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Perceived Barriers to Consumer Adoption of Mobile Banking Technology in South Africa

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

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ABSTRACT

Internationally, mobile banking usage is growing, in South Africa the adoption of mobile banking has been slow. The research considers the perceived barriers users face when considering mobile banking, by using the Sarker and Wells (2003) framework to consider the various issues that users face in relation to handheld mobile devices. This research follows a qualitative process based on interviews within an identified group of respondents to see what their perceived barriers were to mobile banking. The interviews were analysed, based on the propositions identified by the framework, in order to get an understanding of the perceived barriers. It was found that some of the identified potential hindrances were strong hindrances, and two hindrances were in fact weak influencers.

DECLARATION

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

Philip David Thornton

Signed at ……

On the …….. day of …… 2010

DEDICATION

To my family: David, Orelia and Alfred Thornton for their unwavering support.

ACKNOWLEDGEMENTS

I would like to thank the following:

Prof. Louise Whittaker, for supervising me as well as for her help and support

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CHAPTER 1: INTRODUCTION

1.1 Purpose of the study

The purpose of this research is to identify and determine user barriers for mobile banking as perceived by existing bank customers, in a South African context.

1.2 Context of the study

Internationally, Laukkanen and Pasanen (2008) point out that banks are increasing their services by using multiple electronic channels. These channels include: ATM banking, telephone banking, personal computer banking, internet banking and mobile phone banking. In addition, Suoranta and Mattila (2004) emphasise that banking is taking place less in branches and more online.

Both Finnish researchers Suoranta and Mattila (2004) and Laukkanen and Pasanen (2008) posit that mobile banking has not yet reached its full potential in terms of the number of potential users.

From a South African perspective, Ivatury and Pickens (2006) explain that mobile banking is available through the banking sector as well as other providers, e.g. WIZZIT. In 2006, WIZZIT had 500 000 customers (Ivatury and Pickens 2006). When one considers that at the same time Vodacom, a South African cellular, provider had 21,8 million customers (Vodacom 2009) it suggests that there is an opportunity to determine why more South Africans are not utilising the mobile banking services offered by companies and banks.

1.3 Problem statement

1.3.1 *Main problem*

The purpose of the research is to identify consumers' perceived barriers that affect the adoption of mobile banking in South Africa. It explores the perceptions

of potential users (who have a bank account and are literate) of mobile banking to determine which perceived barriers exist in mobile banking.

1.4 Significance of the study

The study will provide guidance to banks, mobile banking providers, mobile phone operators and potential mobile banking users.

It is hoped that in understanding the hindrances that stand between customers and mobile banking, banks may be able to benefit from this report and that they will be able to change or remove hindrances to enable more customers to utilise this channel.

Mobile banking providers may also gain insight from this report as they will be able to identify the perceived barriers existing between them and their clients. By being aware of such barriers, providers will be able to adapt their current service offerings or address their clients' qualms.

In addition, the study will be useful for mobile phone operators as they will gain a greater understanding of the perceived challenges their clients face. Such an understanding may assist them to make changes to their current service offerings to help improve the service that is offered to their clients.

Potential mobile banking users might also benefit from this report as through the provision of feedback to banks, mobile banking providers and mobile phone operators, changes may be made that will improve the service offered which may result in barriers being overcome and changing potential users into mobile banking customers.

1.5 Delimitations of the study

Demographic usage patterns are not included in scope of this report. However, there have been findings that suggest that demographics do influence mobile banking usage. This will be discussed briefly but not analysed, due to the current research presenting contradictory findings.

Despite there being a possibility that illiterate people might use mobile banking by memorising menu sequences, these users will be ignored in the research. All respondents who will be interviewed will be literate as this is guaranteed by the education level required of all respondents, which is discussed in chapter 3, Research Methodology.

1.6 Definition of terms

There are several terms that need to be explained as these can cause confusion to the reader.

Table 1: Table of terms and definitions

Term	Definition	Reference
Mobile Banking (cellphone banking)	A channel for a customer to interact with a bank via a mobile device, these devices can be mobile phones or personal digital assistants. (For the avoidance of doubt, where the term mobile banking is used in this research, it only refers to banking by way of communicating to the bank by WAP, WIG or USSD).	Barnes and Corbitt (2003, cited in Laukkanen and Pasanen 2008)
Mzansi Account	Bank accounts designed especially for low-income customers.	(Ivatury and Pickens 2006)
SIM Card	Subscriber Identity Module card	(Brown, Cajee, Davies

Term	Definition	Reference
	which is found in a mobile phone.	and Stroebel 2003)
USSD	Unstructured Supplementary Service Data	(MTN 2005)
WAP	Wireless Application Profile	(Brown et al. 2003)
WIG	Wireless Internet Gateway	(Brown et al. 2003)
WIZZIT	Mobile banking provider offering a transactional bank account that is accessible through both mobile phone and debit card.	(Ivatury and Pickens 2006)

1.7 Assumptions

The following assumptions are taken into account for the research:

- Changes in the current financial structures over the course of this research do not affect the respondents' input. During the time that the research is being conducted, it is assumed that the banking and financial consumer markets with regard to mobile banking are stable.

- Respondents have sufficient knowledge of mobile banking to clearly articulate and discuss answers to the questions provided. With regard to the technical nature of mobile banking, it is assumed that the respondents are able to have a conversation regarding their opinions about mobile banking and technology.

- 30 interviews will be enough to gather sufficient data to conduct the research.

2 CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

Internationally, Suoranta and Mattila (2004) have recognised that banking is taking place less in branches, as customers are turning to online solutions instead. Banks in turn are increasing their services to customers by growing the number of channels that they use to interact with clients (Laukkanen and Pasanen 2008). In particular, banks are using electronic and wireless channels to provide services to customers (Suoranta and Mattila 2004). These electronic channels consist largely of ATM banking, telephone banking and internet banking (Laukkanen and Pasanen 2008).

A new subset of electronic banking is mobile (cellphone) banking. (Pousttchi and Schurig 2004; Suoranta and Mattila 2004), which is either used as a substitute or as a supplement to current services (Hoffman 2006).

2.1.1 *Mobile banking*

Barnes and Corbitt (2003, cited in Laukkanen and Pasanen 2008) describe mobile banking as a channel for a customer to interact with a bank via a mobile device. Such devices can be in the form of mobile phones or personal digital assistants. There are various further explanations regarding what mobile banking is. Mallat, Rossi and Tuunainen (2004) explain that mobile banking is a service where users can receive information on their account balances, can transfer funds between accounts, trade stocks and receive confirmation of direct payments made. Laukkanen (2007b) further include the ability to receive share portfolio and price information as part of the mobile banking service.

2.1.2 *South African banking*

Due to South Africa being a middle-income developing country (Brown and Molla 2005) it is to be expected that the banking environment in South Africa is different in some respects to the banks in the international literature discussed.

In South Africa, only a bank can participate in the national payments system and accept deposits (Hoffman 2006). The country has a high level of unbanked citizens (approximately 16 million people) as well as people who struggle to access or interact with financial services providers (Ivatury and Pickens 2006). To help rectify this, South Africa instituted entry-level transactional bank accounts (Ivatury and Pickens 2006). These accounts (known as Mzansi accounts) are designed especially for low-income customers. The Mzansi accounts were launched by the major retail banks and Postbank (Porteous 2007) in 2005. Since the launch of these accounts Mzansi, has attracted around three million clients (Porteous 2008).

Table 2 (Proteous 2007) illustrates a breakdown and compares the South African banking population prior to the Mzansi introduction and a year after its introduction.

Table 2: Banking Profiles Compared (Porteous 2007)

Category	2004	2006
1. Currently banked	13m (48%)	15.9m (51%)
Unbanked Made up of:	14.1m (52%)	15.3m (49%)
2. Previously banked	3.6m (13%)	3.6m (11.5%)
3. Never banked	10.5m (39%)	11.7m (37.5%)

Source: FinScope™ SA 2004, 2006

All of the major retail banks in South Africa provide cellphone (mobile) banking (Brown et al. 2003). In addition, there are also non-banks (MTN Banking and WIZZIT) who are in alliance with banks which offer mobile banking (Porteous 2008). Their mobile banking offerings were launched during the same year (2005) as the Mzansi account launch (Porteous 2008). MTN Banking and WIZZIT have partnerships with Standard Bank and the Bank of Athens respectively (Porteous 2008).

Datta, Pasa and Schnitker (2001) suggest that both businesses and consumers in emerging markets should find mobile banking more beneficial than businesses or consumers in developed markets, due to them having access to a limited number of services. However, despite mobile banking having been available in South Africa since 2005 (Goldstuck 2007), by 2006 South Africa had only seen an estimated half a million users utilising the service (Porteous 2008). Considering that in 2001 Vodacom had 19,2 million subscribers (Vodacom 2009), it would appear to indicate that the uptake of mobile banking has not been to popular and/or successful.

2.2 The case for mobile banking

From the literature reviewed above, it is apparent that mobile banking is not particularly popular in South Africa. The review seeks to identify the inhibitors of mobile banking in South Africa. The review commences by considering the case for and status of mobile banking at present.

2.2.1 *Why banks introduced mobile banking*

Internationally, Laukkanen (2007b) found that the introduction of electronic banking allows banks to easily provide additional channels which increased the potential value add for customers. According to financial software developer Meridea, (2005; cited in Riivari 2005) the main drivers behind a bank deciding to implement mobile financial services are to:

- To improve customer service
- reduce costs
- increase the reactivity of the company
- increase market share
- reinforce brand image.

A further driver identified is that mobile services are used by banks to stay competitive by finding ways to serve their customers (Laukkanen, Sinkkonen, Kivijarvi and Laukkanen 2007). This is different to internet banking services which actually provide large economic benefits for banks. Laukkanen et al. (2007) point out, however, that mobile services are offered by banks not as a cost-saving measure, but are instead offered as an additional value-added service for customers. Alternatively, banks in Asia find that mobile banking offers a cost-effective channel to their customers (Tae-gyu 2004).

2.2.2 *Who are the users of mobile banking?*

There are conflicting views regarding who utilises mobile banking. For example. Laforet and Li (2005) found that users in China were predominantly male and these were not necessarily young or highly educated. As shown in Figure 1, in Finland, the highest usage of mobile banking is in the age 18-24 age bracket. Surprisingly, the results indicate that the persons most likely to try to use mobile banking are under the age of 18, followed by users aged between 50-64 (note: under-18-year-olds only represent 0.3% of all respondents).

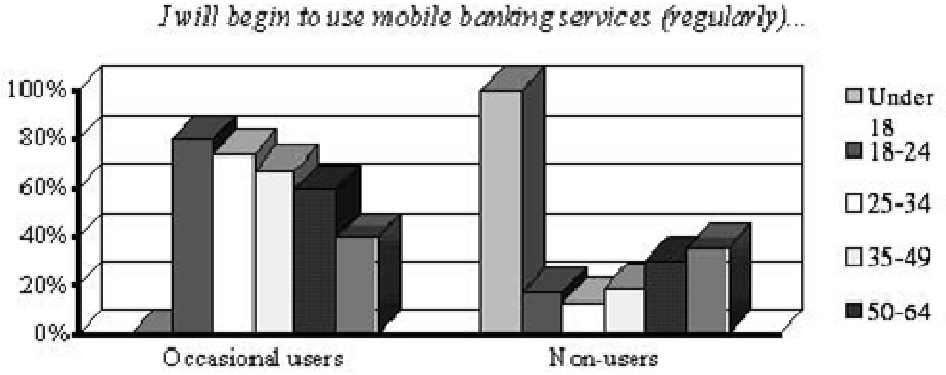

Figure 1: Intention to begin regular usage of mobile banking services presented proportionally by age category (Suoranta and Mattila 2004)

Suoranta (2003, cited in Laukkanen and Pasanen 2008) subsequently found that the typical mobile banking user is married in the age group of 25-34 and has intermediate education. In contrast, Laukkanen and Pasanen (2008) found that the average age of mobile banking customers to be between 30 -39 and

40-49 years. Laukkanen and Pasamnen (2008) also challenge Suoranta's findings by suggesting that men are the most typical users of mobile banking. In this study, they (Laukkanen and Pasanen 2008) identify that education, occupation, household income and size of the household do not affect mobile banking users.

In addition, Laukkanen et al. (2007) found that mature consumers aged 55 + had a high negative image of mobile banking compared to younger consumers. These mature users considered new technology more complicated than useful.

2.2.3 *Benefits of mobile banking*

Mobile phones are becoming an integral part of customers lives (Laukkanen 2007b) and with mobile phone technology developments (e.g. internet connections) phones are becoming a channel for service consumption, and therefore offer both banks and clients opportunities.

Laukkanen and Pasanen (2008) highlight that mobile banking allows users to:

- check balances
- pay invoices
- transfer funds between accounts
- monitor credit cards
- check when invoices are due
- buy, sell and receive portfolio and price information about stocks
- utilise internet banking via their mobile phone over a network (Laukkanen et al. 2007).

Suoranta and Mattila (2004) and Laukkanen (2007a) point out that there are four factors that contribute to the adoption of mobile banking. These are convenience, accessibility to services regardless of time and place, privacy, and the saving of time and effort.

Laforet and Li (2005) propose that mobile services could be adopted by users to improve their self-image.

Laforet and Li (2005) found another advantage for mobile banking was guaranteed safety. This is in contradiction to most of the literature. However, it can possibly be explained due to their study (Laforet and Li 2005) having been conducted in China where the banking regulations are different. Laforet and Li (2005) also found that cost savings for users in China were advantageous as mobile banking is relatively cheap.

2.2.4 *Technology for mobile banking*

There are three ways in which mobile banking can be conducted in South Africa. These are Wireless Internet Gateway (WIG), Unstructured Supplementary Data Services (USSD) or Wireless Application Protocol (WAP).

WIG cellphone banking allows customers to access their bank accounts for transactions by using Short Message Services (SMS) (ABSA 2009b). From a security perspective these SMS transactions are secure, due to the information transferred between the phone and the bank being encrypted. To use this application users are required to download or install the service onto their Subscriber Identity Module (SIM) card. Upon completing this, the user can then interact with the bank through a menu interface that gives users various banking options (ABSA 2009b).

USSD allows users to interact with the bank's system in a similar manner through once-off commands or through menu-based applications (MTN 2005). USSD is a technology that allows mobile phones to send information between it and an application on the network, for example mobile banking (MTN 2005).

The third way to conduct mobile banking is to use WAP. Emmanuel (2007) explains WAP as a wireless communication standard that allows internet content to be viewed on digital mobile phones. ABSA (2009a) explains that WAP mobile banking is where customers access their bank accounts on their mobile phones by using an internet connection that is available on their phones.

Similar to WIG, the information that is sent over this medium is encrypted for security. However, there are two challenges faced by clients: the first is that only specific mobile phones support WAP, and second is that the phone needs to allow secure internet sessions (ABSA 2009a).

2.3 The status of mobile banking

Comparing the internet to mobile banking in Finland, Laukkanen (2007b) finds that internet banking is the leading channel for electronic banking. The most important elements of internet banking are low fees, saving time, and the freedom of time and place (Karjaluoto, Mattila and Pento 2002, cited in; Laukkanen 2007b). Alternatively, Laforet and Li (2005) found that the main benefit for online (internet) banking in China was the issue of security (the banks guarantee the safety of the clients' funds).

Internet banking is also more established than mobile banking (Laforet and Li 2005; Unknown 2007), a factor which may result in it being more popular than mobile banking. For example, 70% of Finns regularly use banking services via the internet (Laukkanen et al. 2007; Laukkanen and Pasanen 2008). In the USA, 50% of CitiBank's chequeing customers utilise online banking (Unknown 2007). However, the consumption of mobile banking in Finland is relatively low (Laukkanen 2007a). Alternatively, Tae-gyu (2004) is of the opinion that in Asia, more users will start to access the internet via their mobile phones, than using a traditional PC. The effect is that mobile banking is taking off in Asia.

Globally mobile banking is still a relatively new industry (Suoranta and Mattila 2004; Laforet and Li 2005; Laukkanen 2007b). The most advanced countries using mobile banking are in the Far East (Juniper Research 2009). Market penetration of mobile banking is greater than 40% in Korea, Singapore, Hong Kong and Japan (Tae-gyu 2004), while the USA is lagging behind Europe. It appears that banks in the USA only started launching their mobile banking offerings during 2007 (Bielski 2008) and 2008 (Unknown 2007). Despite all of the advantages of mobile banking, the internet is still the leading channel of electronic banking (Laukkanen 2007b) internationally.

As an industry, South Africa's mobile banking industry is still in its infancy, (Richards 2008, cited by Fisher-French 2008). However, the South African industry experts foresee that mobile banking will become a standard in the future.

According to World Wide Worx (Goldstuck 2007) during 2006 just over one in ten South Africans (with bank accounts) had utilised mobile banking. The majority of these users (87%) had used it to access their balances. World Wide Worx (Goldstuck 2007) also found that the youth market was least likely to have used mobile banking. Instead the most likely people to have used mobile banking were aged 46-55.

There are approximately half a million mobile banking users in South Africa (Dlamini 2006; Porteous 2007, 2008). In South Africa, mobile banking is being targeted at various segments of the population. For example, two of the providers are targeting low-income earners (Dlamini 2006; Fisher-French 2008). However, one of these providers, despite aiming for the lower end of the market, communicated to the upper end believing that the product should be aspirational (Hoffman 2006). In circumstances where existing bank customers are using mobile banking, these customers tend to use mobile banking as an additional channel through which to operate their account (Porteous 2007, 2008).

2.4 Inhibitors of mobile banking.

In order to determine the inhibitors of mobile banking, Sarker and Wells (2003) provide a model which specifically focuses on the adoption of mobile devices by users. This model is an Input-Process-Output model (Sarker and Wells 2003).

The Input, Process and Output are all made up of various factors (Figure 3 illustrates the structure of the model). Inputs consist of Individual Characteristics, Communication/Task Characteristics, Modality of Mobility, Technology Characteristics and Context.

The Use Process is made up of Exploration and Experimentation and Assessment of Experience. Finally, Output consists of Adoption Outcome (Sarker and Wells 2003).

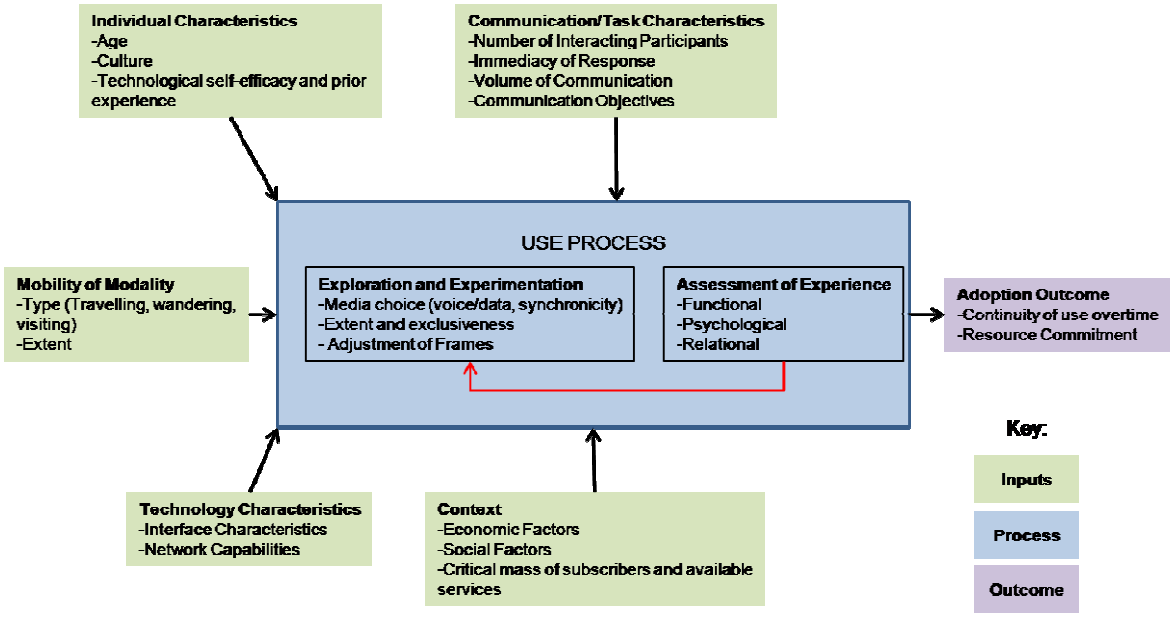

Figure 2: Input-Process-Output framework for mobile handheld device use and adoption (Sarker and Wells 2003).

Sarker and Wells (2003) point out that there are various influences that will affect whether a person utilises wireless handheld phones. Due to the nature of this research focusing on why users do not consider using mobile banking, and not looking at their actual experience with the mobile banking, only inputs will be discussed.

These inputs will be discussed in no particular order and from the discussed inputs various propositions will be drawn.

2.4.1 *Input – individual characteristics*

The first influence is individual characteristics such as age, culture and technological self-efficacy (Sarker and Wells 2003). From an age and culture perspective Suoranta and Mattila (2004) found that demographics were a hindrance to mobile banking. They established (Suoranta and Mattila 2004) that certain categories of people were less likely to use mobile banking. Similarly,

Laukkanen and Pasanen (2008) found that certain age and gender categories were less likely to adopt mobile banking. Such demographic differences were discussed briefly within section 2.2.2 “Who are the Users of Mobile Banking?” previously. Flinders (2008) also identified a cultural issue, namely that a person’s place of origin could affect their acceptance of mobile banking. An example given is in rural India where most banking is conducted via mobile phone. Flinders (2008) continues to point out that it is the western hemisphere that has an aversion to mobile banking, as users prefer the tangible side of banking.

A user’s technological self-efficacy (Sarker and Wells 2003) is also a determinant of whether a person will use mobile banking. Technology self-efficacy describes a user’s willingness to try using and building their levels of confidence in using mobile devices. Goldstuck (2007) found an interesting perspective in a study that he conducted in that he found that some respondents would just not use a mobile phone for banking purposes.

Ivatury and Pickens (2006) found that users also preferred human interaction when it came to utilising a banking service.

2.4.2 *Proposition 1*

An individual’s characteristics can be an inhibitor to mobile banking.

2.4.3 *Input – technology characteristics*

The second input is technology characteristics (Sarker and Wells 2003). There are two factors that influence technology characteristics – these are interface characteristics and network capabilities. Interface characteristics include the physical constraints, as well as the interface of the device. Network capabilities include challenges such as cellular coverage, and the responsiveness of the cellular network (Sarker and Wells 2003).

In terms of interface characteristics (Sarker and Wells 2003) there seems to be consensus among international researchers regarding the inhibitors to mobile

banking. In two separate studies, Laukkanen (2007a, 2007b) found that the largest inhibitors to mobile banking were the actual mobile device (handset), specifically that the keys and screen were too small and the speed of the data transfer/connection were deterrents. Similarly, users in South Korea found scrolling through several menus on a phone inconvenient (Bradford and Hayashi 2007).

Similar to the international studies mentioned previously, Smit (2006, cited in Dlamini 2006) identifies the user-friendliness of the phone as an issue in South Africa. The challenges identified were size and functional limitations of the actual device.

In terms of network capabilities (Sarker and Wells 2003), it is apparent that such are sufficient as all of South Africa's major banks offer a form of mobile banking (Porteous 2008). Further, Hoffman (2006) points out that with the increase in geographical coverage of the mobile networks, there is opportunity to see an increase in mobile banking users.

Laukkanen (2007a, 2007b) also found that the speed of data transfer/connection were hindrances to mobile banking. The speed of data transfer/connection has an effect on the immediacy of the response from the financial institution. If the connection is slow or not of an appropriate speed, this could impact negatively on people using mobile banking.

Based on this it would be assumed that technology characteristics, specifically interface characteristics and network capabilities, can be a hindrance to the adoption of mobile banking if users struggle with either of these.

2.4.4 *Proposition 2*

Technology characteristics can be an inhibitor to mobile banking.

2.4.5 *Input - communication/task characteristics*

Sarker and Wells (2003) point out that as new features and applications are developed for mobile phones, the way that users then interact with the mobile

device changes. These changes are summarised into four categories: Number of interacting participants, immediacy of the response desired, volume of communication desired and communication objectives (Sarker and Wells 2003).

Sarker and Wells (2003) explain that mobile devices give the impression of being more suitable for one-way communication (e.g reading e-mail). However, they believe that mobile devices are suitable for two way communication, for example, sending text messages as communication between people. In South Africa most mobile banking offerings allow users to interact with their bank accounts through SMS or WAP (internet technology) (ABSA 2009b, 2009a). However, as discussed previously in the findings of Brown and Molla (2005), potential mobile banking clients can be hindered from using mobile banking as they are not ready for mobile phones to be a multipurpose device. Sarker and Wells (2003) also believe that if a mobile device has too many interactive features, these features can act as an inhibitor to mobile device usage. Thus the number of interacting participants (Sarker and Wells 2003) and the number of ways that users can communicate with a mobile device can be a hindrance.

The immediacy of the response required (Sarker and Wells 2003) refers to the circumstances where users require feedback instantaneously. This is strengthened by the findings of both Suoranta and Mattila (2004) and Laukkanen (2007a) who explain that one of the benefits of mobile banking is accessibility to services regardless of time or place. If there is not a need or a sense of urgency to conduct banking transactions, this can be a hindrance to mobile banking.

The volume of the communication desired (Sarker and Wells 2003) can also have an influence on the adoption of mobile banking. In such circumstances the limitation of phone size (Dlamini 2006; Laukkanen 2007a, 2007b) is viewed as a hindrance to mobile banking. For example, Sarker and Wells (2003) highlight that mobile text messaging was seen as suitable when short messages were exchanged, current constraints in relation to the device especially the keyboard, make it virtually infeasible to participate in a high volume text exchange. The size of the screen and keyboard can similarly physically hinder users from utilising mobile banking in circumstances.

The communication objectives (Sarker and Wells 2003) of the mobile device can have an effect on whether users will utilise mobile phones for mobile banking. With the mobile device offering different media alternatives for communication, the issue of using a mobile phone for a conversation or to send a text message might be appropriate depending on the circumstances. From a user point of view, Brown and Molla (2005) found that potential clients were not ready for mobile phones to be a multipurpose device.

2.4.6 *Proposition 3*

Communications or task characteristics can be an inhibitor to mobile banking.

2.4.7 *Input – modalities of mobility*

Sarker and Wells (2003) explain that one of the greatest benefits of wireless technology is the ability to communicate or conduct commerce via a mobile device. The modalities of mobility are comprised of two sections: type of mobility (travelling, wandering and visiting), and secondly the extent of the requirements for mobility (Sarker and Wells 2003). Suoranta and Mattilia (2004) and Laukkanen (2007a) point out that a benefit of mobile banking is the fact that users are able to access their bank accounts regardless of where they are. The extent of mobility (Sarker and Wells 2003) of the use of the mobile device is determined by the situation that the user requires. The functionality of mobile banking in South Africa is similar to that which was discussed in the international section of the literature review. For example, Fisher-French (2008) points out that mobile banking in South Africa allows customers to purchase pre-paid cellular services, check account balances, transfer money between accounts and pay bills. Dlamini (2006) and Goldstuck (2007) have shown that mobile banking offers clients affordable banking, appropriate technology and accessibility. Their findings are similar to those of Ivatury and Pickens (2006), who substitute using “appropriate technology” for “convenience”. Porteous (2008) highlights that convenience was viewed as a major driver to use mobile banking.

Ihlwan (2004) and Tea-gyu (2004) give examples in Korea of users of mobile banking seeing the benefit of not having to go into the traditional branch to conduct mobile transactions. Instead, the users utilise mobile banking, instead to conduct transfers. These users understand that they can conduct transactions irrespective of where they are. The counter to this is that users of traditional banking products might not be aware of the benefit of being able to conduct transactions in any place through their mobile phone.

2.4.8 *Proposition 4*

Ignorance of the benefit of modalities of mobility can be a hindrance to mobile banking.

2.4.9 *Input – context*

The context that users find themselves in will have an effect on the way that users interact with their mobile device (Sarker and Wells 2003) and will affect all the other inputs discussed above. However, Sarker and Wells (2003) have identified three factors which will affect the context of users: economic factors & technological infrastructure, social factors and critical mass.

Economic factors, as explained by Sarker and Wells (2003), refer to the users financial situation. In their study, Sarker and Wells (2003) found that despite the fact that users were aware of the advantages of mobile devices, there were times when they did not value the level of convenience over the actual cost. The acceptance and use of mobile devices is also dependent on the abundance of mobile devices within a community as well as the available infrastructure (Sarker and Wells 2003).

Despite financial institutions offering electronic banking channels to save costs for themselves, clients assume that these savings are not necessarily passed on to them. In Finland, Laukkanen (2007b) found that despite internet banking giving better rates (relative to other channels), the perceived value of mobile banking was an inhibitor as potential customers did not see a cost benefit arising from mobile banking offering. In contrast to this, in Korea, transaction

costs for mobile banking are one fifth of the amount of face-to-face transactions (Ihlwan 2004). This could be a contributing factor to why the country has more than 40% market penetration in mobile banking users (Tae-gyu 2004).

The same challenge has been identified in South African surveys where it was found that perceived costs of mobile banking were a barrier (Ivatury and Pickens 2006; Goldstuck 2007). These perceptions, however, were identified by non-users of mobile banking and the perceptions were user opinions and not necessarily based on fact.

In the study conducted by Ivatury and Pickens (2006), it was found that the annualised cost for a traditional bank account with one of South Africa's retail banks is $103 (US dollars), while a Mzansi bank account cost $94 and a WIZZIT mobile banking account cost were only $70. This shows that the above perception is misguided.

With regards to technology infrastructure (Sarker and Wells 2003), a contentious issue is that of the actual mobile phone (handset). Dlamini (2006) points out that any phone can be used for the service. This is correct. However, Dlamini (2006) fails to take into account that certain clients might need to change their SIM cards (Hoffman 2006) as without the correct SIM card, users will not be able to conduct mobile banking. However, from a service provision stance, Hoffman (2006) also pointed out that South Africa's growing network coverage from mobile providers does create opportunity for adoption.

Specific social factors (Sarker and Wells 2003) that can have an effect on the adoption of mobile banking in South Africa include security issues.

Security and the perceived risk of using mobile banking have been identified as a potential inhibitor in South Africa. In a South African survey conducted by Brown et al. (2003) the perceived risk of mobile banking was identified as a potential hindrance. Similarly, Dlamini (2006) and Goldstuck (2007) also identified security as an issue that users face. In a subsequent study, Porteous (2007, 2008) found that there was a high level of mistrust amongst users of mobile banking.

This is contrary to the position internationally. In this regard, Laforet and Li (2005) pointed out that security was not a concern in China as legislation protected the consumer. From a European perspective, Laukkanen (2007b) found that users of mobile banking were not concerned with security with regard to their transaction. In the USA, concerns about security have been raised, however, this was limited to a very specific handset (Unknown 2007).

The various studies on South African users therefore contradict the international findings in that users do harbour mistrust about mobile banking.

Finally, the last factor of Context is critical mass, or the number of users that it would take to convince a person to try to use a mobile function (Sarker and Wells 2003). In this case, the number of users of mobile banking versus the number of mobile phone subscribers seems to point to critical mass not being met. This could be a result of a lack of awareness. In various South African studies, a hindrance that has been identified is ignorance about mobile banking (Ivatury and Pickens 2006; Porteous 2007, 2008). In a study conducted by Porteous (2007, 2008) 20% of the respondents had not heard of or did not understand what mobile banking is. A potential reason for this is identified by Suoranta and Mattila (2004) who have identified that the communication source used by financial services providers to customers affects the adoption of mobile banking. They found that the banks communication style should be compatible to the potential adopters.

In South Africa, mobile banking is offered and marketed at various income levels (Dlamini 2006; Fisher-French 2008; SATGN 2009). By way of example, Hoffman (2006) identified that MTN banking was targeting low-income earners. However, the provider was actually communicating to higher income groups. MTN's logic was that they were trying to make this an aspirational product. A disconnect like this might therefore contribute to respondents not knowing about mobile banking or contributing to the perception that they do not qualify to use the service.

2.4.10 *Proposition 5:*

The context of a user can be a hindrance to mobile banking.

2.5 Conclusion of literature review

The literature review covered an explanation of mobile banking and set out the status of the offering from an international and a local perspective. It highlighted who uses mobile banking, why they use it and the benefits of the offering.

The literature also looked at the status of mobile banking in comparison to internet banking and other electronic banking channels. Based on a mobile device adoption model, various issues were raised. The result was the identification of five potential hindrances which were formulated into propositions and are listed below.

2.5.1 *Proposition 1:*

An individual's characteristics can be an inhibitor to mobile banking.

2.5.2 *Proposition 2:*

Technology characteristics can be an inhibitor to mobile banking.

2.5.3 *Proposition 3:*

Communications or task characteristics can be an inhibitor to mobile banking.

2.5.4 *Proposition 4:*

Ignorance of the benefit of modalities of mobility can be a hindrance to mobile banking.

2.5.5 *Proposition 5:*

The context of a user can be a hindrance to mobile banking.

CHAPTER 3: RESEARCH METHODOLOGY

The research methodology explains and justifies the proposed research method that was used to gather data for the research report.

3.1 Research methodology/paradigm

The study focuses on what people perceive to be barriers preventing them from using mobile banking. A qualitative methodology was employed. Ohman (2005: 37) defines a qualitative research methodology as "focus[ing] on individuals' lived experiences as they are presented in thoughts, ideas, feelings, attitudes and perceptions". Ohman (2005) highlights that a qualitative research methodology is a research approach that places emphasis on human behaviour. According to Peshkin (1993, cited in Leedy and Ormrod 2005), qualitative research studies usually focus on:

- Description – revealing the nature of certain scenarios (settings, process, relationships, systems or people)
- Interpretation – gaining new insights about a particular phenomenon or discovering the problem within a phenomenon
- Verification – testing the validity of certain assumptions
- Evaluation – providing a method to evaluate the effectiveness of policies, practices and innovations.

A qualitative study is appropriate to analysing actual (or lack of) experience due to perceptions. Using some of Peshkin's points (1993, cited in Leedy and Ormrod 2005) listed above, this research looks at the relationships between the candidate and their mobile phone. For the interpretation (Peshkin 1993, cited in Leedy and Ormrod 2005), there is a possibility that not all the factors that hinder mobile banking have been identified. Verification (Peshkin 1993, cited in Leedy and Ormrod 2005), can also be evaluated against some of the findings within the literature review. For example, security was discussed to see if it is actually a hindrance in the South African context or not.

In conclusion, Calder (1977) adds that qualitative research provides an in-depth understanding of the consumer. The focus of this research is directed at non-consumers to try to determine why they are not utilising mobile banking, or why they are choosing not to be consumers.

3.2 Research Design

With the focus of this research being to try to identify an explanation, a qualitative research approach is suggested as the outcomes tend to be explanatory rather than predictive (Willis 2008). A simple interpretive study is used as the information that candidates provide is based on their perceptions and interpretations.

Leedy and Ormrod (2005) point out that there are no set guidelines for conducting qualitative research. However, the following approach is suggested:

- Identify population and sample
- Set up interviews
- Conduct interviews
- Transcribe interviews
- Identify and analyse findings
- Draw conclusions

3.3 Population and sample

3.3.1 Population

The population for this research would be any person in South Africa (not necessarily a South African citizen) who meets the following criteria:

- Has a mobile phone

- Has a bank account
- Has completed secondary school

The research population had to be people who have the ability to utilise mobile banking (i.e. they must have both a phone and a bank account). People who have mobile phones and no bank accounts are ignored despite them being able to bank. The reason for this is that people who do not have bank accounts are not able to reference their opinion about banking, based on other banking services. There will therefore be very little utility gained in gauging their views.

The choice of having completed secondary school removes the issue of education and literacy from the sample. Illiteracy would be a challenge to mobile banking and is ignored for the sake of this research.

3.3.2 Sample and sampling method

The sampling method used is convenience sampling. Convenience sampling involves selecting a sample from the most accessible subjects (Marshall 1996). Marshall (1996) explains the benefit of convenience sampling as being the least costly form of sampling with regard to time, effort and money. However, convenience sampling can result in low quality data and can lack intellectual credibility.

The sample size for this report is 32 respondents. Creswell (2003) points out that the qualitative research purposefully selects participants that will best help the researcher understand the problem. In the case of this research, the sample of subjects was drawn from MBA classes as well as people from the general population who had completed secondary school.

Leedy and Ormrod (2005) point out that qualitative researchers often purposefully select individuals who contribute the most information about the topic. Such a selection allows the most information about the topic to be gathered due to the sample including subjects who have been in contact with the researcher in prior situations. Certain subjects are not comfortable discussing their banking habits. In the hope of eradicating the barrier of

confidentiality, the researcher chose classmates and other acquaintances as subjects. It was hoped that, by knowing the researcher, respondents would feel more at ease and therefore speak more freely and give spontaneous answers.

3.4 The research instrument

The research instrument used was in-depth interviews. Myers (1997) points out that interviews are used to gather qualitative data for qualitative research. Interviews will be semi structured, revolving around a few key questions (Leedy and Ormrod 2005).

The questionnaire used for the semi-structured interview is attached as Appendix A. The questionnaire consists of an introduction and two key questions with five additional topics for discussion.

The first two questions are intended to gauge the respondents' opinion and understanding of mobile banking. The first question attempts to see if respondents are aware of the benefits of mobile baking and the second question is used to set the scene in order to try to determine what the candidates perceive the hindrances to mobile banking to be.

Next, five discussion points are covered. These topics are based on the propositions identified during the literature review. By discussing the five points, the research question is discussed and actual input can be gleaned. The final point allows for the exploration of any new topics that might be identified.

3.5 Procedure for data collection

The interviews for the collection of data took place from the middle to the end of June 2009. The interviews ran for twenty to thirty minutes.

To arrange the actual interviews, candidates were phoned directly and a time and venue for the interview agreed. The venue was chosen during the phone call and was at a location where the candidate was comfortable. Creswell (2003) points out that the researcher often goes to the candidates home or

office. The ideal setting for interviews is where the candidate and the researcher are not disturbed or have any external influences.

The interviews were digitally recorded, and notes were also taken. Permission to record the interview was gained before the actual interview. These recordings were then transcribed into manuscripts to aid the research process.

3.6 Data analysis and interpretation

Leedy and Ormrod (2005) point out that there is no correct way to analyse data in qualitative research. They suggest (Leedy and Ormrod 2005) that analysis starts with categorising and sorting through large bodies of information to identify smaller underlying themes. These themes are often only identified after evaluating the body of material collected. In qualitative research, data analysis, interpretation and data collections are often enmeshed with the data collection process (Leedy and Ormrod 2005).

The approach used to analyse and interpret the data was based on Creswell's four steps to data analysis (1998, cited in Leedy and Ormrod 2005):

1. Organise the data – this was done by transcribing and storing all the interviews in a central location.

2. Study the entire data set – using the Sarker and Wells model (2003).

3. Identify categories or themes – confirms the categories and allocates information to the relevant proposition.

4. Integrate and summarise the data –start to present the data in write-ups. It is during this stage that the actual interpretation of the data into findings occurs.

The analysis is written up using thick descriptions. Thick descriptions (Ponterotto 2006) can be explained as not only describing and observing but also explaining the context within which the event occurred. Thick descriptions require the researcher to describe, explain and interpret (Ponterotto 2006). By using such an approach in the analysis, it will allow the reader to understand the

context of the information that has been received and it can prevent the reader from becoming confused.

3.7 Limitations of the study

There are limitations to this study which need to be highlighted:

- Methodology – it is not possible to conduct statistical analysis on this research
- Sampling
    - may have a narrow set of findings due to the nature of the sample group
    - the sample group is very narrow so the applicability of findings will be limited
    - the sample group will be based on a geographic region (Gauteng) and again findings will be limited
    - convenience sample can lead to data of low quality
- Analysis method
    - researcher bias can interfere with the results
    - candidate issues, for example mood or the candidate not feeling comfortable can jeopardise the data gathering.

3.8 Validity and reliability

Validity is defined as “the extent to which an instrument measures what it proposed to measure” (Kimberlin and Winterstein 2008: p 2258). Creswell and Miller (2000, cited in Cresswell 2003) in turn explain that validity is used to evaluate whether research findings are accurate from the research, participant or reader of an account.

Reliability is explained by Cohen and Crabtree (2008) as being the extent to which measures are standardised and controlled to reduce errors and to decrease the chance of obtaining difference. Kimberlin and Winterstein (2008) point out that validity requires an instrument to be reliable. However, an instrument can be reliable and not valid.

3.8.1 External validity

Cohen and Crabtree (2008) explain that external validity refers to the extent that findings can be generalised. In terms of the actual sample, the external validity of the findings may be low relative to South Africa or different demographic groups. The study will not necessarily be applicable to developed countries due to South Africa's developing nation status.

3.8.2 Internal validity

Internal validity has been defined by Cohen and Crabtree (2008: p 334) as referring "to the truth about claims made regarding the relationships between two variables". Leedy (2001) explains internal validity of research as the extent to which the design and data of the research allows the researcher to draw accurate conclusions. To attempt to ensure internal validity, the researcher has taken the advice of Creswell (2003) and Leedy and Ormrod (2005) who suggest that the researcher declare any biases that may influence the data collection or interpretation and that the researcher should show a level of open mindedness when acquiring data that conflicts with existing data. The use of thick descriptions is also used as the use of thick descriptions allows the reader to understand the setting and context of the situation (Creswell 2003).

3.8.3 Reliability

Golafshani (2003) points out that reliability in qualitative studies is irrelevant. However, the focus of reliability of qualitative research is the focus on quality (Golafshani 2003). To ensure that the study is reliable, the focus will have to be on stability of the research instrument. Stability is where the instrument secures

constant results with the repeated measurements on the same subjects. In this case using the Sarker and Wells model (2003) to identify the propositions as well as using a semi-structured approach to interviews should ensure that if the interview were re-conducted, the same results would be achieved.

4 CHAPTER 4: PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter presents and discusses the interview results. It is ordered by the propositions put to respondents and a discussion based on their responses is included within each section.

4.2 Composition of respondents

Before the research analysis is discussed relative to the propositions identified in chapter 2, an understanding of the respondents is required. Table 3 presents a high-level overview of the sample of respondents and a discussion follows below. For more information, see Appendix B, which identifies the respondents. Due to confidentiality requests, in relation to, amongst other things, respondents' level of education, Appendix B also contains a list that has had respondent names removed and resorted. This list formed the data used to create this section.

Table 3: Respondent composition

Respondent Details	Percentage
Level of education	
Secondary education	100%
Tertiary education	>80%

Age breakdown	
25-34	84.4%
35-49	9.3%
50-64	6.3%
Active mobile banking users	
Active user	16%
Non-user	84%

For this research, 32 respondents were identified and interviewed. The respondents fulfilled the requirements set out in chapter 3, namely they: had a mobile phone, a bank account and completed secondary school. In addition to all respondents having satisfied the final requirement of having completed secondary school, more than 80% had tertiary education. All the respondents were therefore capable of conducting mobile banking, as they met all the requirements.

From an age perspective, the majority of the respondents were in the age bracket of 25–34 years. In the literature review, one of the studies found that this was the age category that had the most users of mobile banking. In terms of the older respondents, it is interesting to note that they did not feel that their age was an issue relevant to them considering mobile banking (discussed in

Proposition 1). This may be a result of these respondents working in the mobile-payments environment.

Based on the initial impressions and assumptions made following the literature review, it was expected that the characteristics of the sample would result in there being a potentially high number of mobile banking users within the sample. However, when the sample was drawn, and users were asked whether they used mobile banking, it was found that the majority of the respondents had never tried it at all. This excludes people who had tried/experimented, but were unable to access mobile banking. Finally, of the entire sample, only five respondents (16%) were active mobile banking users.

4.3 Interview process

At the start of all interviews, it was explained to respondents what mobile banking entailed within the framework of the research (see table of definitions). Respondents were then asked whether they had used mobile banking, and why they would use it. This was followed by why respondents did not use mobile banking/or why they had not considered mobile banking.

Once these points had been noted, the interviewer continued to see if there were other barriers that respondents had not thought about or considered initially. These additional issues, as well as the initial responses, were discussed to try to determine all issues that were hindrances. The first impressions of respondents' barriers to mobile banking were captured and have been sorted according to the five propositions and these findings are displayed in Figure 3 (the numbers on the bar indicate the count of respondents).

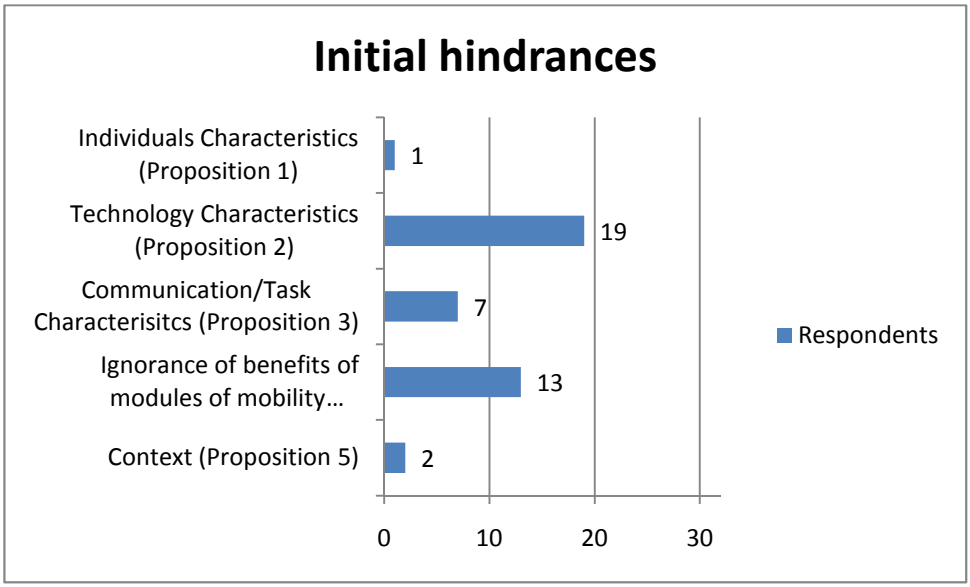

Figure 3: Respondents' initial perceptions of barriers to mobile banking

It is important to note that some respondents gave multiple reasons, and for others there were none. Initially, active users seldom identified barriers. Thus, if added, the frequency of respondents above it is greater than the sample of 32.

Proposition 2, which discusses the limitations of the handset and the network, was the greatest barrier respondents cited upfront. When asked what prevented them from using mobile banking, respondents were least likely, initially, to identify personal characteristics.

Despite respondents listing their hindrances that first sprung to mind, once the dialogue was in process, users often brought up other barriers and considerations. At times these were very different to the initial response. These responses were either initiated from probing questions, or came up after some consideration. These responses are captured in Figure 4 (again the number on each bar represents the number of responses respondents made, sorted into a specific proposition).

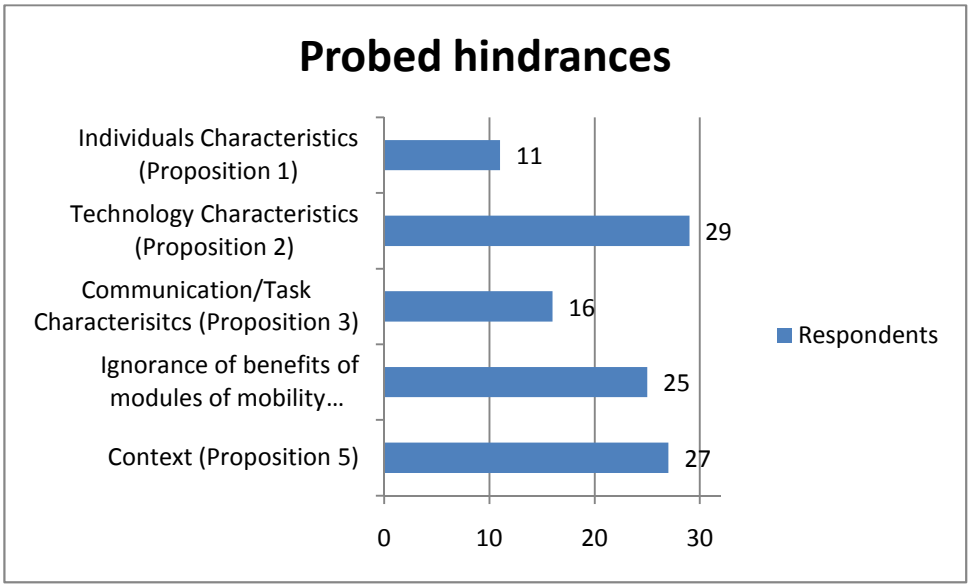

Figure 4: Barriers identified in probing respondents

Proposition 2 is again highlighted as the strongest barrier that users faced when considering mobile banking. When comparing Figure 3 to 4, Proposition 5 had the greatest variance. There are a number of possible reasons that could have caused this. Proposition 5 can be confused with Proposition 2, due to respondents complaining upfront about the network, however, once discussing the actual issue, security turned out the real issue. Another factor to consider is that Proposition 5 also discussed costs. Respondents rarely identified costs as a factor, however, once cost was raised, it often became a discussion point.

These findings are discussed in more depth within the presentation and analysis of the individual propositions below. Within each individual proposition are figures illustrating, the number of responses where respondents identified a specific point as a barrier.

4.4 Proposition 1 – An individuals' characteristics can be an inhibitor to mobile banking

Proposition 1 proposes that an individual's characteristics could be an inhibitor to mobile banking. The Sarker and Wells model (2003) states that individual characteristics are made up of age, culture and technology self-efficacy.

Figure 4 highlights that eleven of the respondents identified individual characteristics as a hindrance. When broken down into the various subpoints, it is apparent that Proposition 1 is not a large inhibitor. Figure 5 illustrates the number of negative responses raised by respondents per subpoint.

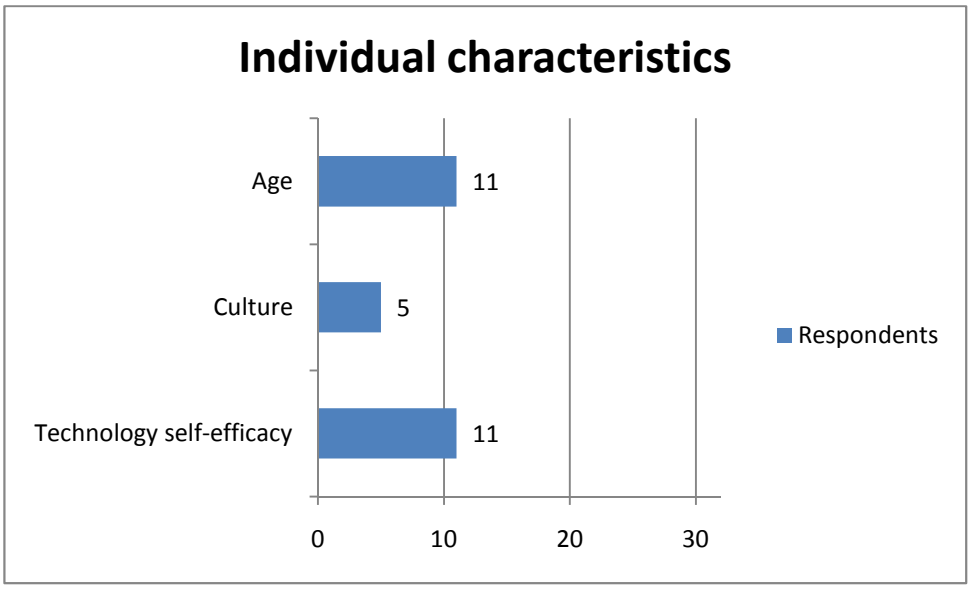

Figure 5: Count of respondents who cited subpoints of individual characteristics as a hindrance

4.4.1 *Age*

As a barrier to mobile banking age is a weak influence. This is emphasised by twenty-one respondents stating that their age was not a reason for not conducting mobile banking. However, the fact that only 22% used it, as well as the fact that several respondents indicated that they thought that age is an issue for others, requires further discussion.

Table 4 points out comments made by respondents regarding the effect of age being a barrier for other users.

Table 4: Respondent comments about age

Age
“I think the younger generation is far more accustomed to not having that physical evidence, because they don’t do anything via post ... Very few have gone into a bank and filled out a deposit slip. Many of them don’t even know how to fill in a cheque and I have been through that from an age perspective ... It is going to move, it is going to change, but for me, this is the age issue.”
“Age definitely ... I would reckon that mobile banking [is probably most used by age group] 18–30”
“There seems to be a glass ceiling at about 36.”
“I think especially with this sort of thing [those in the] 30–40 year ranges and also younger people [find it] so much easier to adopt things these days.”
“With people of my age group, as well, they are very much still internet junkies. [They] sort of love the idea of having a laptop you can whip out at a coffee shop, so you can look cooler than if you are just playing on your phone.”

The sample could also have influenced this result: the majority of the respondents were in a similar age category (25–34). However, considering the fact the outliers (who were older) also did not regard age as an issue, this weakens the age argument that the sample could be influencing the result.

Considering that 65% of the respondents did not regard their age being a barrier to them and only assuming that age could affect others points to age not being a hindrance to the adoption of mobile banking.

4.4.2 *Culture*

The sample of respondents interviewed came from diverse cultures and backgrounds. Generally respondents did not comment on this point until raised. There were a few respondents who felt that culture did not have an effect on them and only five respondents raised it as a hindrance. These respondents made the following comments shown in Table 5.

Table 5: Respondent comments about culture

Culture
"Culture-wise, obviously I have always been exposed to technology and computers from a young age, so that would probably increase the likelihood that I would use mobile banking, [since I'm] comfortable with technology. I daresay that culture and age probably have a positive relationship to using it now."
"Sure, I've grown up with computers around me all the time ... Then you might look at some other form of technology for doing banking."
"People who have gone to a decent high school, a decent university and that sort of thing have more knowledge about these things [mobile banking] so they are obviously more comfortable using [it]."

However, as one respondent summarised the majority view: "Not culture, I think culturally there are so many people from every culture [all own] cellphones. I don't think culture plays a role in it." These respondents were adamant that culture did not affect their willingness to try mobile banking.

Considering the responses received, it would appear that culture does not affect people's willingness to try mobile banking. Although it does play a role for some respondents, these respondents were a minority. Within individual characteristics, culture seems not to qualify as a hindrance.

4.4.3 *Technological self-efficacy*

Users were asked to describe what their level of comfort with technology (technology self-efficacy) was, and the result was very similar to the other subpoints of this proposition. Twenty-one respondents (regardless of age) pointed out that they were very comfortable with technology and were willing to experiment with new technology.

Table 6 illustrates comments that were made by respondents showing that technology self-efficacy is not a hindrance.

Table 6: Respondent comments about technological self-efficacy

Technology self-efficacy
"I'm not averse at all ... [but what] tends to happen with technology is a lot of people, especially the techies, they make technology things sound so freaking difficult."
"It depends on the protocol. I am very happy with the internet-type protocol, because generally it is a richer protocol than USSD."
"I am always willing to try and find something new to use."
"I have been persisting on this idea of using technology more."

The level of technology self-efficacy of a respondent can affect whether a person will use mobile banking or not. Upon interviewing respondents, those who had tried to use mobile banking (less than half the respondents) tended to be people who were working with technology professionally. These respondents, who had a higher level of confidence, actually had more reservations about mobile banking, as they understood the flaws and challenges better.

From the responses received it is apparent that technology self-efficacy can be a hindrance to mobile banking. The surprise finding, however, is that it is not affecting the technologically averse respondents, but it is affecting the users who actually embrace technology. The fact that technology was a hindrance to only 11 respondents, however, reduces the influence of the proposition. Thus, similar to the other two subpoints, this is a weak hindrance.

In summary, Proposition 1 states that an individual's characteristics can be a hindrance to mobile banking. As discussed above, respondents stated that age was not an issue. As for culture, its effect and influence on mobile banking is very weak. Finally, the level of technology self-efficacy does have a weak effect on whether a user will consider mobile banking. The stronger the respondent's level of technical skill, the stronger was the reluctance to use mobile banking. Taking these findings into account and as the entire proposition only affected just over a third (eleven) of respondents, this proposition should be reworded:

An individual's characteristics can be a mild inhibitor to mobile banking.

4.5 Proposition 2 – Technology characteristics can be an inhibitor to mobile banking

As per the Sarker and Wells model (2003), technology characteristics consist of interface and network constraints. Interface constraints in relation to this proposition consists of three aspects: The size of the phone keypad, the screen and the software/browser used on the phone. Network constraints consists of two aspects: coverage of the network (also discussed in Proposition 3) and then the actual speed of the connection and data transfer.

Figure 6 illustrates the number of respondents that raised the issue of technology characteristics in relation to each other of the two subpoints. As illustrated, the number of responses for both interface and network capabilities are strong hindrances.

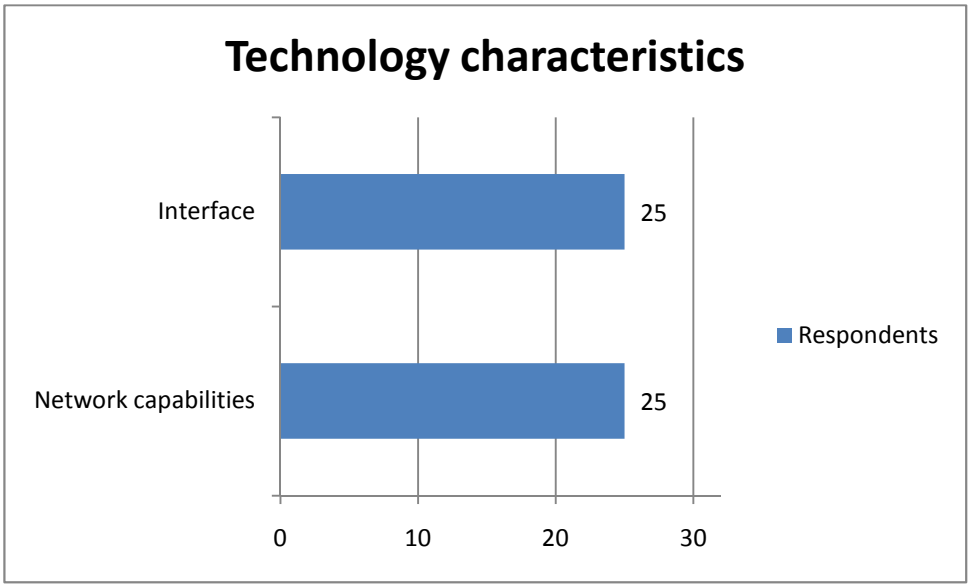

Figure 6: Count of respondents who cited a subpoint of technology characteristics as a hindrance

4.5.1 *Interface*

a. *Keypad*

One of the three potential hindrances from a handset perspective was the size of the keypad with one respondent stating: “Even typing in my name and password was an issue. If you don’t touch the right place ... It’s just sometimes gets frustrating.” Another said, “You can make mistakes, I mean you’ve got the small keyboard and you can’t see the screen properly”.

These two responses convey the general frustrations a minority of respondents had with their phone keypads. Interestingly the phones had different styles of input (one was a touch-screen phone and the other was a touch pad). Another respondent raised that when it came to actually choosing mobile devices, the respondent was more concerned with the actual feel of the device: “Size it’s about how solid it feels, and having a keyboard”. This respondent was commenting on wanting a phone with a full keyboard and was not satisfied with the standard number pad. Despite these three respondents’ opinions, the phone keypad was not too much of an issue. However, it is important to note that certain phones have different sized keyboards and some phones come with a

full QWERTY keyboard, so respondents' opinions can vary depending on the type of phone they have. The comment above regarding the full keyboard was made by a respondent who had a phone which had a touch screen (the phone has no keyboard, instead the user touches the phone's screen which has an outline of the keyboard displayed on it). The fact that phones come in different sizes might be a reason that this is mentioned as a frustration by certain users, however, the number of complaints were relatively low.

b. ***Screen***

The size of the screen of a handset was expressly mentioned as a hindrance to mobile banking by a number of respondents. The physical dimensions of the screen compared to internet banking were influences on respondents' views about screen size.

When discussing screen size, respondents who had tried mobile banking made the following comments shown in Table 7

Table 7: Respondent comments about screen size

Screen size
"It would be better if the screen would be bigger."
"It's not set up for small-screen internet banking ... it frustrates me to watch the small screen."
"It would definitely be a hindrance, I think if I had a phone with a smaller screen ... I wouldn't be as willing to adopt mobile banking."

During the discussions of screen size, some respondents compared mobile banking to internet banking. One participant pointed out that the reason they would not consider mobile banking was purely due to screen size and instead would only use internet banking:

“It must just be there, and if it is there on my phone it is going to be three centimetres by six centimetres and it’s too small.” This was followed by, “I just prefer to be on the screen, the computer screen”. The attitude and preference to internet banking was shared by more than half of the respondents. The size of the screen was raised by most respondents, and specifically it was given as one of the reasons why there was a preference towards internet banking.

The majority of respondents raised screen size as a challenge. As a result respondents often passed up the opportunity to conduct mobile banking; instead they rather waited for the opportunity to conduct internet banking.

c. *Software/browser functionality*

The software and browser functions of the actual handset are the final potential hindrance identified within interface. During the interviews this issue raised a lot of frustration among respondents.

Respondents expressed various dislikes regarding software/browser functionality. The following quotes listed in Table 8 emphasised the displeasure that respondents had with software/browser functionality of mobile banking.

Table 8: Respondent comments about software/browser functionality

Software/Browser functionality
“Even though you can access the full web page on the phone, it is just more visible on the laptop screen and connection speed is generally faster.”
“It wasn’t a particularly nice interaction ... It must look nice.”
“I have seen, sort of, on the web browsers that you have, scroll here, there and everywhere and you kind of lose track of where you are. So it might have some kind of an effect, but not a huge one.”

Software/Browser functionality
“I hate my phone... It is this screen, it’s the browser functionality primarily.”

One respondent brought up an interesting observation: “My handset is not geared ... [I] don’t like the interface ... [I] must be able to do it properly or not at all.” This attitude points out the frustration users find with mobile banking and could be a further explanation of why respondents had a strong preference for internet banking.

What is apparent is that the browser and software on the phone were identified as a key issue preventing people considering mobile banking. In this context the challenge of actual web pages trying to be condensed onto the small screen (resulting in users having to scroll all over the page) was identified too.

The issues identified therefore appear very likely to be inhibiting/preventing the respondents from using mobile banking. One of the respondents made a comment that summed up the feelings of the group, stating, “I regard the cellphone as being limited in the ability to give what you really want”. This comment explains the general challenge that the handset has in relation to respondents’ requirements and issues with the keyboard, screen and browser/software capability.

4.5.2 *Network*

The network on which the mobile phone operates could pose a hindrance to mobile banking, and network capabilities were raised as a challenge to the use of mobile banking by 25 of the respondents. These frustrations were caused either by the network’s coverage or the speed of the network allowing the transfer of data.

a. *Coverage*

Coverage of the network is an issue that may be a potential hindrance to mobile banking, as without coverage it is impossible to carry out the transactions.

Coverage also includes the stability/quality of the network (so certain areas might allow for faster connections). With this understanding of "coverage" in mind some respondents did find challenges and frustrations with the network and this influenced their opinions of mobile banking. The following comments in Table 9, relating to coverage, were raised by both users and non-users of mobile banking.

Table 9: Respondent comments about coverage

Coverage
"It would never not work as a consequence of the banks, it is always the network that lets you down."
"If I am in the middle of the transaction and the network just cuts out, as it does from time to time when I'm having a conversation on the phone, I would be worried about how secure my banking is... This does form a very definite worry."
"People don't get SMSes, which regularly which causes huge problems, and that would be something that would worry me, if I was waiting for something serious, with regards to banking."
"If I was considering mobile banking, I would definitely go for the stronger network ... I would have to be comfortable with the connectivity, in other words, not dropping signals when you are in the middle of a transaction."

Clearly, therefore, the delivery and quality of the network has an influence on whether to adopt mobile banking or not. Although network issues raised some strong concerns amongst users, it was not always mentioned by all respondents.

However, this finding could have been influenced by the fact that all of the respondents live in the same city and the emphasis on data transfer might have been less important if these people were based in different cities where coverage could vary.

The respondents who voiced their frustrations about the network felt very strongly that this was an issue for them when considering mobile banking. Accordingly this factor is a hindrance to users considering mobile banking.

b. ***Speed/data connection***

The speed/connection with which the mobile phones connected to the networks was cited as a potential hindrance to users utilising mobile banking. It also contributed towards people considering internet banking instead of mobile banking. Table 10 lists comments raised about the speed/data connection from respondents.

Table 10: Respondent comments about speed/data connection

Speed/data connection
"It takes a long time to connect to GPRS, and it takes a very long time to get to the actual website."
"[Compared to] using internet in general, over ADSL, or work internet (more stable) sometimes you get the dips on the mobile network. Even if you use your mobile phone as dial-up, it's not always that great."
"On my phone I am on 3G [connection speed to the internet], but sometimes it is not very 3G."

However, despite the complaints of internet connection speed, most respondents were only responding based on their experiences of using their phones as browsers. Respondents did not take into account using USSD to do

their transactions, which does not require an internet connection. There were only a few respondents who thought of USSD and these respondents did not enjoy the interface and as a result would not consider using it.

In general, the majority of respondents complained about the networks and specifically the speed of the connection. This barrier was further compounded with most respondents having better internet connections at home or on work computers. For respondents, the convenience of being able to transact at any place on a mobile device was outweighed by the actual speed of the connection, particularly as respondents found it less frustrating to work on a computer as opposed to working on a mobile device. Overall the speed of data transfer was a very strong perceived barrier to mobile banking.

The browser on phones was further criticised by respondents who use mobile banking regularly. “The browser is probably the biggest hindrance. The only thing I would like is a bigger screen and faster connection”. This respondent’s frustration actually encompasses most of Proposition 2 as the respondent has identified issues in relation to both the phone and the network.

From the respondents’ comments it is apparent that Proposition 2 (and its constituent elements of phone interface and network) are a very strong barrier towards mobile banking. It was raised as a perceived barrier by 29 of the respondents. The only barrier identified during the literature review that was a weaker contributor than expected was the size of the keyboard. The screen of the phone and the software on the phone was also mentioned by mobile banking users to be a hindrance. However, the strongest concerns from potential users were raised about their opinions of the mobile network. In conclusion, Proposition 2 stands firm and technology characteristics can be seen as a hindrance to mobile banking.

4.6 Proposition 3 – Communication or task characteristics can be an inhibitor to mobile banking

It is apparent from the interviews that communication or task characteristics are not a strong inhibitor to mobile banking. Within the four components identified

for this proposition, some stood out specifically as very weak hindrances compared to the others as illustrated in Figure 7.

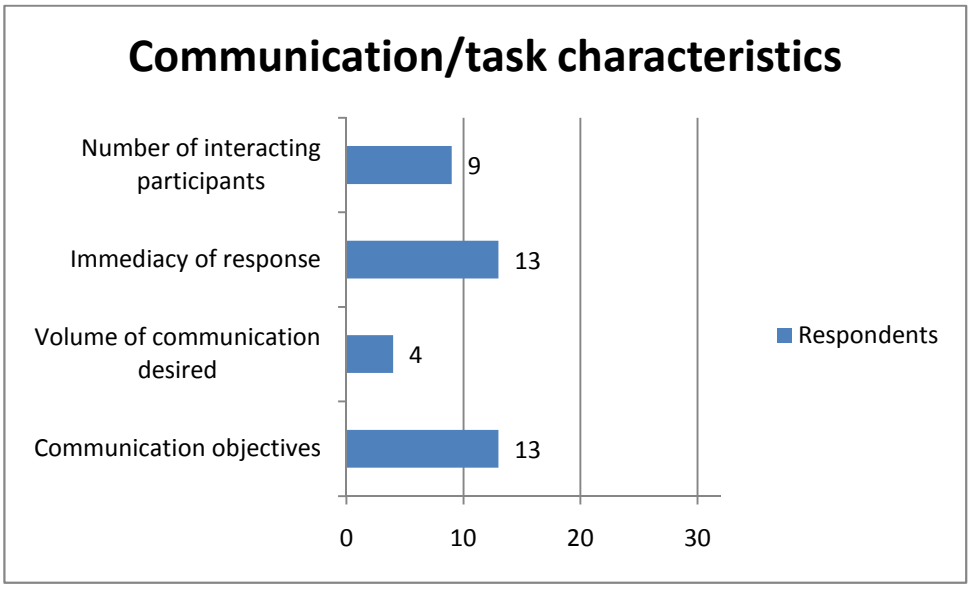

Figure 7: Number of respondents who cited a subpoint of communication/task characteristics as a hindrance

4.6.1 *Number of interacting participants*

Only a very small minority of respondents (nine) was not comfortable with using phones as a multi-purpose device. All respondents used their phones for making calls and sending text messages and the majority of respondents did not mind the idea of their mobile phones as a bidirectional communication tool.

The quotes in Table 11 do however highlight an issue of concern identified by respondents with respect to using the phone as a multipurpose device.

Table 11: Respondent concerns about number of interacting participants

Number of interacting participants
“It seems like you slow down the phone.”

Number of interacting participants
“The more stuff that you have on here (the phone) the quicker the battery goes.”
“With something that will take time, or block calls, it’s a problem, so it is not really worth adopting.”
“Without affecting the reliability of the phone, causing it to crash.”

Despite these comments, when specifically asked if there was a concern about using the phone for constant two-way communication, only nine indicated that they were not comfortable with the idea. Therefore the number of interacting participants is not a large barrier within communication/task characteristics proposition being used to consider barriers to mobile banking.

4.6.2 *Immediacy of response desired*

Within this section, respondents discussed the urgency they required when conducting transactions. Respondents’ views varied and only 13 respondents raised it as an issue. However, comments that were made tended to have a theme of there not being a sufficient immediacy generally for the need to conduct banking transactions by mobile phone.

The general position was held by a respondent to be: “I feel it can wait, it can wait till I am on my computer, it can wait till I walk into a branch, it does not need to be done that urgently,” and “I have never had to do a transfer or anything so urgently that I would need it [mobile banking] on me immediately”. Another respondent: “[There’s] not really any urgency in doing it [the banking]”.

Notwithstanding the low levels of urgency described for the conducting of banking transactions, a few respondents also commented on the importance of the environment where they were working being appropriate for conducting banking transactions.

As a factor contributing towards communication/task characteristics, most respondents saw the benefit of being able to do urgent transactions. However, when it came to the actual discussions, the sense of urgency for conducting the transactions was not seen as being that important. The level of urgency was therefore not seen as a promoter for the conducting of mobile banking. Respondents did see this as a benefit, but the urgency never prompted the thought to conduct mobile banking.

As part of communications/task characteristics, immediacy of response required is a hindrance to mobile banking, because respondents do not see the urgency to conduct transactions.

4.6.3 *Volume of communication desired*

Similar to the issues discussed in Proposition 2, the way a handset can be used to interact or interface with mobile banking is a factor that can inhibit mobile banking. However, the difference from Proposition 2 is that the focus here is more about the appropriateness of the handset for the use of mobile banking.

The majority of the respondents indicated that they considered a handset as being appropriate for mobile banking. However, for four respondents the limitations of the device were raised: “Even typing my name and password was an issue. If you don’t touch the right place ... it just sometimes gets frustrating”. Another comment made about the actual handset being appropriate was: “My handset is not really geared [for mobile banking]”.

It is apparent that respondents are comfortable with the idea that they can conduct mobile banking on their mobile phones, they just see their physical phone as a hindrance (as discussed in Proposition 2).

In light of the fact that the majority of respondents are not conducting mobile banking yet, they indicated that a mobile phone was an appropriate device to conduct banking (28 respondents). This would suggest that a mobile phone is an appropriate device to conduct mobile banking, and it is not a hindrance to mobile banking.

4.6.4 *Communications objectives*

The communications objective introduced an interesting aspect that did affect users' willingness to conduct mobile banking. The issue raised was that of tangibility. In this regard, all respondents used their mobile phones to make calls and send text messages and were comfortable with the medium in doing so. However, when it came to banking, the issue that was raised was the lack of proof of transactions that had been conducted.

Table 12 lists comments made by respondents in terms of their banking preferences and tangibility.

Table 12: Respondent comments about communications objectives

Banking preferences and tangibility
"You always had physical evidence of your banking."
"The physical evidence, the tangible thing is still important in my mind."
"I need proof that I have paid things and that stuff has been paid to me."
"I don't think I could take the word of a cellphone that it has gone through, until I saw it on the bank statement."
"I generally like to talk to someone, or see someone face to face if there is a problem, or I have important queries, so I like the human touch."

In general, a minority of the respondents (thirteen) had an issue with the communications objectives. This could be attributed to demographics, as the respondents who made these comments were older and tended to use banking for both business and private use. With these respondents being in a minority, and no other major comments about communications objectives, it can be

assumed that this factor within the communications/task characteristics is an influence, but not too strong an influence.

Taking the responses received from all the respondents it's apparent that the proposition that communication/task characteristics can be an inhibitor to mobile banking was supported by half (sixteen) of the respondents. However, the four specific factors that were identified as influencing the proposition were not strongly supported; instead, pertinent comments and issues were raised by a minority of respondents.

Of the four factors that make up the proposition, the immediacy of response desired was the factor that was the strongest. However, even within this issue respondents did not find that the need to conduct banking transactions was that important. Further, respondents who expressed opinions relevant to this proposition were more concerned about the environment or space they were working in that than urgency.

This proposition could be considerably strengthened if all handset issues raised in Proposition 2 were included. In contradiction to this finding though, when asked if their phone was an appropriate tool for mobile banking, the majority of respondents answered in the affirmative. This discrepancy in the findings could possibly be explained by the fact that, for this research, only relevant complaints that were appropriate to the factors of Proposition 3 were included.

Communications objectives raised an interesting finding about a level of tangibility that certain respondents required for their general banking transactions that ranged from either wanting to interact with people or to needing physical proof of transactions. For these respondents, those factors were extremely important, however, they remained in a minority and consequently this proposition should be reworded:

Communications/task characteristics can be a mild inhibitor to mobile banking.

4.7 Proposition 4 – Ignorance of the benefit of modules of mobility

In terms of modules of mobility, there were three factors discussed by respondents that lead to this proposition being a hindrance. The first was an issue raised about the availability of the network, the second was not seeing mobile banking as being beneficial or having a need for it and finally the strongest influence was a total lack of knowledge about this service.

From the aspect of modules of mobility, the capability of the mobile networks was highlighted as a constraint. This partially overlaps with Proposition 2. However, the issue of network coverage was raised by a few respondents who commented on their frustrations about the availability of the network. This is discussed here because coverage affects mobility of people. As one respondent pointed out: “If I can [not] get on to the thing [network] to browse at the moment, then I just put it off,” in reference to just using their mobile phone to browse.

In this case the ‘type’ of mobility required might not be the issue, as most of the respondents pointed out they preferred internet banking to the thought of mobile banking. This could be attributed to the fact that most of the respondents had a computer and internet access at their place of work or home. The majority of the respondents also were not commuting great distances either to or for work during office hours. Of those respondents that did travel only one used mobile banking, another was looking into using it, while the third preferred to wait until they were able to use their laptop and connect to the internet. The result is that respondents don’t see a need for banking to be a mobile offering. Table 13 illustrates comments about respondents’ approaches to banking versus the need for having mobile banking.

Table 13: Respondent comments about conventional and internet banking versus mobile banking

Conventional and Internet Banking versus Mobile Banking
"I sit in front of my computer every day."
"I spend a lot of time at the office so I have access to the internet and I do all my banking that way."
"[I] haven't seen a need for it. I get enough from the other ways, sort of conventional banking."

However, the strongest influence on this proposition is the actual knowledge of mobile banking. General ignorance about this offering was very high. Twenty-five of the respondents described their level of knowledge of mobile banking as very low. Certain respondents were not even sure if their bank offered mobile banking, or how to go about trying to use it. This lack of knowledge has a strong influence on this proposition, as if users are not aware of the availability of this service offering, the benefit is lost. Conversely, when asked why respondents would consider mobile banking, convenience was cited most often.

While the majority of respondents were aware of some of the benefits of mobility, ignorance about mobile banking was the strongest inhibitor. However, this finding should be tempered by the fact that the level of mobility required from respondents was not very high, due to respondents being mostly deskbound. This was a very strong influence on inhibiting mobile banking. In terms of this proposition, ignorance about the benefits of modals of mobility with the types of mobility required was so strong an inhibitor it could be seen as a strong influence on hindering mobile banking.

4.8 Proposition 5 – The context of a user can be a hindrance to mobile banking

Proposition 5 considers a user's context as a potential hindrance to mobile banking. The Sarker and Wells model (2003) divided socio-economic context into three sections: economic factors, social factors and critical mass of subscribers. These three sections are discussed individually to see if or how they affected response attitudes towards using and adopting mobile banking.

Figure 8 shows a breakdown of responses for the socio-economic context by subpoint. It illustrates that economic (cost) and social (security) were strong influences.

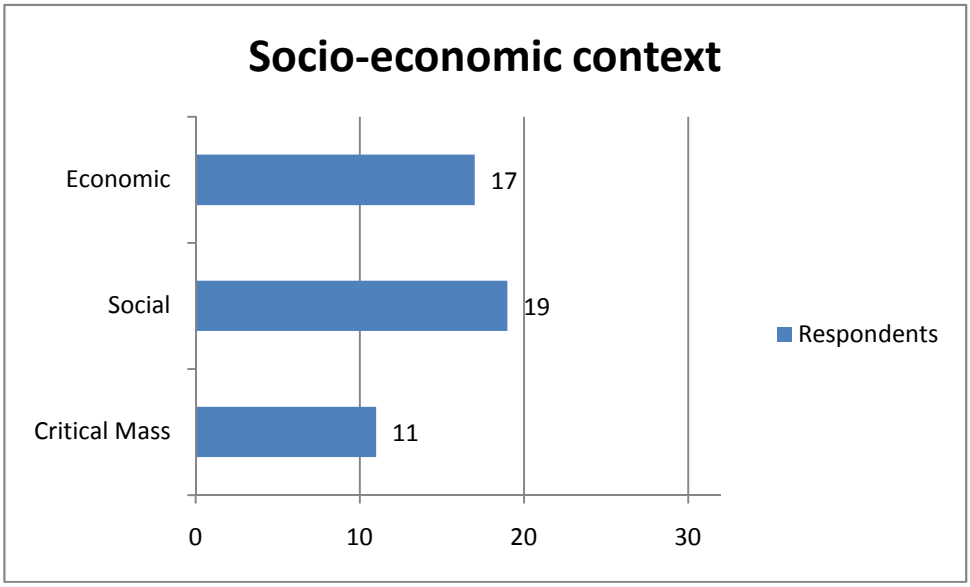

Figure 8: Count of respondents who cited a subpoint of socio-economic context as a hindrance

4.8.1 *Economic factors*

The economic factor looks at how users evaluate the cost versus the actual benefit of mobile banking. It considers whether users could see the benefit of paying the fee and other associated costs, for the convenience of being able to bank through their mobile phones considering fees and other associated costs. Costs to conduct mobile banking can be divided into three areas, network cost

(to connect to the banking system), the subscription to the bank and actual transaction costs.

“I know that my bank charges additional fees if you want mobile banking. So you know, it’s just one more thing. I am already paying for internet banking, I pay fees for the notification when I send over certain amounts, and fees for this, and fees for that. So it’s just one more layer of fees for that, so to me it’s an unnecessary charge. Then the fees for online, the GPRS, which in my opinion is just an exorbitant. I mean it is seriously prohibitively expensive.” Seventeen respondents raised issues about cost, and these comments were mostly of negative influence. This respondent was one of the few who actually saw the cost of mobile banking as part of a holistic expense for all three areas. Most respondents tended to look at costs from an individual perspective of one of the three types of cost.

Table 14 lists comments by both students and employed respondents covering the various areas of the cost. These comments were overwhelmingly negative, ranging from what respondents perceived costs to be for various aspects of mobile banking such as the cost of connecting to the network as well as the transaction costs.

Table 14: Respondent comments about cost of mobile banking

Opinions about cost
“I think I am very [cost] sensitive.”
“I think [it costs] pretty much the same as e-mail, so it would be whatever data you are downloading. When at work for me it’s free, when on my phone I have to pay for it.”
“I wouldn’t have had a problem with them charging for it because you are paying for the convenience of it, but if the charge was, in my opinion, too much I

Opinions about cost
wouldn't use it."

As mentioned by an earlier respondent, cost is still an issue when the decision to use mobile banking comes up against the choice of internet banking. For respondents, by using internet banking, they were able to connect to the internet for free when at work, university or at home. With cost being an issue for most respondents, internet banking becomes a more economic alternative.

When considering the use of mobile banking, the economic context of the respondent did play a role in deterring the use of mobile banking. Where respondents were unemployed, the cost of the mobile banking was seen as an important factor, whereas employed respondents considered it as merely another factor, but not with as much weight. In total cost and the respondent's economic status can be seen as a hindrance to mobile banking.

4.8.2 *Social factors*

As discussed in the literature review, security was raised as a social factor that could be a hindrance to mobile banking. In total, nineteen respondents commented about it. Respondents felt very strongly about this issue. Four aspects were raised: network security, interface security, theft and general safety.

Network security was raised as a concern by a few respondents. "I'd trust the bank, but I think in the event that there might be a security breach, it would probably be the cellphone service provider". Another concern raised about the network included one respondent's concern about not trusting the actual networks given that all mobile phones run on GSM in South Africa. The specific respondent pointed out that the network had very low security provisions.

The interface security was also a reason for concern for some respondents. One respondent commented, "I understand the security issues around the protocol (HTTP), which I like. I don't understand how secure the USSD protocol

is so that would be an issue if I am sending account information across the network". This sentiment was shared by a minority of respondents who also had concerns about the security on the USSD protocol. Respondents who made these comments were people who worked within the technology industry. Therefore, these comments could be attributed to the fact that this knowledge is very technical in nature.

When respondents spoke about mobile banking and security, some compared security to internet banking. "One security issue is that your phone does not exactly have a built-in antivirus as far as I can tell." This respondent as well as a few others discussed concerns around the lack of security available for the interface of the phone. Another hindrance raised was the concern that users had about whether they had connected to the correct site. On an internet browser there are symbols to show users that they have logged on to an entrusted (the bank's) site and not an artificial one. For these respondents, there was a preference to try to use other forms of banking, which they perceived to be more secure than mobile banking.

Theft was also a concern with regard to security. The respondents that raised this were concerned with issues that ranged from information that was left on the phone, to a respondent who pointed out that they were more vigilant about their laptop computer than they were with their mobile phone. Other respondents were concerned with the replication of a person's mobile number. The following quote from a respondent summarises the concern people felt: "Cellphones get stolen on a daily basis. It's more a case of do I really want to make my habits reliant on a device that I know at some point is going to be stolen." This view, that phones get stolen and information may be left on them, was shared by a number of respondents, but not many. As a security factor, this was not very strong.

Finally, an emotional "feeling" about security was raised as a concern among respondents. This covered a general feeling that respondents had about mobile banking. As one respondent put it: "It is just discomfort ... A discomfort with the feeling of, how secure is this?"

In summary therefore, security was a definite hindrance to people considering mobile banking. There were however a few respondents who stated that they did not have an issue about security. These respondents were definitely in the minority. Considering the fact that more than half (nineteen) of the respondents raised a concern about security, it can be accepted that this is an issue hindering the use of mobile banking.

4.8.3 *Critical mass of subscribers*

When the interviews were analysed it was found that critical mass would only be a factor to taking up mobile banking for some respondents, but not all. As discussed in Proposition 4, the first challenge that was raised during the interviews was the level of awareness about mobile banking. A few respondents did not even know whether their banks offered mobile banking.

When asked if respondents knew people who used mobile banking, the responses were varied. It was only a very small minority of respondents who did not know anybody who used mobile banking. However, when asked if knowing other people who use mobile banking or not would affect people's decision to try it, the responses were mixed:

"The more people you know who are using it, the more reference points to check whether it is safe and secure and easy and logical ... It wouldn't be a decision-making factor". Some respondents were of the opinion that colleagues and peers conducting banking transactions had no influence on them. They felt that they would not be swayed by other people.

Conversely, one respondent stated: "I think the fact that other people use it probably influenced my decision to use it." This comment again is reflective of what some of the respondents said about trying mobile banking if they knew someone else who was using it.

As a hindrance to mobile banking, the knowledge of others is divided and only eleven respondents felt this was a hindrance. It definitely seems to be an

influence for a minority. A bigger hindrance is the level of ignorance of mobile banking in terms of its availability.

In terms of Proposition 5, a user's context is a major hindrance to mobile banking when considering the economic factors (cost), social factors (security) and critical mass (knowledge of mobile banking). As a whole, twenty-seven respondents raised an issue in some form or another within Proposition 5, thus this proposition can be seen as a major barrier to people's willingness to try mobile banking.

5 CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The conclusions that were reached during the research are discussed within this chapter. The conclusions are all drawn from the propositions and reasons identified as being inhibitors to mobile banking, using the Sarker and Wells model (2003), considered within the context of the literature review and in the responses received during the respondent interviews.

It should be noted that throughout the interviews the respondents raised their preference for internet banking and it was apparent that from a user's perspective, when respondents considered mobile banking, they often based their comments on a comparison to the functions of internet banking. In the circumstances, the specific benefits are mentioned and discussed deliberately as a comparison to internet banking.

The Sarker and Wells model (2003) looks at the requirements for adoption of mobile handheld devices. The model was adjusted as the research only looked at these perceived barriers that users consider when it comes to the idea of using mobile banking. The respondents who were chosen were taken from a population of people who knew and were comfortable with the interviewer, as respondents were discussing personal facts about their banking transactions and as such a level of trust was required.

Based on the conclusions reached, various recommendations are raised and discussed, directed at stakeholders who would find this document of interest (banks, mobile banking providers, mobile phone operators and users). The research has brought up suggestions for further research, and these ideas are discussed.

5.2 Conclusions of the study

The conclusions found in the propositions are discussed below:

Proposition 1 considered an individual's characteristics and the likelihood that this would affect their willingness to attempt to use mobile banking. The proposition considered characteristics from three perspectives: age, culture and technology self-efficacy (Sarker and Wells 2003). All three of these subpoints were found to be weak hindrances. This is due to the fact that people were quick to point out that their age and culture did not affect them. However, they perceived it to be a barrier for others. These findings are in contradiction to what was discussed in the literature review as the research suggested that age, culture as well as the level of technology self efficacy can have an effect on respondents' willingness to use mobile banking. Due to this weakness the proposition was rephrased to state:

An individual's characteristics can be a mild inhibitor to mobile banking.

Proposition 2 states the user's technology characteristics can be a hindrance to mobile banking. The proposition was made up of hindrances resulting from actual interface: handset/keypad and screen and the actual software, and network constraints (coverage, speed and data transfer). Though some of these issues were found to be stronger inhibitors than others, all the subpoints were hindrances to mobile banking.

The literature reviewed promotes the view that the interface and network constraints are barriers to mobile banking. Considering that in two studies by Laukanen (2007a, 2007b) it was found that the actual mobile device was the strongest barrier to mobile banking. This finding is reflected in this research where technology characteristics were also the largest barrier to mobile banking.

Within this proposition, users in particular compared internet banking (and other channels) to mobile banking and were very critical of the idea of conducting mobile banking specifically when it came to screen size and speed of the connection to the internet. The actual software used for mobile banking was

also criticised. Against the alternatives available to mobile banking, users were critical of the USSD interface, but also disliked the actual browsing experience on regular websites using the browser on their phones.

As a proposition, technology characteristics were a very strong influence in preventing users from conducting mobile banking. As a proposition, this was one of the strongest hindrances to mobile banking with ninety percent of respondents raising it as a concern.

Proposition 3 considered communications or task characteristics as an inhibitor to mobile banking. The discussion in the literature review promotes communication/task characteristics as an inhibitor. The four categories proposed by Sarker and Wells (2003) were all reviewed. The contrast between the literature review and the interview findings being that the phone as a multi-purpose device is not really seen as a barrier for users. The proposition was reworded, due to the findings:

Communications/task characteristics can be a mild inhibitor to mobile banking.

Proposition 4 discusses the likelihood of the ignorance of the benefits of mobile banking being a hindrance to adoption. This proposition was influenced and weakened by issues such as the coverage of the cellular network and people preferring internet banking. Most of the respondents who were interviewed do not travel extensively for work purposes and spent most of the day behind a computer with an internet connection, this meant that they had no need for mobile banking. Respondents were able to discuss the benefits of mobile banking, but, they were not aware of all of the benefits that were offered. The fact that respondents were not aware of all the benefits of mobile banking that would encourage users to use this service gives strength to the proposition that ignorance is a hindrance.

Proposition 5 looked at the context of the respondents themselves as being a hindrance to their willingness to use mobile banking. It considered potential hindrances from three perspectives namely: economic factors, social factors and critical mass of subscribers and available services (Sarker and Wells 2003). Although critical mass was not found to be a strong hindrance, the other two

factors were strong influencers and supported the proposition. It was interesting that despite a person's economic status, cost was an issue for respondents. These findings are a good reflection of what was discussed in the literature reviewed. For example, the perceived costs identified by Ivartury and Pickens (2006) and Goldstuck (2007) were also found to be a strong barrier in the literature review. The literature from specifically South Africa highlighting security as an issue (Brown et al. 2003; Dlamini 2006; Goldstuck 2007) was also identified as a challenge by respondents.

In general there was also a higher level of concern about the security of mobile banking and it was found that a higher level of technical experience/knowledge resulted in a higher concern for security.

When considering the hindrances to mobile banking, the Sarker and Wells model (2003) is generally appropriate. Although the model does have some areas which overlap, it covered all the issues that were raised by respondents. However, the model only gives a framework to work with, implying that all the forces have an effect on limiting mobile banking's use. The finding in this research shows that some forces are definitely stronger than others. To overcome this challenge, the model could potentially consider assigning weight to the various factors that influence it or as the research suggests, emphasising which forces are weaker influences. Figure 9 represents the amendments that are proposed.

The model needs to consider two potential changes. The first is to re-evaluate whether an individual's characteristics are relevant, as the acceptance of hand-held devices increases. As was seen from the actual research, individuals seem to be comfortable using hand-held devices. Second, the model should consider renaming social issues to security issues as, although social issues allows for the identification of relevant further issues in different situations, security was the only social issue that was identified in the literature as well in the interviews. This last suggestion has also been included in figure 9.

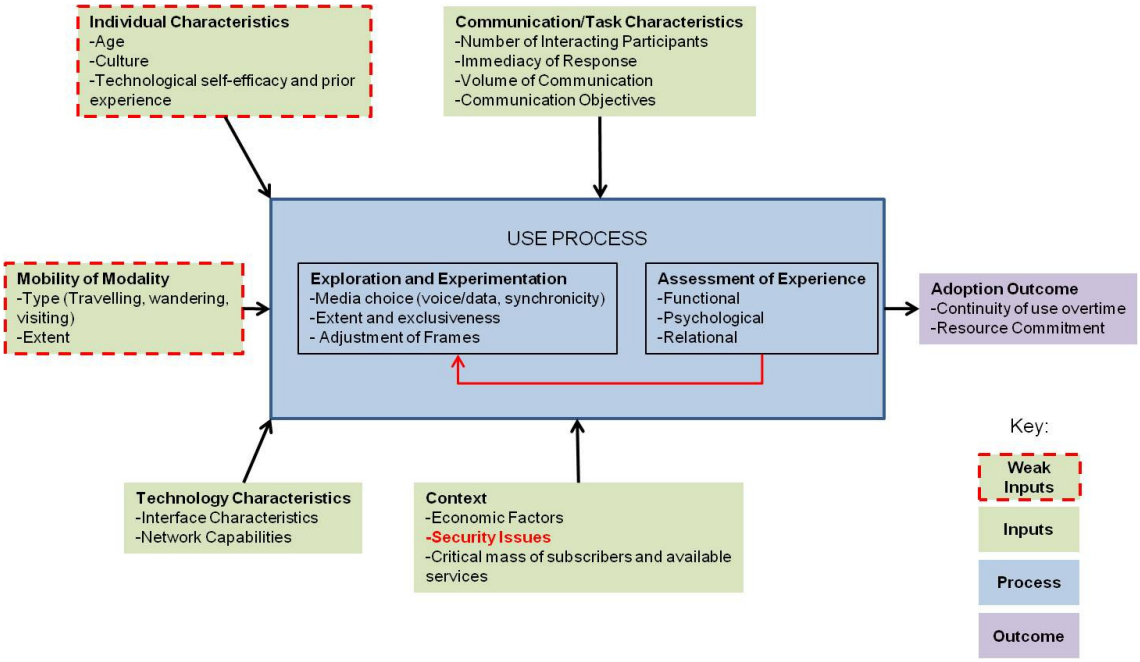

Figure 9: Proposed amendments to the Sarker and Wells model (2003)

5.3 Recommendations

This study has resulted in some recommendations for various stakeholders. These findings are discussed in the same order as they were listed in 1.4 Significance of the Study.

5.3.1 *Banks and Mobile banking providers*

The key learnings for banks and mobile banking providers are the same. The largest hurdle faced for these groups is the level of ignorance and understanding of the product. Considering that more than three quarters of respondents pointed out that their level of knowledge of mobile banking was low, this is a challenge that banks will need to address.

However, it is also important to realise that it is not the actual individual's characteristics that are preventing them from trying mobile banking. The hindrance is ignorance and a lack of understanding of the availability of the product and not the individual.

The second challenge being faced is the perception around cost. There was a perception that there were extra expenses involved with using mobile banking. Though this challenge is shared with the mobile providers, the cost / benefit ratio perception did not warrant them considering mobile banking.

During the research, the majority of respondents compared mobile banking to internet banking. Respondents viewed mobile banking as an inferior alternative to internet banking. They preferred to conduct Internet banking rather than use mobile banking. They did not view mobile banking as an additional banking channel like Internet banking.

The interface provided to customers is also a factor that banks need to consider. Despite the actual phone (screen and keyboard), which is out of the banks control, the interface of the system is manageable from the bank's perspective. Respondents were very critical of the interface in terms of their expectations. However, respondents again preferred the interface that was presented by internet banking.

5.3.2 *Network operators*

Network operators also have an effect on the adoption of mobile banking. The issue raised by respondents was the issue of security. Respondents raised various concerns about the safety of their transactions. Respondents viewed this specifically as an issue of responsibility for the network operators rather than the banks.

The above concern was coupled with the quality of the network. Certain respondents felt that the networks were not stable enough for them to consider using mobile banking.

The research found that the coverage of the mobile operators was more than adequate. However, it is important to note that the entire sample of respondents was drawn from one city. As the sample was based in one geographical location, this could have caused incorrect assumptions to be made.

Cost was also raised as a hindrance. Most respondents had free or cheaper alternatives (internet banking) than using mobile banking. As mentioned previously, respondents preferred to use other banking channels rather than pay for the convenience of banking on their mobile phone.

5.3.3 *Current non-users*

The research has shown that it is not individuals' characteristics that are the hindrance to mobile banking. However, it was found that from a respondent's point of view the level of knowledge and understanding of mobile banking was very limited.

Current non-users of mobile banking can benefit from this report, if these recommendations are acted on. This report can also help decision makers from the banks, mobile banking providers and network operators understand what these users actually want from mobile banking.

5.4 Suggestions for further research

From Proposition 1 the first would be to see if people from a wider age category would deliver similar results and findings within a sample of people with the same education levels. Secondly, from the perspective of culture, it would be interesting to see if people from the same culture had the same opinion about mobile banking. Looking at homogenous culture would be interesting to see how people's perceptions of mobile banking were different (if they were).

Proposition 2 raised the following for further research: The first would be to look at the type of phone respondents had and see if there was a difference in opinion between say touch-screen phones versus keypad phones in terms of users' response to keyboards being a hindrance. The second area for further research would be to look at respondents from various areas around South Africa. For this research report, all the respondents were based in the same city. If respondents were located in different geographic locations they might have different views about the coverage of the network. One final area of further research in this proposition would be to group respondents by their phone

network. There is a chance that people on one network might have different opinions about the speed of coverage based on the network.

Proposition 3 considered communications/task characteristics and the actual phone as part of the hindrance. A possible area for further research would be to rerun this proposition on people who all had the same mobile phone. This would then allow the researcher to gauge if this hindrance is actually stronger or weaker in terms of their perception rather than the respondents' perception of their phone.

What could be considered for future research based on Proposition 4 is conducting the same research but with interview candidates who travelled extensively for work purposes. Comparing the findings of people who do not have ready access to the internet to the comments of respondents who had access to the internet might also bring up different results. It might be able to show that candidates who had less internet access being more open to using mobile banking, if they were not already.

Regarding Proposition 5, further research to be conducted would be to set up a sample of respondents who use mobile banking and try to determine what caused them to consider using it. Preferably one could find out whether they discovered it through advertising, from knowledge of others or found out while trying to save costs.

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APPENDIX A – QUESTIONNAIRE

Introduction

This questionnaire covers a qualitative study of the perceived hindrances of mobile banking. This questionnaire looks at what you would perceive to be the advantages or hindrances that would affect you using mobile banking.

Key Questions

Why would you use mobile banking?

Why would you not use mobile banking?

Points to discuss:

Personal Characteristics

- Age, culture and technology

Technology Characteristics

- Interface – size of phone
- Network capabilities – speed of network

Communications or task characteristics

- Number of interacting participants –
- Immediacy of response – speed of network
- Volume of communication -
- Communication objectives – using a phone for banking

Ignorance of benefits of modules of mobility

- Benefit - understanding

Socio-economic context

Economic – costs

Social – security issues

Critical mass – knowledge of others

APPENDIX B – RESPONDENT LIST & FREQUENCY COUNT

List of Interview candidates			
Respondent Name	**Date**	**Interview Status**	**Transcription Status**
Alistair Dickie	19-Jun-09	Complete	Complete
Alta Kotze	17-Jun-09	Complete	Complete
Analize Taljaard	23-Jun-09	Complete	Complete
Andrew Laing	22-Jun-09	Complete	Complete
Andrew Michu	16-Jun-09	Complete	Complete
Brendon Wade	17-Jun-09	Complete	Complete
Carrie Pitman	19-Jun-09	Complete	Complete
Corinne Taylor	22-Jun-09	Complete	Complete
David Coughlin	20-Jun-09	Complete	Complete
Dustin Pereira	18-Jun-09	Complete	Complete
Greg Massel	15-Jun-09	Complete	Complete
Hanno Botha	17-Jun-09	Complete	Complete
Ian Pitman	21-Jun-09	Complete	Complete
Jacques Hare	16-Jun-09	Complete	Complete
Jean Spencer Young	23-Jun-09	Complete	Complete
Joseph Mate	22-Jun-09	Complete	Complete
Katherine Arnold	23-Jun-09	Complete	Complete
Kathrine Atkinson	21-Jun-09	Complete	Complete
Laure Seale	17-Jun-09	Complete	Complete
Leanne Gitlin	22-Jun-09	Complete	Complete
Marius Voster	23-Jun-09	Complete	Complete
Renee Coughlin	20-Jun-09	Complete	Complete
Natalie Moldenhauer	20-Jun-09	Complete	Complete
Riaz Fadal	15-Jun-09	Complete	Complete
Sean Pitman	21-Jun-09	Complete	Complete
Sello Makwena	16-Jun-09	complete	Complete
Steven Yates	17-Jun-09	Complete	Complete
Sue Pitman	19-Jun-09	Complete	Complete
Sugendree Singh	23-Jun-09	Complete	Complete
Sulu Ndlovu	23-Jun-09	Complete	Complete
Vanessa Kuhn	17-Jun-09	Complete	Complete
Wanjiku Waithaka	23-Jun-09	Complete	Complete

Summary feedback				
Age Group	**Education Level**	**Active Users**	**Upfront**	**Interview**
25-34	Secondary Education	No	2	1,2,3,4,5
25-34	Secondary Education	Yes	N/A	4
25-34	Secondary Education	No	2,4	2
25-34	Tertiary Education	No	3,4	1,2,4,5
25-34	Tertiary Education	No	2	2,3,4,5
25-34	Tertiary Education	No	2,4	2,5
25-34	Tertiary Education	No	N/A	2,3,4,5
25-34	Tertiary Education	Yes	2	2,3,4,5
25-34	Tertiary Education	Yes	4	1,2,3,4,5
25-34	Tertiary Education	No	3,4	2,4,5
25-34	Tertiary Education	No	2,4	2,3,4,5
25-34	Tertiary Education	No	3,4	1,2,3,4,5
25-34	Tertiary Education	Yes	2,5	2,5
25-34	Tertiary Education	No	2	1,2,4,5
25-34	Tertiary Education	No	2,3	1,2,3,4,5
25-34	Tertiary Education	Yes	N/A	1,2,3,4
25-34	Tertiary Education	No	2,4	1,2,4,5
25-34	Tertiary Education	No	2	2,3,4,5
25-34	Tertiary Education	No	2,3,5	1,2,3,4,5
25-34	Tertiary Education	No	2	2,5
25-34	Tertiary Education	No	1	2,4,5
25-34	Tertiary Education	No	2,4	2,4,5
25-34	Tertiary Education	No	2	1,2,4,5
25-34	Tertiary Education	No	1,4	2,3,4,5
25-34	Tertiary Education	No	2	2,4,5
25-34	Tertiary Education	No	2	2,4,5
25-34	Tertiary Education	No	2	2,5
35-49	Secondary Education	No	3	3,4
35-49	Tertiary Education	No	4	2,5
35-49	Tertiary Education	No	4	1,2,3,4,5
50-64	Secondary Education	No	3,4	2,3,5
50-64	Secondary Education	No	2	3,4,5