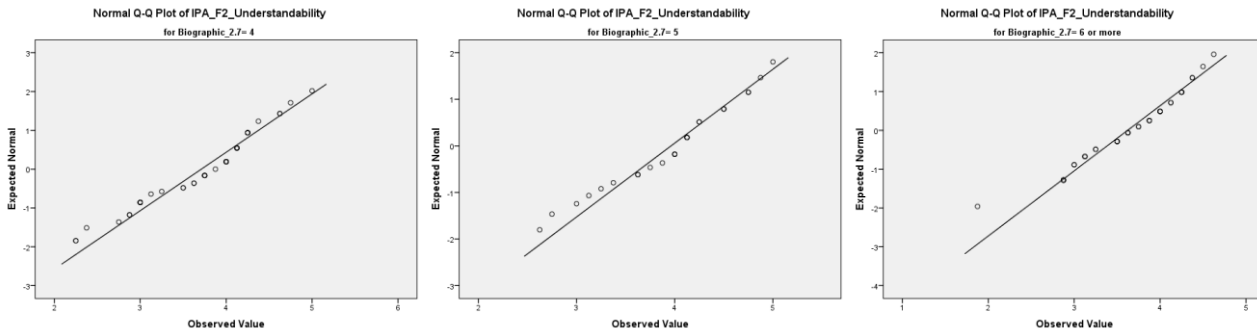










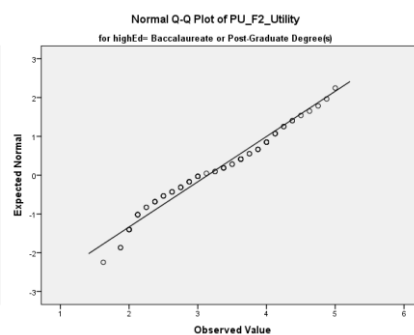
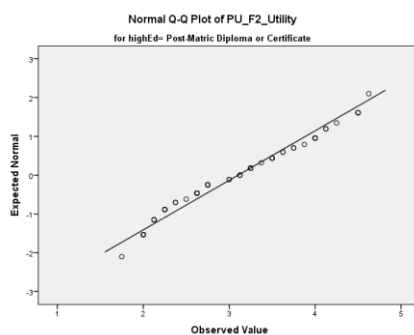
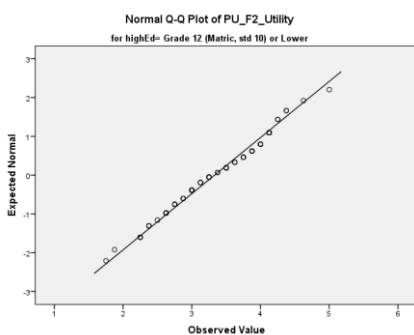
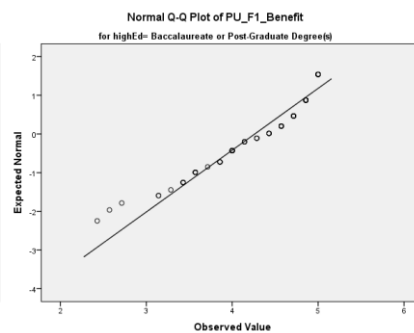
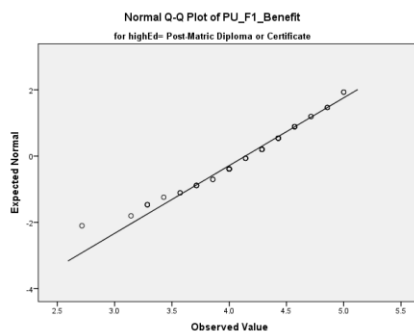
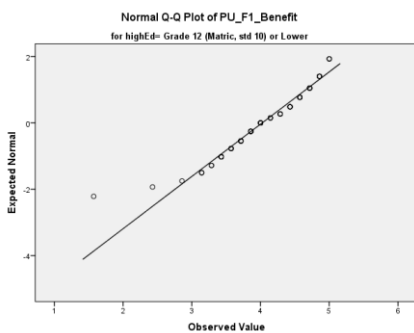
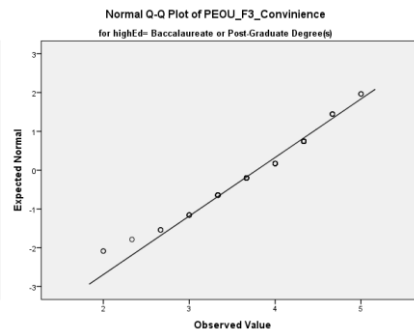
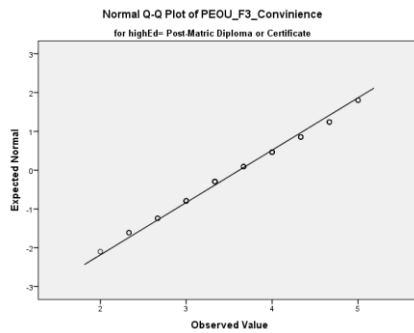
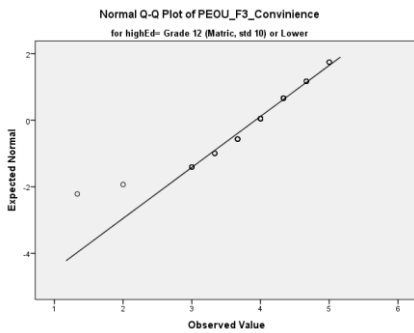
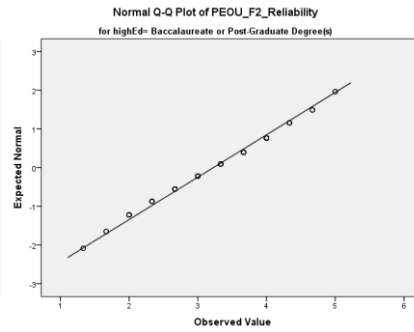
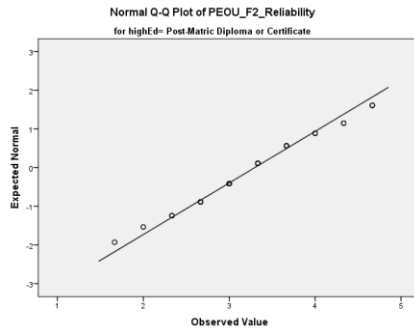
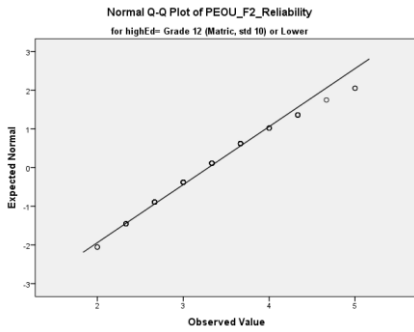
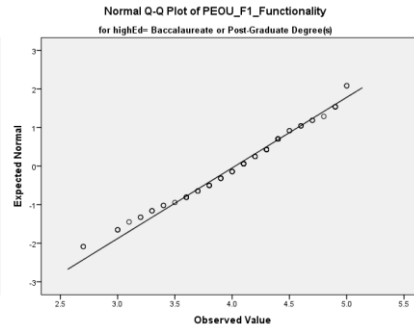
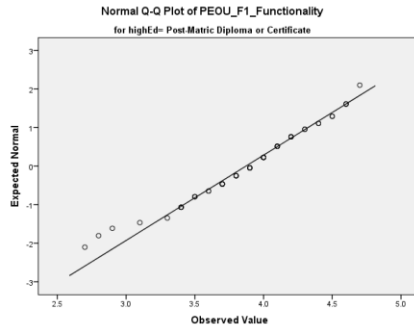
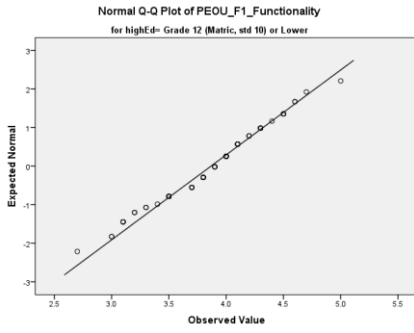


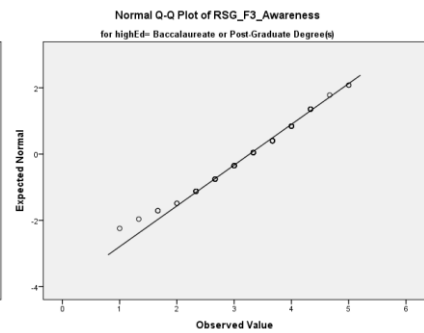
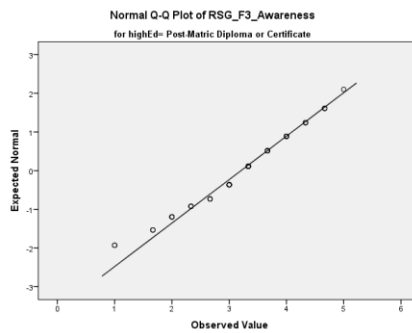
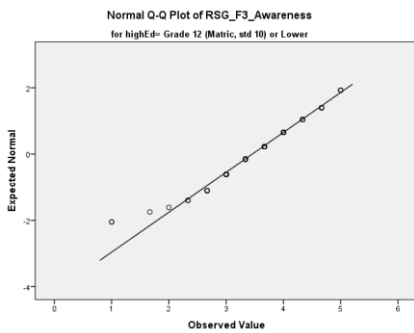
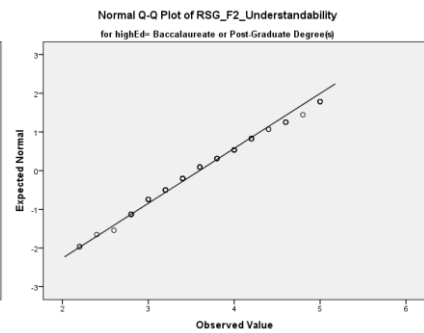
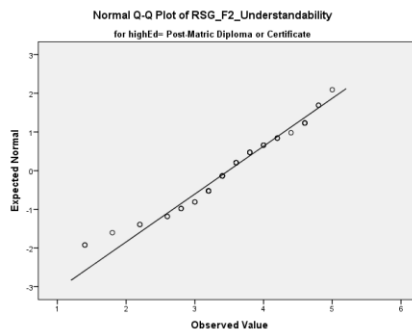
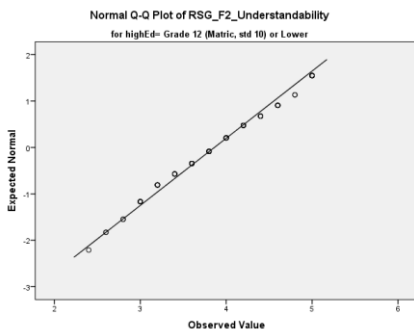
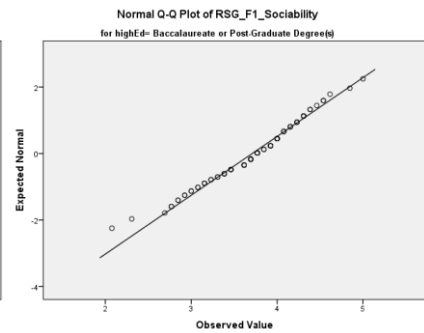
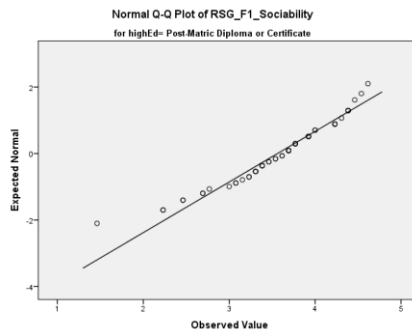
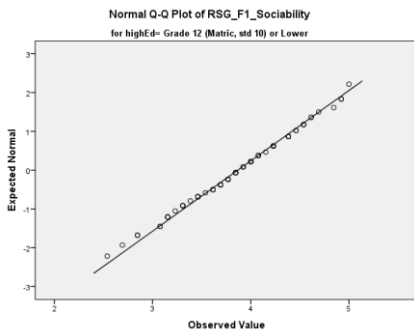
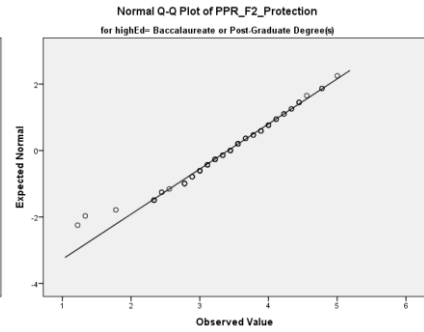
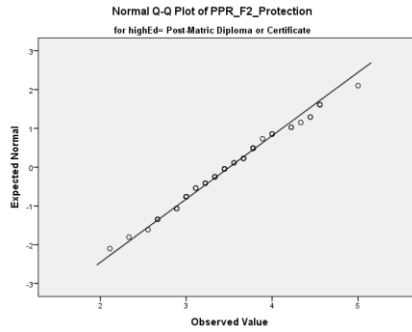
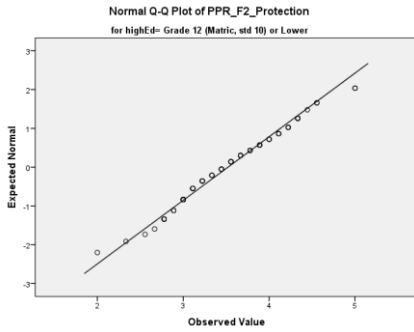
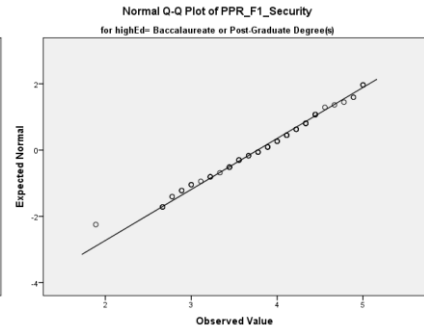
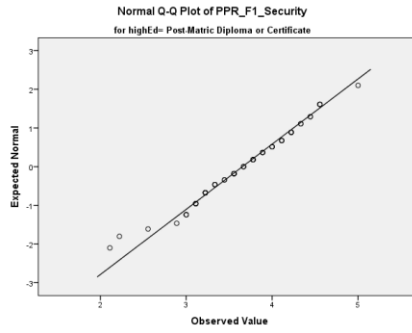
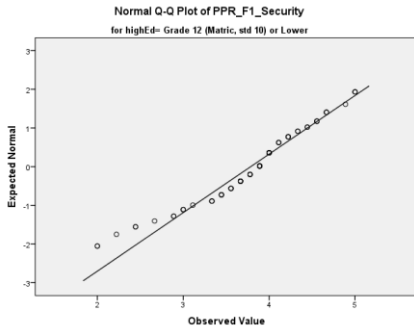
Appendix C 4

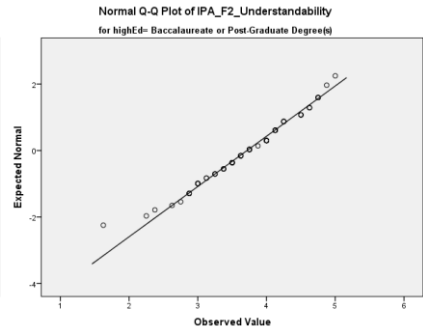
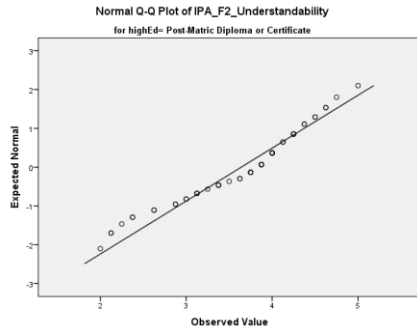
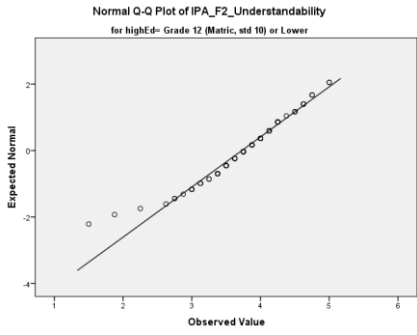
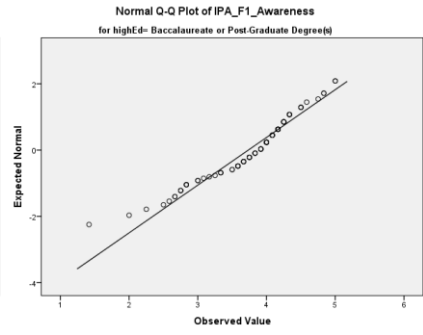
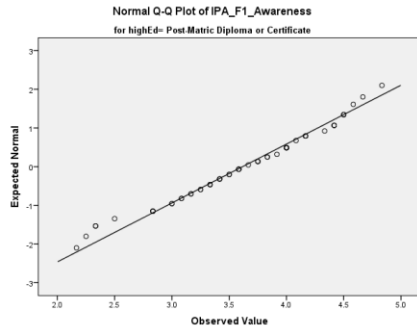
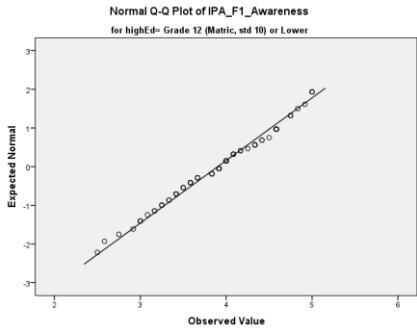
Table 6.1

Tests of Normality							
	Highest Education Level	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Perceived Functionality in PEOU	Grade 12 (Matric, std 10) or Lower	.126	73	.006	.980	73	.313
	Post-Matric Diploma or Certificate	.089	55	.200*	.972	55	.234
	Baccalaureate or Post-Graduate Degree(s)	.080	80	.200*	.976	80	.130
Perceived Reliability in PEOU	Grade 12 (Matric, std 10) or Lower	.124	74	.006	.963	74	.028
	Post-Matric Diploma or Certificate	.135	55	.014	.962	55	.078
	Baccalaureate or Post-Graduate Degree(s)	.090	80	.172	.976	80	.127
Perceived Convenience in PEOU	Grade 12 (Matric, std 10) or Lower	.168	74	.000	.913	74	.000
	Post-Matric Diploma or Certificate	.122	55	.039	.969	55	.171
	Baccalaureate or Post-Graduate Degree(s)	.147	80	.000	.951	80	.004
Perceived Benefits in PU	Grade 12 (Matric, std 10) or Lower	.104	74	.048	.941	74	.002
	Post-Matric Diploma or Certificate	.133	55	.017	.967	55	.138
	Baccalaureate or Post-Graduate Degree(s)	.152	80	.000	.911	80	.000
Perceived Utility in PU	Grade 12 (Matric, std 10) or Lower	.086	72	.200*	.984	72	.492
	Post-Matric Diploma or Certificate	.111	55	.089	.959	55	.059
	Baccalaureate or Post-Graduate Degree(s)	.091	80	.161	.960	80	.013
Perceived Security in PPR	Grade 12 (Matric, std 10) or Lower	.118	74	.013	.953	74	.008
	Post-Matric Diploma or Certificate	.062	55	.200*	.983	55	.616
	Baccalaureate or Post-Graduate Degree(s)	.071	80	.200*	.982	80	.328
Perceived Protection in PPR	Grade 12 (Matric, std 10) or Lower	.082	71	.200*	.985	71	.553
	Post-Matric Diploma or Certificate	.091	55	.200*	.987	55	.810
	Baccalaureate or Post-Graduate Degree(s)	.071	80	.200*	.980	80	.250
Sociability by RSG	Grade 12 (Matric, std 10) or Lower	.055	74	.200*	.989	74	.800
	Post-Matric Diploma or Certificate	.095	55	.200*	.953	55	.030
	Baccalaureate or Post-Graduate Degree(s)	.100	80	.045	.983	80	.364
Social Understandability by RSG	Grade 12 (Matric, std 10) or Lower	.078	73	.200*	.965	73	.038
	Post-Matric Diploma or Certificate	.138	54	.012	.959	54	.061
	Baccalaureate or Post-Graduate Degree(s)	.097	80	.063	.971	80	.070
Social Awareness by RSG	Grade 12 (Matric, std 10) or Lower	.127	73	.005	.957	73	.014
	Post-Matric Diploma or Certificate	.154	55	.002	.968	55	.150
	Baccalaureate or Post-Graduate Degree(s)	.105	79	.032	.976	79	.137
Awareness of IPA	Grade 12 (Matric, std 10) or Lower	.081	74	.200*	.978	74	.227
	Post-Matric Diploma or Certificate	.084	55	.200*	.975	55	.291
	Baccalaureate or Post-Graduate Degree(s)	.126	80	.003	.948	80	.003
Understandability of IPA	Grade 12 (Matric, std 10) or Lower	.092	73	.200*	.964	73	.033
	Post-Matric Diploma or Certificate	.159	55	.001	.947	55	.016
	Baccalaureate or Post-Graduate Degree(s)	.104	80	.033	.979	80	.206

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction







Part 10

Appendix D

APPENDIX D

Hypotheses Testing.

Appendix D 1

Table 6.5.1

Ranks			
	Size of your household	N	Mean Rank
PEOU_F1_Functionality	Live alone	23	102.65
	2	36	106.63
	3	38	114.64
	4	45	100.87
	5	26	106.00
	6 or more	40	97.13
	Total	208	
PEOU_F2_Reliability	Live alone	23	107.85
	2	36	99.11
	3	38	105.99
	4	45	101.71
	5	27	112.85
	6 or more	40	106.13
	Total	209	
PEOU_F3_Convenience	Live alone	23	85.20
	2	36	102.79
	3	38	102.07
	4	45	112.58
	5	27	122.89
	6 or more	40	100.56
	Total	209	
PU_F1_Benefit	Live alone	23	110.26
	2	36	109.13
	3	38	107.86
	4	45	111.70
	5	27	95.72
	6 or more	40	94.28
	Total	209	
PU_F2_Utility	Live alone	23	88.04
	2	36	88.71
	3	38	104.22
	4	45	112.23
	5	26	114.62
	6 or more	39	110.73
	Total	207	
PPR_F1_Security	Live alone	23	72.33
	2	36	105.64
	3	38	117.49
	4	45	103.83
	5	27	117.76
	6 or more	40	104.05
	Total	209	
PPR_F2_Protection	Live alone	23	79.17
	2	35	87.24
	3	38	114.32
	4	45	115.14
	5	26	113.31
	6 or more	39	101.92
	Total	206	
RSG_F1_Sociability	Live alone	23	93.11
	2	36	103.43
	3	38	108.03
	4	45	104.49
	5	27	113.94
	6 or more	40	104.91
	Total	209	
RSG_F2_Understandability	Live alone	23	85.41
	2	36	96.15
	3	38	102.07
	4	44	105.84
	5	27	112.70
	6 or more	39	115.99
	Total	207	
RSG_F3_Awareness	Live alone	23	86.72
	2	36	96.53
	3	37	105.85
	4	45	101.81
	5	26	133.75
	6 or more	40	102.08
	Total	207	
IPA_F1_Awareness	Live alone	23	72.04

	2	36	100.64
	3	38	113.25
	4	45	110.87
	5	27	120.26
	6 or more	40	103.14
	Total	209	
IPA_F2_Understandability	Live alone	23	69.54
	2	36	109.90
	3	38	109.33
	4	45	106.92
	5	27	128.37
	6 or more	39	96.10
	Total	208	

Table 6.5.1.1

Test Statistics ^{a,b}													
	PEOU_F1_Functionality	PEOU_F2_Reliability	PEOU_F3_Convenience	PU_F1_Benefit	PU_F2_Utility	PPR_F1_Security	PPR_F2_Protection	RSG_F1_Sociability	RSG_F2_Understandability	RSG_F3_Awareness	IPA_F1_Awareness	IPA_F2_Understandability	
Chi-Square	1.936	1.022	6.029	2.891	6.153	9.598	10.165	1.606	5.083	9.189	9.928	13.432	
Df	5	5	5	5	5	5	5	5	5	5	5	5	5
Asymp. Sig.	.858	.961	.303	.717	.292	.087	.071	.900	.406	.102	.077	.020	
a. Kruskal Wallis Test													
b. Grouping Variable: Size of your household													

Table 6.5.2

Report													
Size of your household		PEOU_F1_Functionality	PEOU_F2_Reliability	PEOU_F3_Convenience	PU_F1_Benefit	PU_F2_Utility	PPR_F1_Security	PPR_F2_Protection	RSG_F1_Sociability	RSG_F2_Understandability	RSG_F3_Awareness	IPA_F1_Awareness	IPA_F2_Understandability
Live alone	Std. Deviation	.559	.802	.770	.573	.768	.628	.747	.525	.677	.964	.684	.735
	Median	3.90	3.33	3.67	4.29	2.88	3.44	3.11	3.69	3.60	3.00	3.33	3.38
2	Std. Deviation	.548	.737	.631	.600	.793	.645	.678	.671	.724	.852	.876	.729
	Median	4.00	3.17	4.00	4.14	2.94	3.78	3.33	3.77	3.40	3.33	3.67	3.75
3	Std. Deviation	.354	.814	.578	.542	.867	.634	.685	.523	.754	.873	.523	.654
	Median	4.00	3.33	3.83	4.21	3.06	3.89	3.61	3.81	3.60	3.33	3.88	3.75
4	Std. Deviation	.539	.908	.586	.626	.836	.639	.621	.639	.735	.882	.577	.665
	Median	3.90	3.33	4.00	4.29	3.25	3.78	3.67	3.77	3.80	3.33	3.92	3.88
5	Std. Deviation	.424	.788	.829	.632	.736	.535	.617	.543	.766	.613	.563	.631
	Median	4.05	3.33	4.00	4.29	3.44	3.89	3.50	3.92	3.60	3.67	4.08	4.13
6 or more	Std. Deviation	.520	.676	.769	.643	.652	.674	.571	.628	.756	.760	.657	.596
	Median	3.90	3.33	3.67	4.14	3.38	3.78	3.56	3.85	3.80	3.33	3.83	3.63
Total	Std. Deviation	.495	.787	.687	.602	.785	.639	.662	.595	.741	.843	.665	.679
	Median	4.00	3.33	4.00	4.14	3.25	3.78	3.44	3.77	3.60	3.33	3.83	3.75

Table A1

Test Statistics ^a	
	IPA_F2_Understandability
Mann-Whitney U	247.000
Wilcoxon W	523.000
Z	-2.603
Asymp. Sig. (2-tailed)	.009
a. Grouping Variable: Size of your household	

Table A2

Test Statistics ^a	
	IPA_F2_Understandability
Mann-Whitney U	253.000
Wilcoxon W	529.000
Z	-2.745
Asymp. Sig. (2-tailed)	.006
a. Grouping Variable: Size of your household	

Table A3

Test Statistics^a	
	IPA_F2_Understandability
Mann-Whitney U	342.500
Wilcoxon W	618.500
Z	-2.274
Asymp. Sig. (2-tailed)	.023
a. Grouping Variable: Size of your household	

Table A4

Test Statistics^a	
	IPA_F2_Understandability
Mann-Whitney U	152.000
Wilcoxon W	428.000
Z	-3.092
Asymp. Sig. (2-tailed)	.002
a. Grouping Variable: Size of your household	

Table A5

Test Statistics^a	
	IPA_F2_Understandability
Mann-Whitney U	329.000
Wilcoxon W	605.000
Z	-1.745
Asymp. Sig. (2-tailed)	.081
a. Grouping Variable: Size of your household	

Appendix D 2

Table 6.5.1

	Ranks		
	Age Group (recoded)	N	Mean Rank
PEOU_F1_Functionality	20 or younger	35	80.10
	21 – 29	81	110.02
	30 – 39	56	104.19
	40 or older	36	116.28
	Total	208	
PEOU_F2_Reliability	20 or younger	36	102.00
	21 – 29	81	97.01
	30 – 39	56	106.95
	40 or older	36	122.96
	Total	209	
PEOU_F3_Convenience	20 or younger	36	113.14
	21 – 29	81	92.65
	30 – 39	56	105.08
	40 or older	36	124.51
	Total	209	
PU_F1_Benefit	20 or younger	36	87.32
	21 – 29	81	108.81
	30 – 39	56	112.29
	40 or older	36	102.75
	Total	209	
PU_F2_Utility	20 or younger	35	95.73
	21 – 29	80	92.68
	30 – 39	56	108.62
	40 or older	36	130.03
	Total	207	
PPR_F1_Security	20 or younger	36	96.78
	21 – 29	81	110.46
	30 – 39	56	102.32
	40 or older	36	105.10
	Total	209	
PPR_F2_Protection	20 or younger	34	93.00
	21 – 29	80	100.22
	30 – 39	56	108.83
	40 or older	36	112.42
	Total	206	
RSG_F1_Sociability	20 or younger	36	112.21
	21 – 29	81	101.56
	30 – 39	56	101.09
	40 or older	36	111.63
	Total	209	
RSG_F2_Understandability	20 or younger	35	118.03
	21 – 29	81	99.06
	30 – 39	55	104.20

	40 or older	36	101.17
	Total	207	
RSG_F3_Awareness	20 or younger	35	115.17
	21 - 29	80	103.14
	30 - 39	56	100.51
	40 or older	36	100.47
	Total	207	
IPA_F1_Awareness	20 or younger	36	105.99
	21 - 29	81	104.86
	30 - 39	56	95.16
	40 or older	36	119.64
	Total	209	
IPA_F2_Understandability	20 or younger	36	95.49
	21 - 29	81	108.87
	30 - 39	56	100.49
	40 or older	35	110.07
	Total	208	

Table 6.5.1.1

Test Statistics ^{a,b}												
	PEOU_F1_Functionality	PEOU_F2_Re Reliability	PEOU_F3_Convenience	PU_F1_Benefit	PU_F2_Utility	PPR_F1_Security	PPR_F2_Protection	RSG_F1_Sociability	RSG_F2_Understandability	RSG_F3_Awareness	IPA_F1_Awareness	IPA_F2_Understandability
Chi-Square	7.851	4.817	7.961	4.293	10.683	1.441	2.559	1.444	2.570	1.577	3.610	1.791
Df	3	3	3	3	3	3	3	3	3	3	3	3
Asymp. Sig.	.049	.186	.047	.232	.014	.696	.465	.695	.463	.665	.307	.617
a. Kruskal Wallis Test												
b. Grouping Variable: Age Group (recoded)												

Table 6.5.2

Independent Samples Test - Likert Scale										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PEOU_F1_Functionality	Equal variances assumed	.095	.759	.210	206	.834	.015	.069	-.122	.151
	Equal variances not assumed			.211	197.285	.833	.015	.069	-.122	.151
PEOU_F2_Re Reliability	Equal variances assumed	5.647	.018	-1.417	207	.158	-.155	.109	-.371	.061
	Equal variances not assumed			-1.390	178.296	.166	-.155	.112	-.375	.065
PEOU_F3_Convenience	Equal variances assumed	.313	.577	-.465	207	.642	-.045	.096	-.234	.145
	Equal variances not assumed			-.464	193.306	.643	-.045	.096	-.234	.145
PU_F1_Benefit	Equal variances assumed	2.683	.103	.437	207	.663	.037	.084	-.129	.202
	Equal variances not assumed			.450	206.932	.653	.037	.082	-.124	.197
PU_F2_Utility	Equal variances assumed	.226	.635	-.072	205	.943	-.008	.110	-.225	.209
	Equal variances not assumed			-.071	192.216	.943	-.008	.111	-.226	.210
RSG_F3_Awareness	Equal variances assumed	.701	.403	.497	205	.620	.059	.118	-.174	.292
	Equal variances not assumed			.502	201.121	.616	.059	.117	-.172	.289
IPA_F2_Understandability	Equal variances assumed	.536	.465	.943	206	.347	.089	.095	-.098	.276
	Equal variances not assumed			.948	199.334	.344	.089	.094	-.097	.275

Table 5.5.1.1

Test Statistics ^a	
	PEOU_F1_Functionality
Mann-Whitney U	887.500
Wilcoxon W	2483.500
Z	-.967
Asymp. Sig. (2-tailed)	.334

a. Grouping Variable: Age Group (recoded)

Table 5.5.1.2

Test Statistics ^a	
	PEOU_F1_Functionality
Mann-Whitney U	386.500
Wilcoxon W	1016.500
Z	-2.813
Asymp. Sig. (2-tailed)	.005

a. Grouping Variable: Age Group (recoded)

Table 5.5.1.3

Test Statistics ^a	
	PEOU_F1_Functionality
Mann-Whitney U	1398.000
Wilcoxon W	4719.000
Z	-.355
Asymp. Sig. (2-tailed)	.722

a. Grouping Variable: Age Group (recoded)

Table 5.5.1.1

Test Statistics ^a	
	PEOU_F1_Functionality
Mann-Whitney U	887.500
Wilcoxon W	2483.500
Z	-.967
Asymp. Sig. (2-tailed)	.334

a. Grouping Variable: Age Group (recoded)

Table 5.5.1.2

Test Statistics ^a	
	PEOU_F1_Functionality
Mann-Whitney U	386.500
Wilcoxon W	1016.500
Z	-2.813
Asymp. Sig. (2-tailed)	.005

a. Grouping Variable: Age Group (recoded)

Table 5.5.1.3

Test Statistics ^a	
	PEOU_F1_Functionality
Mann-Whitney U	1398.000
Wilcoxon W	4719.000
Z	-.355
Asymp. Sig. (2-tailed)	.722

a. Grouping Variable: Age Group (recoded)

Table 5.5.1.1

Test Statistics ^a	
	PU_F2_Utility
Mann-Whitney U	393.500
Wilcoxon W	1023.500
Z	-2.724
Asymp. Sig. (2-tailed)	.006

a. Grouping Variable: Age Group (recoded)

Table 5.5.1.2

Test Statistics ^a	
	PU_F2_Utility
Mann-Whitney U	928.500
Wilcoxon W	4168.500
Z	-3.056
Asymp. Sig. (2-tailed)	.002

a. Grouping Variable: Age Group (recoded)

Table 5.5.1.3

Test Statistics ^a	
	PU_F2_Utility
Mann-Whitney U	819.000
Wilcoxon W	2415.000
Z	-1.514
Asymp. Sig. (2-tailed)	.130

a. Grouping Variable: Age Group (recoded)

Appendix D 3

Table 6.5.1

Group Statistics - Likert Scale					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
PEOU_F1_Functionality	Male	92	3.94	.489	.051
	Female	116	3.92	.501	.047
PEOU_F2_Reliability	Male	92	3.18	.855	.089
	Female	117	3.34	.725	.067
PEOU_F3_Convenience	Male	92	3.76	.698	.073
	Female	117	3.81	.681	.063
PU_F1_Benefit	Male	92	4.17	.513	.054
	Female	117	4.13	.666	.062
PU_F2_Utility	Male	92	3.19	.802	.084
	Female	115	3.20	.775	.072
RSG_F3_Awareness	Male	92	3.35	.803	.084
	Female	115	3.29	.875	.082
IPA_F2_Understandability	Male	92	3.75	.660	.069
	Female	116	3.66	.694	.064

Table 6.5.1.1

Group Statistics - Importance Scale					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
mean_imp_PEOU_functionality	Male	92	3.03	.376	.039
	Female	116	3.02	.385	.036
mean_imp_PEOU_reliability	Male	92	3.18	.855	.089
	Female	117	3.34	.725	.067
mean_imp_PEOU_convenience	Male	92	3.76	.698	.073
	Female	117	3.81	.681	.063
mean_imp_PU_Benefit	Male	92	4.17	.513	.054
	Female	117	4.13	.666	.062
mean_imp_PU_Utility	Male	92	3.19	.802	.084
	Female	115	3.20	.775	.072
mean_imp_RSG_Awareness	Male	92	3.35	.803	.084
	Female	115	3.29	.875	.082
mean_imp_IPA_Understandability	Male	92	3.75	.660	.069
	Female	116	3.66	.694	.064

Table 6.5.2

Independent Samples Test - Likert Scale										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PEOU_F1_Functionality	Equal variances assumed	.095	.759	.210	206	.834	.015	.069	-.122	.151
	Equal variances not assumed			.211	197.285	.833	.015	.069	-.122	.151
PEOU_F2_Reliability	Equal variances assumed	5.647	.018	-1.417	207	.158	-.155	.109	-.371	.061
	Equal variances not assumed			-1.390	178.296	.166	-.155	.112	-.375	.065
PEOU_F3_Convenience	Equal variances assumed	.313	.577	-.465	207	.642	-.045	.096	-.234	.145
	Equal variances not assumed			-.464	193.306	.643	-.045	.096	-.234	.145
PU_F1_Benefit	Equal variances assumed	2.683	.103	.437	207	.663	.037	.084	-.129	.202
	Equal variances not assumed			.450	206.932	.653	.037	.082	-.124	.197
PU_F2_Utility	Equal variances assumed	.226	.635	-.072	205	.943	-.008	.110	-.225	.209
	Equal variances not assumed			-.071	192.216	.943	-.008	.111	-.226	.210
RSG_F3_Awareness	Equal variances assumed	.701	.403	.497	205	.620	.059	.118	-.174	.292
	Equal variances not assumed			.502	201.121	.616	.059	.117	-.172	.289
IPA_F2_Understandability	Equal variances assumed	.536	.465	.943	206	.347	.089	.095	-.098	.276
	Equal variances not assumed			.948	199.334	.344	.089	.094	-.097	.275

Table 6.5.3

Ranks				
	Gender	N	Mean Rank	Sum of Ranks
PPR_F1_Security	Male	92	106.57	9804.00
	Female	117	103.77	12141.00
	Total	209		
PPR_F2_Protection	Male	91	107.80	9810.00
	Female	115	100.10	11511.00
	Total	206		
RSG_F1_Sociability	Male	92	98.11	9026.00
	Female	117	110.42	12919.00

	Total	209		
RSG_F2_Understandability	Male	91	98.03	8920.50
	Female	116	108.69	12607.50
	Total	207		
IPA_F1_Awareness	Male	92	104.97	9657.50
	Female	117	105.02	12287.50
	Total	209		

Table 6.5.4

Mann-Whitney Test Statistics^a					
	PPR_F1_Security	PPR_F2_Protection	RSG_F1_Sociability	RSG_F2_Understandability	IPA_F1_Awareness
Mann-Whitney U	5238.000	4841.000	4748.000	4734.500	5379.500
Wilcoxon W	12141.000	11511.000	9026.000	8920.500	9657.500
Z	-.332	-.923	-1.462	-1.275	-.006
Asymp. Sig. (2-tailed)	.740	.356	.144	.202	.995

a. Grouping Variable: Gender

Table 6.5.5

Means						
Gender		PPR_F1_Security	PPR_F2_Protection	RSG_F1_Sociability	RSG_F2_Understandability	IPA_F1_Awareness
Male	N	92	91	92	91	92
	Median	3.89	3.56	3.69	3.60	3.88
Female	N	117	115	117	116	117
	Median	3.78	3.44	3.85	3.60	3.83
Total	N	209	206	209	207	209
	Median	3.78	3.44	3.77	3.60	3.83

Appendix D 4

Table 6.5.5

Test Statistics^{a,b}									
	PEOU_F1_Functionality	PEOU_F2_Reliability	PU_F2_Utility	PPR_F1_Security	PPR_F2_Protection	RSG_F1_Sociability	RSG_F2_Understandability	IPA_F1_Awareness	IPA_F2_Understandability
Chi-Square	.007	.021	2.877	2.104	.013	6.136	6.061	5.033	.127
df	1	1	1	1	1	1	1	1	1
Asymp. Sig.	.935	.885	.090	.147	.910	.013	.014	.025	.721

a. Kruskal Wallis Test
b. Grouping Variable: highEd

Table 6.5.5

Report										
highEd		PEOU_F1_Functionality	PEOU_F2_Reliability	PU_F2_Utility	PPR_F1_Security	PPR_F2_Protection	RSG_F1_Sociability	RSG_F2_Understandability	IPA_F1_Awareness	IPA_F2_Understandability
Grade 12 (Matric, std 10) or Lower	Median	3.90	3.33	3.25	3.89	3.44	3.85	3.80	3.92	3.75
	N	73	74	72	74	71	74	73	74	73
Post-Matric Diploma or Certificate	Median	3.90	3.33	3.13	3.67	3.44	3.69	3.40	3.58	3.88
	N	55	55	55	55	55	55	54	55	55
Baccalaureate or Post-Graduate Degree(s)	Median	4.10	3.33	3.00	3.83	3.44	3.77	3.60	3.92	3.75
	N	80	80	80	80	80	80	80	80	80
Total	Median	4.00	3.33	3.25	3.78	3.44	3.77	3.60	3.83	3.75
	N	208	209	207	209	206	209	207	209	208

Table 6.5.5

Test Statistics^a			
	RSG_F1_Sociability	RSG_F2_Understandability	IPA_F1_Awareness
Mann-Whitney U	1515.500	1468.000	1564.500
Wilcoxon W	3055.500	2953.000	3104.500
Z	-2.477	-2.462	-2.244
Asymp. Sig. (2-tailed)	.013	.014	.025

a. Grouping Variable: highEd

Table 6.5.5

Test Statistics^a			
	RSG_F1_Sociability	RSG_F2_Understandability	IPA_F1_Awareness
Mann-Whitney U	2529.500	2296.500	2652.500
Wilcoxon W	5769.500	5536.500	5892.500
Z	-1.559	-2.286	-1.113
Asymp. Sig. (2-tailed)	.119	.022	.266

a. Grouping Variable: highEd