Understanding Use and Adoption of Mobile Data Services in Two African Countries

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By

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Abstract

This study focuses on the use and adoption of mobile data services in South Africa and Mauritius. The main objective of this research is to validate the Sarker and Wells (2003) model as a generic platform for use and adoption of mobile data services. The Sarker and Wells (2003) model has been chosen because it is a comprehensive model, which looks at the holistic picture of adoption incorporating the factors influencing adoption and explaining the adoption process as well. In fact, it is a three-stage model, also known as the input-process-output model, I-P-O. Input refers to the factors influencing use of mobile data services. Process explains the use (adoption) of the services while output is the final adoption outcome. It should be noted that adoption, in this study, has also been referred as 'use' and these terms have been used interchangeably.

For the purpose of this research, mobile data services are defined as wireless access to a set of business to consumer activities using a mobile phone available through mobile service providers. Mobile data services targeted in this study include SMS, downloading of ringtones, content services, web browsing, email, MMS, mobile games, mobile banking and mobile chats. The emphasis of this study is on the use of mobile phones as opposed to PDAs. Mobile phones are mainly used for individual use while PDAs are mostly used by corporate users.

In both South Africa and Mauritius, most of the mobile consumers use Short Messaging Service (SMS), but they are still reluctant to use more advanced mobile data services. Therefore, this study also attempts to uncover the reasons, according to the Sarker and Wells (2003) model, why users are reluctant to use mobile data services. Both quantitative and qualitative research approaches have been used. A quantitative approach validates the I-P-O model in both countries. A research instrument has been built for this purpose, as the original model has been proposed through qualitative lens, hence not yet operationalised. A qualitative analysis enhances the quantitative results by providing richer insights with regards to the suitability of the model in both countries.

The study provides several interesting findings. The Sarker and Wells (2003) model is not an entirely generic model. The results differ considerably from the original study but nevertheless, the model works better in South Africa as opposed to Mauritius. Differences in results have been attributed to the socio-economic conditions and technological environment of both countries. The original Sarker and Wells model is a three-stage model, while this study reveals that it is a four-stage model with the demographic variables influencing the input variables, which in turn impact initial use. A positive use experience leads to sustained adoption while a negative experience may lead to non-use. Positive experience is assessed mostly in terms of the overall satisfaction achieved whilst using mobile data services.

Increased costs, unreliability of network, lack of awareness of the security measures and spamming are some examples of negative experience which may discourage further use.

The qualitative analysis also provides evidence of some additional factors influencing use and adoption of mobile data services besides those postulated in the original Sarker and Wells model. These factors have been grouped into two broad categories namely: Relative advantage and awareness. Relative advantage is broken down into convenience, accessibility and efficiency while awareness refers to advertising, promotion and word of mouth.

In conclusion, this proposed research adds to the existing literature on South Africa, breaks some new ground for Mauritian research and also provides a benchmark for any future research undertaken in both countries. The questionnaire built has been successfully operationalised and it can be used or built upon further by new researchers. The study also provides some interesting findings for different stakeholders of mobile data services in both countries.

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1.0 Chapter One: Introduction

1.1 Background

The rapid evolution of mobile phone technology and mobile internet applications has resulted in a huge expansion of mobile data services. The mobile phone is now regarded as a multipurpose ubiquitous device. New functionalities, ranging from Internet browsing and mobile television to video conferencing, are constantly being added to the basic data access function of these devices (Tarasewich, 2003).

Mobile data services can be described as any set of activities performed on mobile phones except for voice calling (Oh, Yang, Kumai, Mackay, Lee & O'Doherty, 2006). Examples of mobile data services include Short Message Service (SMS), ring tones, email, Multi-media Messaging (MMS), mobile games, mobile banking and content services. From text messaging services, such as SMS and MMS, to mobile commerce services, such as mobile banking, mobile data services have become highly successful in many countries forming an integral part of the daily life activities of many people.

Similarly, there has been a lot of hype and excitement about use of mobile data services and mobile commerce in African countries over the past few years, with predictions that mobile commerce would become the next new trend in the electronic marketplace (Urbaczewski, Valacich & Jessup, 2003). Mobile Commerce, more commonly referred to as M-commerce, is defined as the use of wireless handheld devices such as cell phones and personal digital assistants (PDAs) to conduct commercial and financial transactions (Pinheiro, 2003). However, M-commerce cannot fulfil its potential without the widespread acceptance of mobile data services (Massey, Ramesh & Venkatesh, 2003; Mattila, 2004); hence, use and adoption of mobile data services is an essential concern for M-commerce stakeholders.

The use and adoption of mobile data services in most African countries has been particularly slow as compared to countries such as Japan, Taiwan, USA and UK. In Africa, the use of SMS and chat services has been widely accepted to a certain extent, but people are still reluctant to engage in other mobile data services, such as MMS, mobile banking and web browsing amongst others (Urbaczewski et al., 2003; Brown, Gordon, Janik & Meyer, 2005).

1.2 Problem Statement

Although, various studies and models aim at explaining the adoption of mobile data services in several countries, very few of them focus on the African continent. There is not much available literature on the use and adoption of mobile data services in the African countries. Therefore, this research investigates the use of mobile data services in two African countries namely, South Africa and Mauritius.

While an appreciable amount of research has been conducted on the adoption of some mobile data services in South Africa, hardly any literature is available in this regard in Mauritius. Another prominent concern is that most of the available literature focuses on the factors which may influence intention to adopt a particular service but very few comprehensively explain the adoption process. In addition to that, most of the literature focuses on the adoption of M-commerce or specific services such as mobile banking or content services. There is currently no such study that looks at the overall representation of mobile data services in these countries. Therefore, this research attempts to investigate the use of mobile data services from a holistic point of view encompassing both the factors influencing use and adoption and the adoption process itself.

1.3 Research Objectives

The key research objective is to take a holistic look at the factors influencing use and adoption of mobile data services by the South African and Mauritian consumers. One of the main objectives of this proposed research is to validate and enhance the research model proposed by Sarker and Wells (2003), in two African countries namely, South Africa and Mauritius. In particular, the Sarker and Wells (2003) model has been used because of its comprehensiveness as it looks at both factors influencing adoption and the adoption process. However, Sarker and Wells (2003) do not use the term adoption. Instead, they refer to the adoption process as the 'use' process. Hence, in this research adoption is mostly referred as 'use', and these terms have been used interchangeably. The results obtained in each of these countries are also compared to each other and to the findings of the original study.

Another objective of the research is to design a research instrument that can be used to operationalise the proposed model. Section 4.5 provides a detailed explanation of the design of the research instrument. This research also aims to reveal the additional factors that may explain adoption of mobile data services. The reasons why mobile phone users are reluctant to use different data services and the key inhibitors are also explored. Lastly, the factors, which may encourage users to use mobile data services more frequently, are unveiled.

1.4 Research Questions

Based on the above research objectives, the following research questions are formulated:

- Investigate the use and adoption of mobile data services in both Mauritius and South Africa using the Sarker and Wells model?
- Do the input variables impact the use of mobile data services which in turn impacts the final adoption outcome?

- Assess the overall validity of the model as a generic platform for use of mobile data services.
- Are there any major similarities or differences noted with regards to the results obtained from each country?
- Are there any additional factors which may influence use of mobile data services besides those cited in the model?
- What are the main inhibitors and determinants of mobile data services in the two countries?

Section 3.2 provides a more refined version of the research questions and objectives.

1.5 Research Scope

The scope of this research is limited to Business to Consumer (B2C) users of mobile data services in both South Africa and Mauritius. Table 1 below depicts the mobile data services which have been investigated in this study. These services have been selected as they form part of the most popular and advanced mobile data services available in both South Africa and Mauritius.

Cell phone banking
Downloading ring tones, games and logos
Downloading Content such as weather, sport and/or news
Web browsing
Accessing Email
Mobile Gaming/Video
Playing Online Games
Short Messaging Service (SMS)
Multimedia Messaging (MMS)
Online chats such as msn messenger and Mxit

Table 1: Mobile data services used in Mauritius and South Africa

These two countries have been chosen because they already have the required infrastructure for new mobile technologies and services in place, thus the economies of both countries can experience a major boost with the use and adoption of mobile data services (Rouvinen, 2004). Moreover, conducting a research in two countries, as opposed to one, provides further scope for comparison and analysis, hence adding a whole new perspective to this proposed study.

This research also focuses on the use of mobile phones as opposed to Personal Digital Assistants (PDAs). This is an important distinction to make as PDAs are mostly used by corporate users for business transactions while mobile phones are mainly utilised for individual use (Singh, 2003). Moreover, in this research, the terms users and consumers are used interchangeably.

1.6 Justification and Importance of this research

From an academic perspective, this proposed research provides a comparative study between Mauritius and South Africa using the Sarker and Wells (2003) model. Since not many studies have attempted to explain both the factors influencing use and the adoption process of mobile data services, this research adds to the existing literature on South Africa. It also breaks some new ground for Mauritian research and provides a benchmark for any future research which might be undertaken in the two countries. Future researchers may thus use both the model and the results of this study to allow further comparison with other countries.

Through a practical lens, the results of this research will be of significant value to the different M-commerce stakeholders in both countries. The future of mobile telecommunications relies on the growth of mobile services and on providing the right package of mobile data services to the target consumers. Although the mobile industry is currently one of the fastest growing markets in both Mauritius and South Africa, consumers are still reluctant to use and adopt the new services being introduced. One possible reason for this lack of enthusiasm on behalf of consumers may be attributed to the fact that the stakeholders of the mobile data services are neglecting the needs of the consumers. Thus, this study enhances the understanding on the use and adoption of mobile data services in both South Africa and Mauritius. It allows the stakeholders to better understand the consumer market of mobile data services by providing them with an insight into the following areas:

- The way users perceive the different mobile data services available in the market.
- The factors influencing current and potential users to use the new mobile data services available in the market.
- The factors which may discourage current use and future use.
- The expectations of consumers when using mobile data services.

Thus, through this study, M-commerce stakeholders will be able to meet the needs and demands of their consumer market more effectively, hence allowing M-commerce to proliferate.

1.7 Structure of the report

The next chapter examines the literature related to this proposed research area. The term mobile data service is first defined followed by an insight into the different types of mobile services available. The evolution and impact of mobile technology is then discussed. This is pursued by an overview of the mobile industry of Mauritius and South Africa. The review then provides a detailed analysis of the current state of mobile data services in these two countries. The main enablers and inhibitors of using mobile data services are subsequently explored followed by a discussion of the different research frameworks used in this context. Both positivist and interpretative research frameworks are examined and the

importance of each approach is also assessed. The final section summarises the key findings and lists the main gaps identified through the literature.

Chapter 3 presents the detailed research model used for this proposed study. The model is thoroughly explained and the related research questions and research hypotheses are refined. Chapter 4 focuses on the research methods and instruments which have been used and how the research is undertaken.

Chapter 5 focuses on the research findings. The first section provides a demographic overview of the Mauritian and South African samples. A discussion on the usage profile and level of use of mobile data services then follows. The reliability and validity of the instrument proposed is then tested. The subsequent sections validate the proposed hypothesis both quantitatively and qualitatively. The chapter ends with a summary and discussion of the results obtained.

Chapter 6 thereafter summarises the whole research. An outline of the research approach and findings is given. The limitations of this research are then discussed followed by recommendations for future research.

2.0 Chapter Two: Literature Review

2.1 Definition of mobile data services

The term mobile data service has not been used as frequently as mobile commerce in previous studies; hence precise and accurate definitions of this term are limited. Some studies have used mobile data services, mobile applications/services or even mobile Internet services interchangeably (Bouwman, Carlsson, Molina-Castillo & Walden, 2007).

Mobile data services are defined as wireless access to a set of B2C activities using a mobile phone available through mobile service providers (Wang & Lin, 2006; WMIS, 2006 as cited by Oh et al., 2006). Examples include transactions, such as SMS, send/receive emails, MMS, mobile games, content services, mobile banking, e-tickets, mobile auctions and stock trading. Section 2.2 provides a more detailed insight on some of these mobile data services.

This definition emphasises the use of mobile phones instead of other mobile devices, such as PDAs. Hence, it is suitable for the purpose of this research, which focuses on use of mobile phones as opposed to PDAs. The difference between mobile phones and PDAs is gradually becoming less apparent as the screen sizes on phones are getting larger, with applications being continuously added. "However, the main difference is still the numeric keypad and one-hand usage of most phones as opposed to the touch screens and two-hand usage of most PDAs" (Kaasinen, 2005).

2.2 Types of mobile data services

There is a wide range of mobile data services as mentioned above, some of the most popular ones being:

- Short Messaging Service (SMS)
  Sending of SMS has been one of the most widely used mobile data services in the recent years. The success of SMS has resulted in Service Providers offering a number of other services using SMS as a platform. Consumers can purchase airtime, electricity, ring tones, and lotteries, amongst other services, via SMS. Other services accessible via SMS include reception of product orders, weather forecasts and mobile advertising (Marcussen, 2002; Nysveen, Pedersen & Thorbjornsen, 2005).
- Multimedia Message Service (MMS)
  MMS is mostly used as an entertainment service allowing users to exchange graphics, video clips and animated features with other users through their phones. MMS has given a new dimension to mobile communication making it more personal, more expressive and more multipurpose than ever (Hsu, C., Lu & Hsu, H. 2007).

- Mobile financial applications

  These include applications such as mobile banking (M-banking) and micro payments. M-banking is considered to be one of the most valued and promising services of M-commerce (Chen & Frolick, 2004). Currently, most banks in South Africa and Mauritius offer M-banking as an option. Micro payments, on the other hand, involve small purchases such as vending where the mobile device communicates with a vending machine using a local wireless network to purchase desired items (Varshney & Vetter, 2002). Although this service is not yet established in South Africa and Mauritius, it is highly popular in Japan (Turban, Mclean, Wetherbe, Bolloju & Davison, 2002).

- Mobile advertising

  This is another mobile data service that is becoming widely accepted. An example is where vendors use SMS to alert consumers of various ongoing specials on different products and services. Content rich advertising involving audio, pictures and video clips is also becoming possible with the introduction of third generation mobile telephony (3G) as they provide better bandwidth potential (Varshney & Vetter, 2002).

- Email and Web browsing

  Users can send and receive mails quickly and efficiently through their phones. They can also browse through the Internet to look for information (Wang et al., 2006).

- Content Services

  Mobile content services provide both information and entertainment value. These include location based services and general information alerts such as weather, sport, shares and news (Gilham & Van Belle 2005). Location based services allow users to find different places, services or products via their mobile phone (Varshney & Vetter, 2002). An example of location based service is Look4me provided by Vodacom in South Africa.

- Mobile entertainment services and games

  Mobile entertainment consists of a variety of activities; some of these include downloading ring tones, logos, music and movies and playing games (Hiew & Wong, 2005). Using mobile devices to play games is becoming increasingly popular in many countries including South Africa (Van Wyk & Van Belle, 2005). There are three specific standards that are used for mobile gaming and these include SMS games, WAP games and Java based games with the most popular one being the SMS based games. For instance, the virtual Boyfriend/Girlfriend game created by Scottish Digital Brides logs around 16500 text messages daily (Nysveen et al., 2005).

- Chat services

  Chat services allow users to share information with a number of people at the same time. Chat rooms may be either subject related or grouped according to different user groups, hence allowing users to get in touch with other people of the same interests (Nysveen et al., 2005). In South Africa, the two most popular chat services include Mxit and msn messenger.

- Mobile auctions

  Mobile auctions allow users to buy or sell products via their mobile devices. In UK, online auction companies allow bidders to open online accounts and bid using their mobile devices. In 2003, E-bay also introduced a new service allowing customers to bid more easily using their mobile devices (Turban et al., 2002).

The above-mentioned mobile data services are only some examples of the wide range of B2C applications that are available. Most of these mobile data services have been introduced as a result of the rapid development of mobile technology. Section 2.3 therefore gives an overview of the evolution of mobile technology and its subsequent impact on mobile data services.

2.3 The evolution of mobile phone technology

The first generation (1G) systems only allowed users to make voice calls. The analogue nature of the technology led to a number of limitations including privacy and security concerns, hence leading to the second generation (2G) networks (E-Business Handbook, 2006).

The main objective of 2G systems was to create a global mobile market allowing mobile phone subscribers to move freely between countries. Out of all the 2G technologies, which evolved in the market, Global system for mobile communications (GSM) was the most successful one with 71% of the world's mobile subscribers using GSM (E-Business Handbook, 2006). Although, it was a clear improvement over the 1G system, 2G also had a number of limitations. The low bandwidth of 9.6 kilobits made it hard to use any other service except for voice calls and SMS (E-Business Handbook, 2006). This limitation was however overcome to a certain extent with the introduction of General Packet Radio Service (GPRS).

Known as 2.5G technology, GPRS offers speeds of 115 kilobits per second (Kbps) to 160 Kbps. This wider range of bandwidth made web browsing and accessibility of email applications possible (Joubert, 2006). The introduction 2.75G services (Enhanced Data Rates for GSM Evolution, EDGE) offering speeds of up to 210kbps and more spectral efficiency then followed (E-Business Handbook, 2006).

The evolution of third generation (3G) services further amplified the prospects of mobile data services. "3G is a set of mobile technologies that make use of all new high infrastructure, networks and handsets to allow phones to deliver high speed Internet access (384 Kbps) as well as features such as live video calls, television broadcasts and CD-quality music services" (E-business handbook, 2006). The capabilities of 3G services are huge, enabling access to any service anywhere, anytime. For instance, making video

calls to the office, web browsing or even playing interactive games with other people is now feasible with the introduction of 3G technologies. 3.5G and 3.75 G then followed.

The latest revolution in mobile technology is the introduction of fourth generation (4G) services, allowing data transmission speeds of 100 megabits per second (Mbps) to 1 gigabits per second (Gbps). "4G is intended to dramatically enhance the capabilities of 3G networks and provide new innovative mobile data services" (Manjoo & Kankwenda, 2007). Tests conducted by the Japanese Group DoCoMo revealed that, "a two hour feature film will be accessible in six seconds" (Sunday Times, 2007 as cited by Manjoo & Kankwenda, 2007).

Countries like Japan, Hong Kong and Korea are currently the market leaders of mobile technology and are already widely using 3G technologies (Gilham & Van Belle, 2005). In September 2006, Japan became the first country with 50% of its mobile subscribers using 3G technology (Dekleva, Shim, Varshney & Geoffrey, 2007).

The subsequent sections focus on the progress and deployment of mobile technology and mobile data services in Mauritius and South Africa, starting with an overview of the mobile industry of each country.

2.4 Overview of the mobile telecommunication industry of South Africa and Mauritius

Although Africa accounts for 13 % of the world's population, it only accounted for 2.3 % of the world's telephonic subscribers (fixed line and cellular) at the end of 2002 (Marrakech, 2002). However, over the last few years, many African countries have witnessed rapid developments of their mobile networks and infrastructure, with the number of mobile subscribers increasing at 35% a year. This has resulted in an increase in tele-densities and better reach and service to people from the rural areas (Scott, Batchelor, Ridley & Jorgensen, 2004). Figure 36 and 37 in Appendix 1A illustrates the African countries with the highest Internet and mobile penetration rates. South Africa and Mauritius are the two countries which have made significant progress in this area and are undoubtedly amongst the market leaders in the African continent with well developed infrastructures and highest mobile penetration rates (Scott et al., 2004).

2.4.1 South Africa

South Africa has one of the most sophisticated telecommunication systems of all emerging markets and ranks 23rd in telecommunications development (South Africa.info, 2007 as cited by Manjoo & Kankwenda, 2007). The telecommunication sector contributes approximately 6% to South Africa's GDP (E- Business Handbook, 2005). One of the most remarkable occurrences within the South African telecommunication environment has been the rapid adoption rate of mobile phones (Van Wyk & Van Belle, 2005). At the end of December 2006, the South African market consisted of approximately 39 million mobile subscribers (International Telecommunication Union, 2007). This is a significant increase in the number of mobile

users when compared to the reported 18.7 million estimated in 2004. Furthermore, with more than 83% of the South African population currently using mobile devices. South Africa is the largest cellular market on the African continent, which holds around 78 million cellular users (Converging Communications, 2005; E-Business Handbook, 2006).

The South African mobile industry operates under a unique 3-tier model as depicted by Figure 1 below (Manjoo & Kankwenda, 2007). The 3 main stakeholders are the Mobile Network Operators (MNOs), Service Providers (SPs) and Wireless Application Service Providers (WASPs).

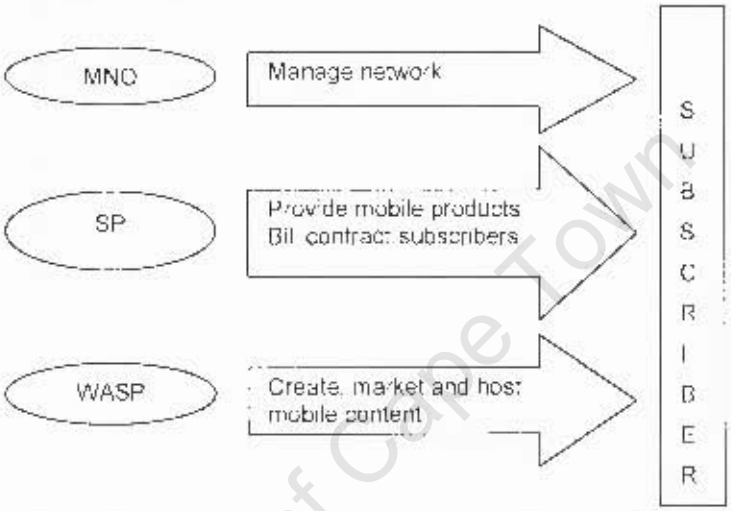

Figure 1: 3-tier mobile model of South Africa (Manjoo & Kankwenda, 2007)

- Mobile Network Operators (MNOs)

South Africa has four MNOs namely Vodacom, MTN, Cell C and Virgin Mobile. Virgin mobile is the newest MNO in the market and it shares a 50-50 joint venture partnership with Cel C.

Figure 2 below shows the current market share of these MNOs (E-Business handbook, 2006).

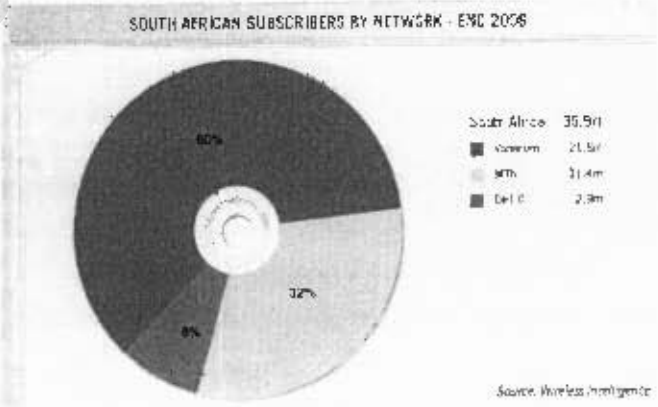

Figure 2: Mobile market shares of MNOs (E-business handbook, 2006)

- Service Providers (SPs)

SPs are in charge of the retailing of mobile products (contracts, handsets, pre-paid vouchers and data services) to the general public and corporate users. They are also responsible to manage customer relationship on behalf of MNOs. Examples of SPs include Nashua Mobile and AutoPage (Gilham & Van Belle, 2005).

- Wireless Application Service Providers (WASPs)

WASPs are responsible for the creation, promotion and hosting of mobile services. They depend on both SPs and MNOs to provide the infrastructure and customer relationship to offer their services. Examples of WASPs are iTouch, Exact Mobile (Gilham & Van Belle, 2005).

Some researchers believe that this 3-tier model poses a serious threat for M-commerce in South Africa as WASPs are less motivated to introduce more services since profits have to be split in three ways (Vechattio, 2005). Some studies established that while consumers trust MNOs, they are not confident of the services offered by WASPs and in the past, some WASPs were held responsible for misleading advertising; billing consumers for services not received; charging very high rates and SPAM (Joubert, 2006). However, other researchers have attributed the success of mobile phones and data services to this unique 3-tier model (Hislop, 2004).

2.4.2 Mauritius

Similar to South Africa, Mauritius has an advanced telecommunication sector. In fact, Mauritius was a trend setter for developing nations as it was the first country to launch cellular operations in the Southern Hemisphere on 29 May 1989 (Minges, 1999). However, the use of mobile phones was not as willingly adopted as anticipated and the number of mobile subscribers only surpassed fixed line subscribers in 2002, a milestone which was already attained by several other countries (Minges, Gray & Tayob, 2004). This was explained through the following arguments. Unlike other developing nations, Mauritius has a prevalent accessibility of fixed telephonic networks; hence, mobile phones have never been a substitute for fixed telephony. In addition, Mauritius followed the Receiving Party Pays (RPP) system, implying that the person receiving calls was subject to be billed as well (Minges et al., 2004). However, as from October 2004, the Island adopted the Calling Party Pays (CPP) regime resulting in a substantial increase in use of mobile phones (Minges et al., 2004).

Currently, Mauritius has three M obile Network Operators namely, Emtel, Cell plus and Mahanagar (MTNL). Cell plus is the current market leader closely followed by EMTEL. MTNL is the latest MNO which entered the market in 2006 (Information and Communication Technologies Authority of Mauritius, 2007). The market penetration of cellular phones was estimated at 61.5 % of the 1.2 million population at the end of December 2006 (International Telecommunication Union, 2007). Mauritius has a 2-tier mobile entity with the network operators performing the roles of service providers as well.

2.5 Mobile telecommunication technology in South Africa and Mauritius

Both Mauritius and South Africa were quick to make significant financial investments for both the purchase of 3G licenses and rollout of 3G network infrastructure (Global UMTS Network Rollout Status, 2006). Mauritius was the first country in the African continent to launch 3G services followed by South Africa. The first test call was made on 16 October 2004 by EMTEL in Mauritius and in November 2004, 3G services were available commercially. Cell plus however is still experimenting with 3G and planning to launch the service in the near future (Global UMTS Network Rollout Status, 2006).

In South Africa, Vodacom was first to launch 3G services in December 2004 followed by MTN. Currently, both Vodacom and MTN users who are equipped with 3G enabled handsets can make video calls (Joubert, 2006). In March 2006, MTN launched 3.5G technologies, which make use of High Speed Downlink Packet Access (HSDPA) to provide users with connection speeds of 2 Mbps. Vodacom followed in April 2006 (Global UMTS Network Rollout Status, 2006) . Mauritius has not yet deployed 3.5G technologies.

Moreover, while increasing mobile data services prospects, this rapid emergence of new mobile technologies has also increased the challenges faced by MNOs. With the advent of every new technology, the MNO is faced with the challenge of setting up the network in time, despite the initial lack of consumer demands for the services, in order to prevent poor coverage (E-business handbook, 2006; Joubert, 2006). However, the key to success is to cautiously assess consumers' needs and market potential before making any further investments in new technologies (E-business handbook, 2006; Sarker & Wells, 2003). A survey undertaken by research company World Wide Worx, in South Africa in 2005, found that only 26% of mobile users have mobile phones that are capable of Internet and data access. Only 7.1% of the sample use 3G technologies and merely 22.9% intend on using 3G in the future. In contrast, 16.4% of the mobile users are already using GPRS and a further 23.6% plan to use it in future (World Wide Worx as cited by Joubert, 2006). The detailed results are illustrated below in Figure 3.

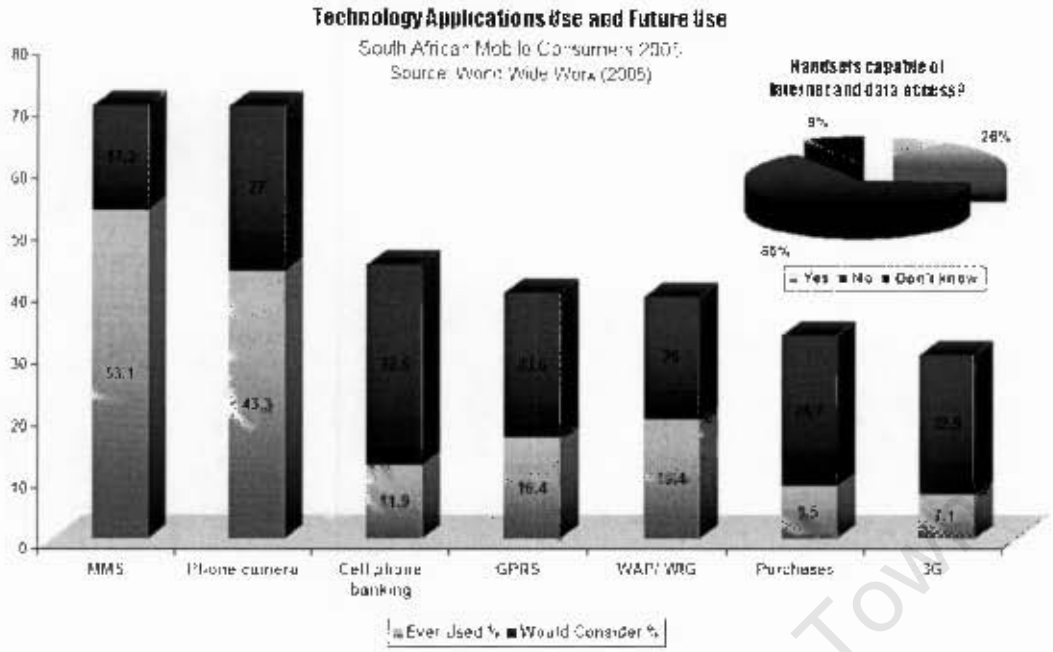

Figure 3: Technology Applications used by South African Consumers in 2005

2.6 Mobile data services in South Africa and Mauritius

Despite the fact that the use of mobile devices is the fastest growing technology ever seen in South Africa, use of advanced mobile data services has still not touched the lives of most cellular phone users in both countries (Goldstuck, 2005). The major portion of the population uses SMS, chat services and some leisure based services such as ring tones and games but they are still reluctant to engage in other more advanced data services (Scott et al., 2004; Goldstuck, 2005).

Still, use of mobile data services has been growing quietly in South Africa for the past five years with the market exceeding the R2-billion mark in transactions in 2004, from as low as R50-million in 2000 (Goldstuck, 2005). This situation is expected to improve further with the recent introduction of 3G and 3.5G networks. A mature consumer mobile commerce industry is assumed to be 3-5 years away (Goldstuck, 2005). The World Wide Worx survey results indicated that only 18% of the sample performed some form of M-commerce transaction with the most popular service being competitions (3.6%), followed by product purchases (3.3%). The detailed results are shown in Figure 4 below. Table 30 in Appendix 1D lists the adoption studies, focusing on different mobile data services in South Africa.

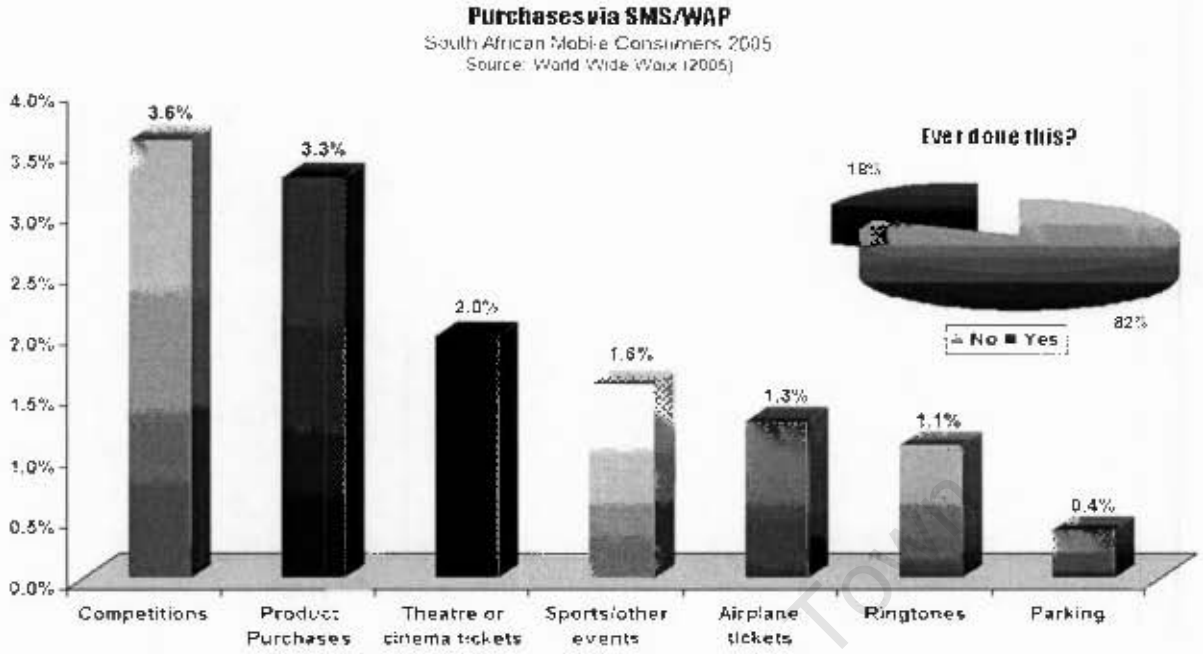

Figure 4: M-commerce purchases by South African Consumers in 2005

There are very few available studies on the use of mobile data services amongst Mauritians and no survey has been performed to assess level of use at this stage. A research focusing on mobile tourist guide for Mauritius briefly mentions that despite the availability of 3G technology, use of mobile data services is still in an infancy stage. This was attributed mainly to the high cost of 3G handsets in the Island (Suddul & Mohamudally, 2007).

2.7 South Africa vs. Mauritius

This section provides a brief summary of South Africa and Mauritius with regards to their demographic economical and technological environment.

	South Africa	Mauritius
Demographic Information		
Population	46 million	1.2 million
Growth Rate	-0.8%	0.8%
Adult Literacy rate	82%	92%
Economic Information		
GNI per capita (US$), 2004	5 390	5 450
Purchasing Power Parity	566 805	16 854
Inflation rate (1999-2004)	5.7 %	10.7%
Internet & Mobile Penetration		
Internet penetration- December 2006	16 million	300 000
Rate of Internet penetration	10 %	24%
Current Mobile Network Operators	4 (Vodacom, MTN, Cell C and Virgin Mobile)	3 (Emtel, Cell plus and MTML)
Mobile penetration	39 million	722 000

	South Africa	Mauritius
Rate of mobile penetration	83%	61.5%
Latest M-technology deployed by MNOs	3.5G	3G
% Population engaging in mobile data services and M-commerce	18%	20%

Table 2: Comparison of the current state of M-commerce in South Africa and Mauritius

Table 2 above shows that although both countries are different in terms of their demographic and economical environment (World Bank, 2007); they follow a similar trend with regards to the mobile penetration rates. Both countries have a relatively low adoption rate of M-commerce, despite being amongst the countries with the highest mobile penetration rates in Africa (International Telecommunication Union, 2007). The progress of the mobile telecommunication industries depend on not only the development of mobile technology and the data services provided but also the subsequent adoption of the services by the consumers (Bouwman et al., 2006). Hence, the necessity to investigate the factors which may encourage potential and existing users to adopt and/or continue use of mobile data services. This can be achieved by looking at various adoption models which have been proposed in relation to what consumers believe are the enablers and inhibitors of mobile data services. Consequently, the focus of the next section is on the enablers and inhibitors of mobile data services followed by the different research models proposed.

2.8 Enablers and Inhibitors of Mobile Data Services

Mobility, convenience and ubiquity are the main benefits of using mobile data services. Internet now travels with the customers; transactions can be conducted from any location and at any time of the day, which makes it well suited for the customers. Information can now be easily accessed at anytime from any location hence ensuring convenience, mobility and ubiquity (Turban et al., 2002; E-Business Handbook, 2006).

The usability and security of mobile devices are however debatable issues. While some people find using mobile devices to conduct transactions relatively easy, others experience difficulty with the small screen size and small keypad. Data input becomes a problem, and this can lead to wasted time, errors and frustration experienced by users, hence making usability less attractive (Tarasewich, 2003; Chen & Frolick, 2004).

Some researchers believe mobile commerce has fewer security flaws as opposed to electronic commerce as the mobile device travels with the user, hence giving the latter a greater sense of security (Brown et al., 2005; Doens, 2005). However, the mobility of these mobile devices also increases the risk of losing them (Tarasewich, 2003). Mobile users are worried about the safety of their devices as these can easily be lost or stolen. One of the key concerns which emerged during the results analysis of a South African study was: "Although cell phone banking is convenient and more secure in a way, it would be more

inconvenient if one loses the phone, because everything will have to be replaced" – (Gordon, Janik & Meyer, 2004).

On the downside of use of mobile data services, information security is a major concern. Information security refers to the safety and security of data as it travels over the network. Concerns have been expressed about the call being intercepted and decrypted (Gordon et al., 2004).

Cost of mobile data services is another prominent inhibitor. It is one of the major factors to be considered by consumers when deciding whether or not to use a technology or service. Most consumers perceive the cost of mobile data services to be particularly high (Gordon et al., 2004). Mobile phone charges in South Africa are believed to be up to10 times more expensive than that of other comparable European countries (Steenkamp, 2005).

Other factors inhibiting use of mobile data services include lack of business requirements, incompatibility of handsets, lack of skills and knowledge concerning the service and poor design interface of the devices (Singh, 2003).

2.9 Technology adoption models

Over the past two decades, an increasing body of work has been attempting to explain and predict user acceptance/adoption of new technologies. Subsequently, there have been various theoretical frameworks proposed on this subject. Similarly, various studies have been performed using these theoretical frameworks to explain the adoption of mobile data services. Some of the most commonly used ones, in this context, include the Technology Acceptance Model (TAM) by Davis (1989), the Innovation Diffusion Theory (IDT) by Rogers (1995) and the Decomposed Theory of Planned Behaviour by Taylor & Todd (1995) (Mallat, 2004). Other theoretical models, which have been used, include the Theory of Reasoned Action (TRA), proposed by Ajzen & Fishbein (1975), the Theory of Planned Behaviour (TPB) by Ajzen (1991), and the Unified Theory of Acceptance and Use of Technology (UTAUT) model by Venkatesh & Morris & Davis (2003) (Mallat, 2004; Okazaki, 2005).

Recent studies performed in the context of mobile data services, using the aforementioned theories, are discussed in more detail below. It should be noted that not all the studies focus on mobile data services as a whole. While a few concentrate on mobile commerce, others look at specific segments of mobile data services such as mobile banking or mobile video adoption. However, these studies are all relevant to this proposed research as they still form part of mobile data services.

2.9.1 Theory of Reasoned Action

The Theory of Reasoned Action (TRA) foresees behaviour and the actual results of the behaviour in different circumstances. TRA has been a widely studied model in social psychology literature (Davis, 1989). The fundamental principle of TRA is that norms, beliefs and attitudes are important in understanding behavioural intention to perform an action (Ajzen & Fishbein, 1975).

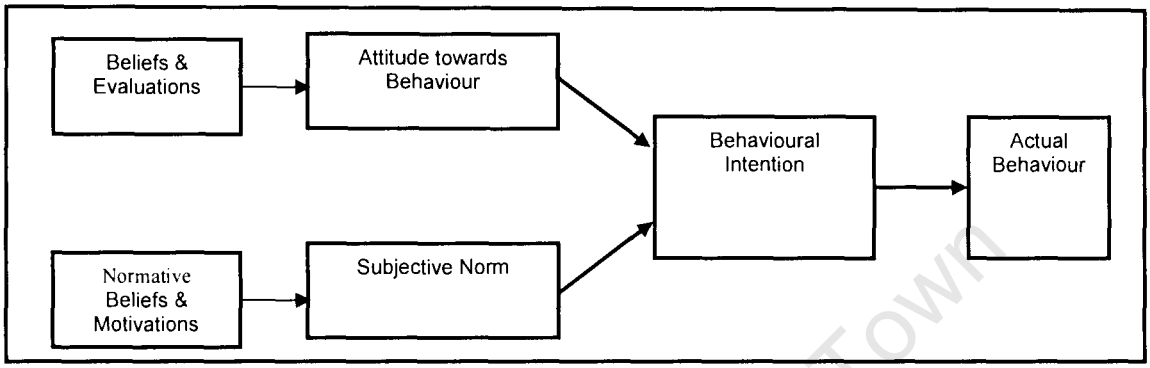

Figure 5: Theory of Reasoned Action (Source: Ajzen & Fishbein, 1975)

As shown by Figure 5 above, behaviour is influenced by 'attitude' and 'subjective norm'. 'Attitude' in the context of this proposed study corresponds to the positive or adverse feelings about using mobile data services, while 'subjective norm' refers to the influence or pressure imposed by society that persuades consumers to use mobile data services (Ajzen & Fishbein, 1975).

The TRA has been used to investigate the factors that encourage consumers to accept the mobile phone as a means of communicating promotional content (Bauer, Barnes, Reichardt & Neumann, 2005). The research findings found that social norm positively affects 'attitude' to use mobile marketing which in turn positively affects behavioural intention. This study thus established that TRA is a valid framework for mobile data services adoption (Bauer et al., 2005).

2.9.2 Theory of Planned Behavior

The Theory of Planned Behaviour (TPB) is an established social psychology theory which explains that a number of significant attitudes influence behavioural intention (Ajzen, 1991). The TPB is an extension of the TRA. The TRA was criticised because it did not describe conduct of individuals who had little power or control over their behaviour, like in M-commerce (Joubert, 2006). Therefore, a third construct namely 'perceived behavioural control' was added to the TRA model to make it more applicable to situations where the individual does not have full control over the situation (Ajzen, 1991). The major constructs of TPB are 'perceived behavioural control', 'attitude' and 'subjective norm' as shown by Figure 6 below.

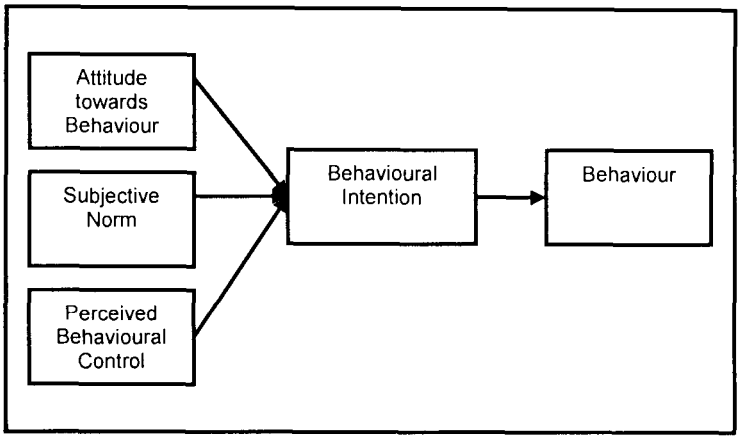

Figure 6: Theory of Planned Behaviour (Source: Todd & Taylor, 1995)

The significance of 'perceived behavioural control' on Information Technology adoption has been validated by numerous studies. However, in the context of mobile data services, results concerning 'perceived behavioural control' have been less dependable (Mallat, 2004). Two studies on Internet users' intention to use WAP phones and services (Teo & Pok, 2003; Hung, Ku & Chang, 2003) found 'perceived behavioural control' to be insignificant in predicting behavioural intention (Mallat, 2004).

Van Wyk and Van Belle (2005) used the TPB to identify the importance of behavioural factors on the adoption of mobile gaming in South Africa. The study showed that subjective norm and facilitating conditions exert a major influence on the intention to use mobile gaming.

2.9.3 Technology Acceptance Model

Derived from TRA, the Technology Acceptance Model (TAM) denotes an important theoretical contribution towards understanding Information Systems (IS) usage and IS acceptance behavior (Malhotra & Galletta, 1999).

TAM suggests that when users are presented with a new technology (mobile data services), a number of factors influence their decision as to whether to use it or not. TAM, as portrayed in
Figure 7, essentially underlines two main principles: 'perceived usefulness' and 'perceived ease of use'. 'Perceived usefulness' is defined as "the degree to which a person believes that using a particular service would enhance his or her job performance" (Davis, Bagozzi & Warshaw, 1989). 'Perceived ease of use' on the other hand, relates to "the degree to which a person believes that using a particular service would be free of effort" (Davis et al., 1989).

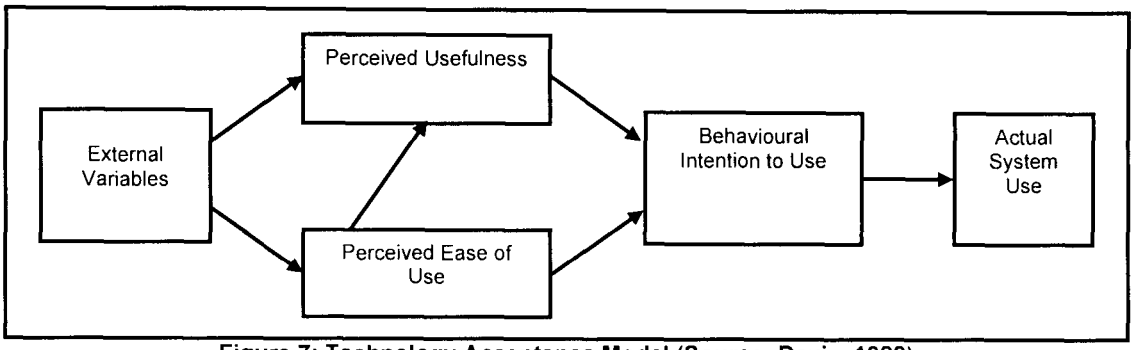

Figure 7: Technology Acceptance Model (Source: Davis, 1989)

TAM has been used to test a wide variety of applications and it has produced consistent results. TAM has certainly been the most widely used and tested model as compared to the other technology acceptance models proposed above, and there is substantial theoretical and empirical support in its favour (Venkatesh & Davis, 2000). The significance of the 'perceived usefulness' and 'perceived ease of use' has been validated by numerous studies, hence demonstrating its strength and rigour in the field of Information Systems (Dillon, 2001).

Similarly, in the context of mobile data services, TAM has been the most frequently used model and various studies have used the framework as a basis to understand users' intention to engage in different data services (Okazaki, 2005). Empirical research shows that both 'perceived ease of use' and 'perceived usefulness' exert significance influence on behavioural intention and subsequently towards use of mobile data services (Fang, Chan, Brzezinski & Xu, 2005; Bruner & Kumar, 2003; Luarn & Lin, 2004; Teo & Pok, 2003). However, it should be noted that various researchers have also criticized this model for not including other important factors such as perceived cost and perceived credibility which may influence technology acceptance. Consequently, these researchers, as elaborated below, have modified TAM.

In an attempt to explain to the customer acceptance of handheld Internet devices, Kumar and Bruner (2003) extrapolated the TAM model to incorporate 'fun' as a construct in addition to 'perceived usefulness' and 'perceived ease of use'. The study was performed at a Midwestern University in United States and it targeted 212 undergraduate students. The findings showed that while 'perceived usefulness' of a particular mobile data services unquestionably influences behavioural intention to adopt the service, the 'fun aspect' of a service has a more positive effect on the intention to use the device. A positive correlation was also established between 'fun' and 'ease of use'. Easy to use mobile devices are perceived as being user friendly to use and give consumers more enjoyment and satisfaction while they are performing tasks or transactions. Higher levels of enjoyment and satisfaction associated with mobile devices lead to greater incentives for using the device for mobile data services. This thus impacts both the behavioural intention and actual use of mobile data services.

A unified conceptual model of the technology acceptance was proposed to explain mobile (wireless) technology adoption (Fang et al., 2005). 'Perceived playfulness' and 'perceived security' were included in addition to 'perceived ease of use' and 'perceived usefulness' (Fang et al., 2005). The authors assessed these constructs based on three different tasks categories namely:

- General tasks: Activities such as managing an address book, sending/receiving email, reading the news, checking weather information.
- Transactional tasks: Activities such as purchasing movie tickets, banking online, purchasing books, clothes.
- Gaming tasks: Playing games.

The results showed that the original TAM constructs are only applicable to the intention to perform general tasks, as both 'perceived usefulness' and 'perceived ease of use' were found to be key determinants of behavioural intention to use the wireless technology. As for the intention to carry out transactional tasks only 'perceived usefulness' and 'perceived security' emerged as key determinants of behavioural intention. Contrary to the findings of Kumar and Bruner (2003) this study showed that 'perceived playfulness' only influences users' decision to play games (Fang et al., 2005).

Luarn and Lin (2004) used an extension of the TAM model to investigate the behavioural intention to use mobile banking. In addition to the two original TAM constructs, they included three other constructs. Two resource based constructs, 'perceived cost' and 'perceived self-efficacy' were added. A trust based construct 'perceived credibility' was also included. 'Perceived cost' is the extent to which mobile banking is perceived to be costly, while 'perceived self efficacy' in this context is defined as "the judgment of one's ability to use mobile banking" (Luarn & Lin, 2004). 'Perceived credibility', on the other hand, is the extent to which an individual believes that the use of mobile banking will be secure and reliable (Luarn & Lin, 2004).

All the constructs were found to have significant effects on the behavioural intention to use mobile banking (Luarn & Lin 2004). Moreover, it was found that 'perceived credibility' and 'perceived cost' have a higher influence on the behavioural intention to use mobile banking as opposed to 'perceived usefulness' and 'perceived ease of use'. This is because users are more concerned about their security, privacy and the cost of mobile banking rather than the ease of use and usefulness of the services. 'Perceived self-efficacy', on the other hand, has a positive influence on 'perceived ease of use' which, consequently, positively impacts 'perceived usefulness' and 'perceived credibility'.

2.9.4 Innovation Diffusion Theory

The Innovation diffusion theory (IDT) is a multidisciplinary theory commonly associated with research on new technology and it has two important concepts, diffusion and innovation. An innovation is defined as an idea, practice or object that is perceived as new by an individual or another unit of adoption, while diffusion is "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1995).

The 'diffusion' of new technologies takes place within a 5-stage process as shown in Figure 8 below.

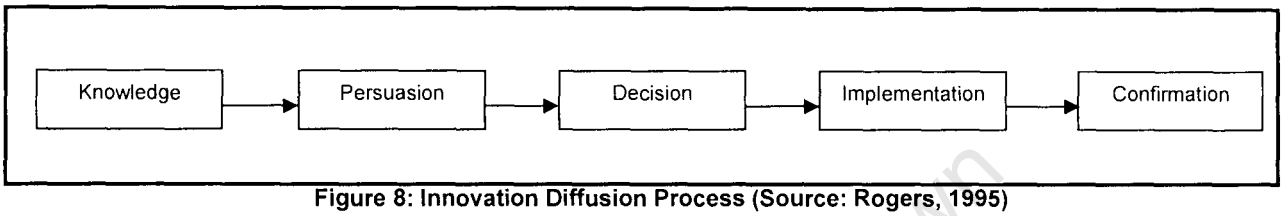

Figure 8: Innovation Diffusion Process (Source: Rogers, 1995)

Rogers (1995) identified and explained five important characteristics that determine the rate of diffusion of an innovation (mobile data services). These are:

Relative Advantage – The degree to which an innovation (mobile data services) is perceived as being better than the idea it succeeds. Some authors believe that this characteristic is similar to the 'perceived usefulness' in the TAM model (Agarwal & Prasad, 1999; Gordon et al., 2004).

Compatibility- The degree to which mobile data services are perceived to be consistent to the existing values and needs of adopters.

Complexity- The degree to which mobile data services are perceived as being difficult to use and understand (Rogers, 1995). This construct is recognized to be similar to the 'perceived ease of use' construct in the TAM model (Moore & Benbasat, 1991).

Trial ability- The degree to which mobile data services may be experimented before an adoption or rejection is made (Rogers, 1995).

Observability – The degree to which the results of mobile data services are visible to others, for instance the degree to which users can learn the services from others (Rogers, 1995).

Furthermore, a meta-analysis on 75 articles on IS innovation research concluded that relative advantage, complexity and compatibility are the most credible determinants of technology adoption (Tornatzky & Klein, 1982 as cited by Mallat 2004).

Using the Innovation Diffusion Theory, Gilham and Van Belle (2005) examined the factors affecting the adoption of mobile content services amongst youth in the Western Cape and the study found that relative advantage, increased trial ability and compatibility were the more significant determinants of mobile content services as these factors were found to be most influential when compared to others. More precisely, it was found that relative advantage and trial ability have a positive effect on the intent to use

ring tones. Increased complexity has a negative effect on the intent to use operator logos while increased compatibility has a positive effect on the intent to use operator logos. On the other hand, both increased compatibility and relative advantage have a positive effect on the intent to use information alerts while increased cost has a negative effect on the intent to use information alerts. It was interesting to note that cost only showed a significant relationship with information alerts and not with the other two content services. This could possibly be attributed to the fact that since the majority of information alerts lasts only for a relatively short time period (e.g. news, weather, TV guide), the users might be more sensitive to the cost of these information alerts as compared to other mobile content services (Gilham & Van Belle, 2005).

Richards and Van Belle (2006) investigated the determinants of 3G mobile video adoption by the South African mobile consumer market by extending the IDT to incorporate technological experience, cost and self-efficacy. Contrary to the results of Gilham and Van Belle (2005), their results showed that relative advantage and trial ability have no significant effect on the adoption of 3G mobile video. Instead, the major determinants of adoption are compatibility, complexity, technological experience and cost. It should also be noted that their findings also differ from the one by Luarn and Lin (2004) as described in section 2.6.3. In this particular case, although self-efficacy is not a significant determinant of consumers' intention to use 3G mobile video adoption, Luarn and Lin (2004) found that it positively affected consumers' intention to use mobile banking.

2.9.5 Decomposed Theory of Planned Behaviour

The decomposed TPB model (DTPB), combines theoretical constructs from TAM and IDT with the TPB. Eight antecedents were added to the original TPB constructs as shown in Figure 9 below (Taylor & Todd, 1995).

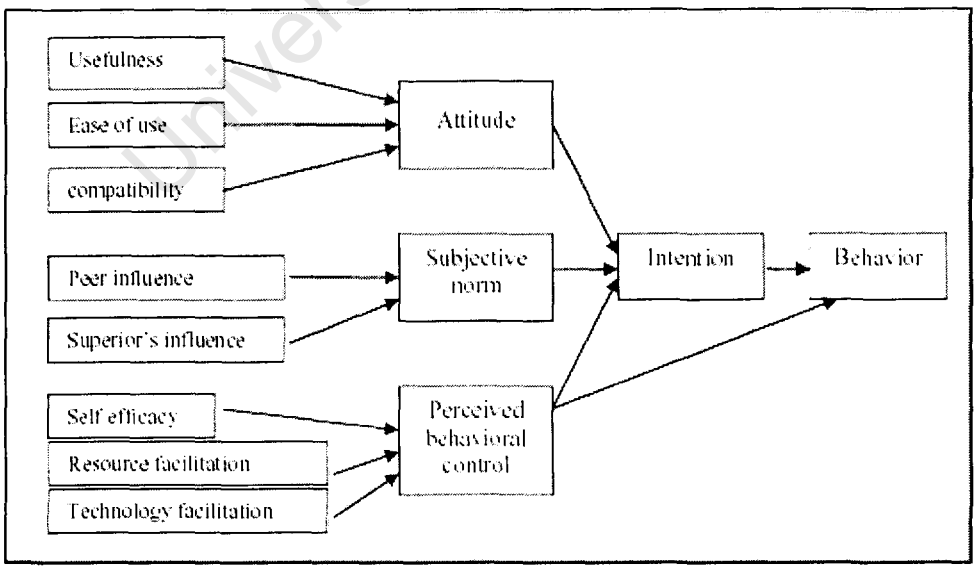

Figure 9: Theory of Decomposed Planned Behaviour (Source: Todd &Taylor, 1995)

Using a combination of the DTPB and IDT, Brown, Cajee, Davies and Stroebel (2003) proposed a framework to examine the predictors of cell phone banking in South Africa. This framework, although initially developed and tested by Tan and Teo (2000) to evaluate the factors influencing Internet adoption in Singapore, is deemed valid to be used in this context as M-banking is regarded as an extension of Internet banking (Brown et al., 2003). The findings showed that relative advantage, trial ability, consumer banking needs and lower perceptions of risk are the key factors affecting adoption of M-banking. These results complement the findings by Gilham and Van Belle (2005) who also established that relative advantage and trial ability are determinants of mobile content services.

It is interesting to find that though all the three above studies (Gilham & Van Belle, 2005; Richards & Van Belle, 2006 & Brown et al., 2003) were conducted in South Africa and used the IDT as a theoretical basis, the results obtained were quite different. These differences can be attributed mainly to different types of mobile data services studied, the varying samples and the diverse interpretations of the questions asked by respondents (Richards & Van Belle, 2006).

2.9.6 Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al. (2003) reviewed eight accredited acceptance and adoption theories and merged significant constructs from the different theories to form the Unified Theory of Acceptance and Use of Technology (UTAUT). Table 3 below illustrates the different constructs of the UTAUT, their definitions and their theoretical origins while Figure 10 depicts the UTAUT model.

UTAUT construct	Definition	Original constructs
Performance expectancy	Degree to which an individual believes that using the system will help him or her better attain significant rewards	Perceived usefulness (Davis et al.,1989), Relative advantage (Moore and Benbasat,1991), Extrinsic motivation (Davis et al., 1992), Job-fit (Thompson et al., 1991), Outcome expectation (Compeau and Higgins 1995; Compeau et al., 1999)
Effort expectancy	Degree of ease associated with the use of the system	Perceived ease of use (Davis et al., 1989), Complexity (Thompson et al., 1991), Ease of use (Moore and Benbasat, 1991)
Social influence	Degree to which an individual perceives that others believe he or she should use the new system	Subjective norm (Ajzen, 1991; Davis et al., 1989; Fishbein and Ajzen 1975; Mathieson, 1991; Taylor and Todd 1995), Social factors (Thompson et al., 1991) Image (Moore and Benbasat 1991)
Facilitating conditions	Degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system	Perceived behavioral control (Ajzen 1991; Taylor and Todd 1995), Facilitating conditions (Thompson et al., 1991), Compatibility (Moore and Benbasat, 1991)

Table 3: Theoretical constructs of UTAUT

(Mallat, 2004; Venkatesh et al., 2003)

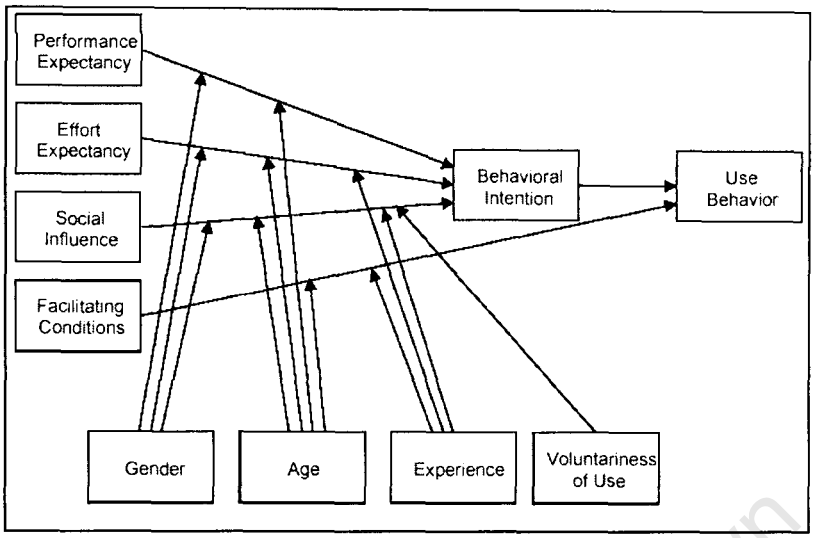

Figure 10: UTAUT model (Source: Venkatesh et al., 2003)

UTAUT model takes into account moderators such as age, gender, experience and voluntariness of use which contribute to a better understanding of the complexity of technology acceptance by individuals (Carlsson.C, Carlsson.J & Hyvonen, 2006). These moderators influence the strength of the relationship between the key determinants and the behavioural intention. For instance, age and gender have an impact on the relationship between 'performance expectancy' and behavioural intention. On the other hand, the relationship between 'social influence' and behavioural intention may be influenced by all the moderators (Venkatesh et al., 2003).

Carlsson et al., (2006) investigated the adoption of mobile devices/services using the UTAUT. The findings showed that 'performance expectancy' and 'effort expectancy' have a significant influence on behavioural intention to use mobile devices/services while social influence and facilitating conditions did not account for behavioural intention to use mobile services.

It should be noted that the above-mentioned studies are all positivist in nature. A positivist research approach is one where an assumption of a physical and social world, which can be measured, is made. The researcher is thought to be impartial and he has an unbiased opinion of the subject being researched. The aim here is to predict usage of a technology as witnessed above (Orlikowski & Baroudi, 1991). Though very simple to use and understand, their main limitation is that they do not attempt to explain the adoption process itself, "since they are based on variance cause-effect models" (Brown et al., 2005). This is where interpretative studies become useful. The next section focuses on some interpretative studies performed in the context of mobile data services that provide a clearer and richer understanding of the adoption process.

2.10 Interpretative Research Approaches

An interpretive research approach is based on the thought that 'there is no unique real world that pre-exists'- (Williamson, Wright & Burstein, 2006). The aim, in this case, is to understand the subject being studied rather than making predictions. Although interpretative theories have not been extensively used to explain technology acceptance in the past, they have emerged "as an important strand in Information Systems research" (Walsham, 1993). This type of research approach is used to explicitly inspect the social and human elements of technology acceptance. Some of the most commonly used interpretative theories in the context of mobile data services are the domestication, stratification and grounded research theory. These are discussed in more detail below.

2.10.1 Domestication Research

Domestication research, which is mainly dominated by social science researchers, has its roots in sociology, anthropology and ethnology (Silverstone & Hirsch, 1992). Domestication research has been used to study the use of a particular technology in everyday life. Literally, domestication is defined as the handling of something alien in such a way that it is integrated into one's everyday life (Blechar & Damsgaard & Knutsen, 2005). Studies in domestication research reveal the importance of using mobile services to express fashion, style and individual group identity (Ling 2001; Skog, 2002).

In an attempt to investigate the appropriation of WAP mobile technology amongst young Australians, Carroll, Howard, Peck and Murphy (2003) used an interpretative qualitative study. The authors define appropriation "as the way that users evaluate, adopt, adapt and integrate a technology into their everyday practices" (Carroll et al., 2003). From this definition, it can be concluded that appropriation is thus closely linked to the process of domestication. The results showed that users evaluate a technology at three different stages. The first stage entails the first encounter with the new technology. At this stage, users may either be attracted to further explore the technology or they might choose not to pursue further evaluation. The factors which attract users for further exploration are expected usefulness, adaptability (the extent to which the technology can be customised), fashion and style and familiarity with the technology. On the other hand, the factors that discourage adoption of the technology are hidden costs, reliability and perceived difficulties in learning and usability.

The second stage is when users adopt and adapt to the technology. This reflects a further assessment of use. The third stage is when the technology is appropriated and integrated into everyday practices (Carroll et al., 2003). Similarly to the previous study proposed (Blechar et al., 2005), this study also concluded that the adoption and appropriation of the technology are continuous processes and any change in the perceptions of the technology may lead to non-adoption (Carroll et al., 2003). The model is shown by Figure 38 in Appendix 1B.

2.10.2 Stratification and Domestication Theory

The theory of stratification and domestication was used to present a process model of user reflexivity that could help towards the understanding of what leads potential users to adopt a particular technology (Blechar et al., 2005). More precisely, the aim of the theory was to delineate a framework to enhance subjective and interpretative understanding of wireless service domestication. The stratification model, proposed by Giddens (1984), emphasises that 'humans are not only constantly monitoring their own actions but also the actions of others in the monitored character of the ongoing flow of social life.' The model, as illustrated in Figure 11 below, demonstrates the reflexive nature of how people come to accept and adopt new technology over time (Blechar et al., 2005).

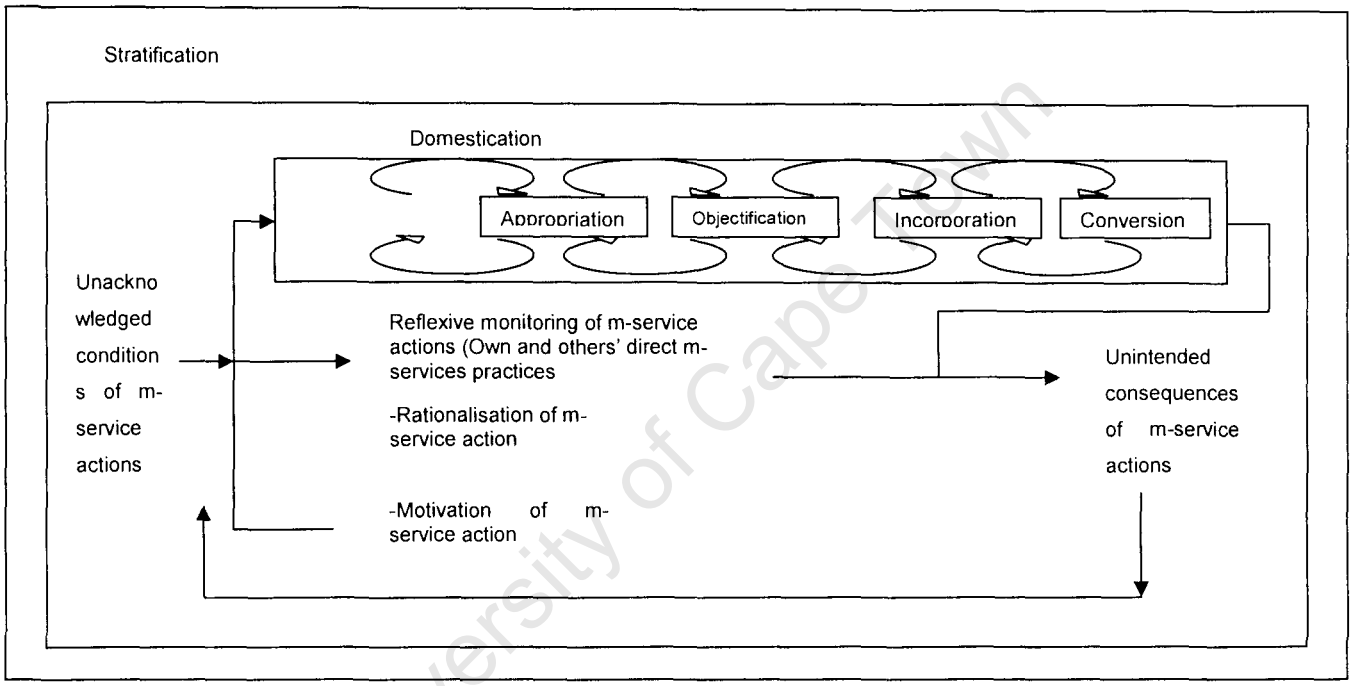

Figure 11: Stratification in the process of M-service domestication (Source: Giddens, 1984)

This model explains that the domestication process has five interrelated steps: Imagination, appropriation, objectification, incorporation and conversion. Imagination is the exclusion of ignorance or the beginning of realisation of an innovation or technology. Following imagination, appropriation is the development of knowledge concerning the technology. At this stage, there is a considerable possibility of either procurement or rejection of the technology. Objectification then follows which 'denotes the cognizance of an innovation into people's life' (Silverstone & Haddon 1996 as cited by Blechar et al., 2005). This is succeeded by incorporation, the process when a technology has become part of the lives of people. Conversion eventually takes place. During this whole course, the users take reflexive actions or decisions on the incorporation of the technology in their everyday lives as they constantly scrutinize both their own actions and those of others. Users also reflect on both previous and forthcoming experiences as well as observations concerning technologies. For instance, the study found that some people started using a

particular technology only because others were already using it. The reflexive action of users can thus lead to either conforming or deviating from what is expected. Deviation in the form of unintended consequences of one's and others' actions can lead to the emergence of new practices. These experiences are fed into the reflexive monitoring process, hence impacting the future decisions concerning technology acceptance (Blechar et al., 2005).

It should be noted that the domestication process is closely related to the Innovation Diffusion process as denoted by Figure 11 above. Imagination can be compared to knowledge, appropriation to persuasion, objectification to decision, incorporation to implementation and conversion to confirmation.

2.10.3 Grounded Research Approach

Grounded theory is defined as 'theory that is derived from data systematically gathered and analysed through the research process' (Glaser & Strauss, 1967 as cited by Brown et al., 2005). The investigator does not begin with a research problem but merely an interest in a particular area, the research problem gradually surfaces during data collection (Orlikowski & Baroudi, 1991). Grounded theory has also been defined as an appropriate study method for novice interpretative researchers (Brown et al., 2005).

Sarker and Wells (2003) used the grounded theory methodology to understand the acceptance and use of mobile handheld device. The research, performed in United States using a multi-cultural sample, was qualitative and interpretative in nature and it focused on understanding mobile handheld device use and adoption for M-commerce. Based on the results of the study, an input-process-output framework was used to depict the key issues related to use and adoption of handheld devices as shown in Figure 12 below.

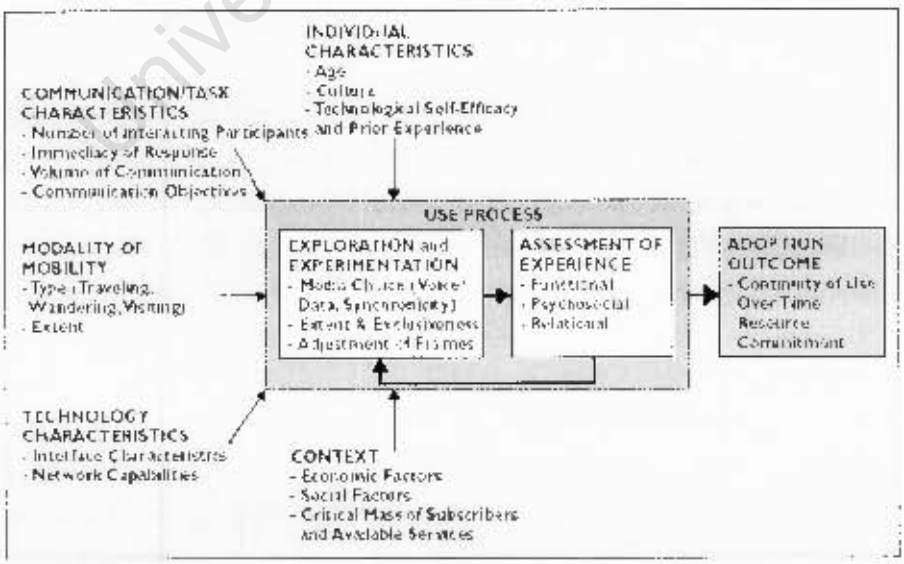

Figure 12: The input-output-process framework (Source: Sarker & Wells, 2003).

The input consists of individual, context, communication/task and technology characteristics and modality of mobility. Table 4 below summarises all the factors and sub factors of the model. A brief explanation of how the sub factors influence the use process is also provided.

Use process is differentiated by two main phases namely an exploration and experimentation phase followed by assessment of experience, which feeds back into the exploration and experimentation phase. The output is characterised by two outcomes: continuity of user over time and resource commitment. This model shows that the input phase includes factors that influence users' decision to use mobile data services. The use process is when users adopt and adapt to the technology. This is comparable to both the second stage of technology appropriation by Carroll et al. (2003) and to the formulation and reformulation of perceptions as depicted in Figure 13 below by Brown et al. (2005). Furthermore, a positive experience of the use process in terms of functional, psychosocial and relational outcomes results in users' commitment to the use of the technology. Figure 39 in Appendix 1C illustrates a modified version of the above input-process-output model.

Factors	Sub Factors	Explanation
Individual Characteristics	**Age**	Although demographic factors such as age have not been included in many studies, argue that the age of the potential adopter is a factor which predicts the use of mobile technology especially when referring to data features
	Culture	The cultural origin of individuals is an important factor to predict patterns of use of mobile devices. For instance, it was found that in Korea sending text messages to work colleagues was regarded as a serious offence while in countries such as Norway, SMS was not seen as offensive.
	Self Efficacy and Prior Exposure	Technological self efficacy refers to individuals' degree of confidence in using mobile phones to perform specific transactions and was found to be a high predictor of mobile usage behaviour (individuals with prior Experience were less prone to adapt and change to new features).
Communication/Task Characteristics	**Immediacy/Urgency of response desired**	The urgency of the response desired influenced the choice of the media used. For instance it was found that in urgent situation, people would prefer phoning rather than sending emails and SMS.
	Formality of situations	Participants were reluctant to use mobile data services in formal situations. For instance, participants found that sending SMS to their work colleagues and supervisors was not appropriate.
	Number of interacting participants and volume of participation	Mobile data services were seen to be useful in dyadic interaction and low volume communication. For instance, because of the complexity involved in using the keypad of the mobile phone, participants were reluctant to use mobile data services in situations requiring high volume communication.

Factors	Sub Factors	Explanation
Modality of Mobility	**Travelling, Wandering and Visiting**	Travelling is defined as the process of going from one place to the other in a vehicle while wandering refers to the time spent walking around while waiting for someone. Visiting, on the other hand, is defined as "stopping by at some location and spending time there before moving to another location" (Sarker & Wells, 2003).
Technology Characteristics	**Interface Design**	The importance of an easy to use interface design has been discussed in many studies. Intimidating interface design seems to be a major factor inhibiting the use and adoption of mobile data services. "Interface design must be accommodating to everyone, not just techno-geeks"
	Network Capabilities	Similarly to interface design, limiting network capabilities such as lack of coverage, limited reach of mobile technology and reduced responsiveness are major inhibitors of use and adoption of mobile devices.
Context	**Cost Incurred**	Some users found the cost of mobile data services too high while others thought the cost incurred was fairly priced.
	Symbolism	It was found that participants used mobile data services because use of mobile devices was seen as a status symbol.
	Peers and critical mass	Peers significantly influenced the use of mobile data services and mobile devices. Users say they use mobile data services as most of the people surrounding them do so.

Table 4: Factors and sub factors of the input-process-output model

Closely aligned with the above study, is the one of Brown et al. (2005) on the adoption and non-adoption of cell phones for financial transactions in South Africa. Data was collected using semi-structured, face-to-face interviews and the target sample was people having a cell phone and an active bank account (Brown et al., 2005). The results analysis showed the emergence of 6 main categories namely: Cost, resistance to change, exposure, perceived relative advantage, perceived ease of use and perceived risk. Figure 13 below demonstrates the relationships between these categories.

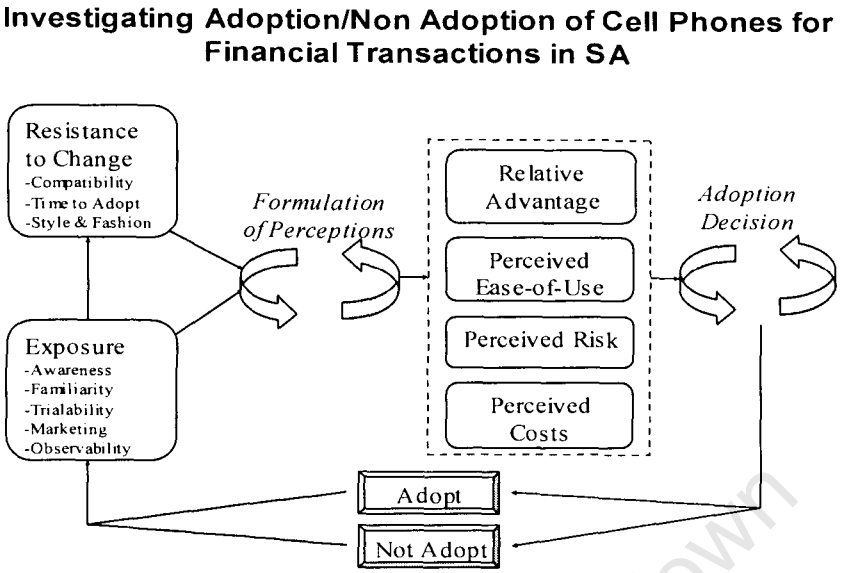

Figure 13: Relationships established between categories obtained through the research process (Source: Brown et al., 2005).

The diagram shows that the acceptance of a technology is influenced by an individual's perception of the technology (Brown et al., 2005). These perceptions arise from the individual's original exposure to the technology as well as their resistance to change. Consequently, the acceptance or non-acceptance of a technology will have an influence upon the original exposure of the individual, which will in turn affect the initial perceptions and the decision to adopt. Resistance to change may be gradually abridged through greater exposure to the technology. Hence, this technology acceptance model is a continuous process with constant formulation and reformulation of perceptions occurring at different stages (Brown et al., 2005).

The above studies not only validated the factors leading to use and adoption of mobile devices, but they also attempted to explain the adoption process of a new technology. The next section provides an insight into the merits and limitations of each approach.

2.11 Merits and Limitations of Positivist and Interpretative Approaches

The main benefit of the positivist models undoubtedly lies in their parsimonious nature. They are uncomplicated and easy to use adoption models as their constructs are relatively easy to understand and test (Lee, 2003).

On their downside, these models do not attempt to explain the adoption process, "since they are based on variance cause-effect models" (Brown et al., 2005). Their main aim is to predict the adoption of

technologies by validating their proposed constructs. These models also have limited ability to explain users' intention to use mobile services as they only explain very little variance. For instance, TAM explains approximately 40 % variance of the model; TRA accounts for 32% while IDT explains 45% (Nysveen et al., 2005; Venkatesh et al., 2003).

There are also other important aspects that influence technology acceptance which may have been overlooked by those positivist models. For instance, in the TAM model, there is absolutely no consideration given to the human and social elements (Malhotra & Galletta, 1999).

Moreover, TAM and other positivist approaches focus on predicting and measuring variables which are thought to influence technology acceptance. However, if the area of study is complex and the variables hard to measure, applying positivist approaches will produce confusing and inconsistent results (Bjorn & Fitzgerald, 2003; Padayachee, 2002). For instance, the impact of emotional expression on these technology adoption models would be very hard to measure and predict (Lamb & Kling, 2003). Thereby, despite the evidence of various statistical tests that proved their validity, positivist frameworks have limited functionality (Padayachee, 2002).

Alternatively, interpretative approaches are appropriate ways to explore research environments that are ill defined and complex. These types of research approaches have been used to explicitly inspect the social and human elements of technology acceptance. The exclusion of the human and social element has in the past questioned the validity of Information Systems; hence this approach is a welcome change (Lee, 2003). Moreover, interpretative research approaches focus on addressing the obscurity of a research area attempting to explain and understand the situation instead of predicting use. Thus the research is not limited by use of dependent and independent variables (Padayachee, 2002).

Furthermore, interpretative studies allow key issues, which may go unnoticed in a positivistic study, to be unravelled (Williamson et al., 2006). For instance, through the use of the grounded theory methodology, Brown et al. (2005) discovered that resistance and exposure led to the reformulation of the initial perceptions made about the technology.

Nevertheless, non-positivist approaches are risky if researchers are not critical enough while undertaking their studies. Also, interpretative theories such as the grounded theory methodology are time-consuming, as data must be analysed until a saturation point where no new concepts are emerging is reached (Brown et al., 2005).

However, it should be noted that neither paradigm is better than the other; there are some studies which can be analysed using a confirmatory positivistic approach while others need to be examined in a more

explanatory manner (Fitzgerald & Howcroft, 1998). Still, interpretative research can be a pioneer to positivist research particularly in complex and ill-defined areas (Padayachee, 2002).

2.12 Summary of Literature Review

This literature review has provided an extensive insight into the areas, which are deemed to be relevant to the proposed area of study. This section briefly summarises the main points.

- **Mobile data services and mobile technology**

Mobile data services are defined as any service on mobile phones except for voice calling. There are a number of mobile data services with the most popular ones being: SMS, mobile chats and mobile entertainment services. The evolution of mobile technologies from 1G to 3.5G has considerably increased the prospects of mobile data services. Mobile banking, mobile advertising, mobile auctions, mobile Internet browsing and product locating are some of the mobile data services launched as a result of 2.5 and 3G technologies.

- **The mobile telecommunication industry of South Africa and Mauritius**

South Africa and Mauritius both have advanced mobile telecommunication industries in Africa. Amongst the African countries, Mauritius was the first country to launch 3G technology, followed by South Africa. At present, 3.5G is already available in South Africa. With more than 83% of the South African population currently using mobile phones, South Africa is the largest cellular market on the African continent, which holds around 78 million cellular users. However, use of advanced mobile data services has still not touched the lives of most mobile subscribers. A research by World Wide Worx in South Africa indicated that only 18% of mobile users have performed M-commerce transactions with the most popular service being competitions followed by product purchases. Aside from SMS, use of other mobile data services has not been enthusiastically adopted in Mauritius, hence the situation being very similar to South Africa.

- **The determinants and inhibitors of mobile data services**

Mobility, convenience and ubiquity are the main benefits of mobile data services while the main inhibitors are hidden costs and information security. Other inhibitors include lack of business requirements, incompatibility of handsets, lack of skills and knowledge concerning the service and poor design interface.

- **The different positivist and interpretative research models in the context of mobile data services**

The table below summarises some recent studies focusing on use of mobile data services using the positivist and interpretative approaches.

Theoretical Framework	Researcher	Description	Country	Major conclusions
Theory of Reasoned Action, TRA	Bauer et al. (2005)	Developed a model for consumer acceptance of mobile marketing using TRA	Germany	Confirmed validity of TRA for M-commerce adoption

Theoretical Framework	Researcher	Description	Country	Major conclusions
Theory of Planned Behaviour, TPB	Van Wyk & Van Belle(2005)	Used the TPB to identify the significance of behavioural factors on the adoption of mobile gaming.	South Africa	The findings show that subjective norm and facilitating conditions exert a major influence on the intention to use mobile gaming
Technology Acceptance Model, TAM	Bruner & Kumar (2003)	Extrapolated the TAM model to incorporate fun to explain the customer acceptance of mobile handheld devices for M-commerce.	USA	The fun aspect of mobile devices has a more positive effect on the intention to use the device as compared to perceived usefulness and perceived ease of use.
	Fang et al. (2005)	Perceived playfulness & perceived security were included in addition to the original TAM constructs to explain wireless technology adoption.	USA	Contrary to Bruner & Kumar's findings, perceived playfulness was only found to influence intention to play games.
	Luarn & Lin (2004)	TAM was extended to include perceived cost, perceived credibility & perceived self-efficacy to investigate the behavioural intention to use mobile banking	Taiwan	All the constructs have significant effects on the behavioural intention but perceived cost and perceived credibility have higher influence
Innovation Diffusion Theory, IDT	Gilham & Van Belle(2005)	The IDT was used to investigate the adoption of mobile content services amongst youth.	South Africa	Relative advantage, increased trial ability and compatibility are influential determinants of adoption of mobile content services
	Richards & Van Belle(2006)	The IDT was extended to investigate the determinants of 3G mobile video adoption.	South Africa	Compatibility, complexity, technological experience and cost are significant determinants of 3G video adoption.
Decomposed Theory of Planned Behaviour , DTPB & IDT	Brown et al. (2003)	Developed a framework to examine the predictors of cell phone banking	South Africa	Relative advantage, trial ability, consumer banking needs and lower perceptions of risk are the main factors affecting adoption.
UTAUT	Carlsson et al. (2006)	Investigated the adoption of mobile devices/services	Finland	Performance Expectancy, effort expectancy influence behavioural intention.
Stratification & Domestication Research	Blechar et al., (2005)	Presented a process model of user reflexivity that could help towards the understanding of what leads potential users to adopt a particular technology	USA	Domestication has 5 interrelated steps and during this whole course, the users take reflexive actions or decisions on the incorporation of the technology in their everyday lives as they are constantly scrutinizing both their own and the actions of others.
Domestication Research	Carroll et al., (2004)	Investigated the appropriation of WAP mobile technology.	Australia	There are 3 stages for technology appropriation. It is a continuous process and any change in the

Theoretical Framework	Researcher	Description	Country	Major conclusions
				perceptions of the technology may lead to non-adoption
Grounded Research	Sarker & Wells (2003)	An input-process-output framework was drawn to understand the acceptance and use of mobile handheld device.	USA	Inputs are factors which lead to adoption of mobile devices. The use process is characterized by 2 phases: an exploration and experimentation phase followed by assessment of experience. The output was characterised by two outcomes: continuity of user over time and resource commitment
	Brown et al. (2005)	Investigated the adoption and non-adoption of cell phones for financial transactions in	South Africa	Acceptance of a technology is influenced by an individual's perceptions of the technology. These perceptions arise from the individual's original exposure to the technology as well as their resistance to change.

Table 5: Summary of some studies on mobile services

- **Positivist vs. Interpretative Approach**

Both approaches have their own merits and limitations. Neither has been shown to be superior to the other but interpretative research can be used as a pioneer to positivist models i.e. in the exploratory phase of model development, or as an alternative angle to provide better insight in the dynamic aspects of the adoption process.

2.13 Identified Gaps

From the literature review, the following gaps were identified:

- Although several prior studies have endeavoured to investigate the adoption of mobile technologies and mobile data services, very few of them were focused on South Africa and Mauritius. The situation in South Africa is better than that of Mauritius as there are a few academic studies performed in the arena of mobile services. On the other hand, only one research has been conducted in this area in Mauritius.
- Most of these studies performed in the context of mobile data services in South Africa are positivist in nature excluding the one by Brown et al. (2005). As mentioned above positivist studies concentrate on predicting adoption based on their different constructs. However, these constructs explain very little variance of adoption as mentioned in section 2.8.
- Furthermore, previous studies have failed to provide a holistic view of the different adoption factors and the adoption process of mobile data services.

- The model prop osed by Sarker and Wells (2003), though holistic in nature, has not been adequately tested and validated.
- There is no comparative study in the context of mobile data services conducted between these two countries as yet.
- Despite the constant effort of MNOs to provide the latest technologies and mobile data services available, consumers are still reluctant to use them.

3.0 Chapter Three: Research Model

3.1 Research Model

Based on the above exhaustive literature review, this study validates and enhances the input-process-output, I-P-O, model in both South Africa and Mauritius. This model has been chosen for the following reasons.

This model provides a more holistic view of factors leading to adoption of mobile data services when compared to adoption models such as TAM, TRA, TPB and IDT. The latter models focus on the factors influencing technology adoption. The Sarker and Wells (2003) model provides a richer and more dynamic picture of the adoption process of mobile devices in addition to stating the determinants which are thought to influence level of use and adoption of mobile data services as denoted by the inputs of the framework.

Moreover, since interpretative research is believed to be a pioneer to positivist research (Padayachee, 2002), it will be interesting to scrutinize the validity of this interpretative framework when it is applied in a positivist environment. Therefore, this study will provide a new perspective to the existing literature on the validity of applying interpretative models.

However, a few modifications on the original model have been effected for the purpose of this study.
While the Sarker and Wells (2003) model considered the use of mobile phones for voice calls and data services, this study is solely limited to the use of mobile phones for data services. Although culture 'surrounding use' was found to be a determinant influencing use of mobile data services in the Sarker and Wells (2003) model, th is research does not investigate its impact on use due to time and scope limitations. In fact, due to its vast dimension, some prior studies have solely focused on the impact of culture on use and adoption of mobile phones. Figure 14 below depicts the modified model that is tested in this study while section 3.2 provides a detailed explanation of the model. The proposed model has been adapted from the Sarker and Wells (2003) model as well as the Sarker, Urbaczewski and Wells (2003) model. In this research, the model is henceforth referred as either the I-P-O or the Sarker and Wells (2003) model.

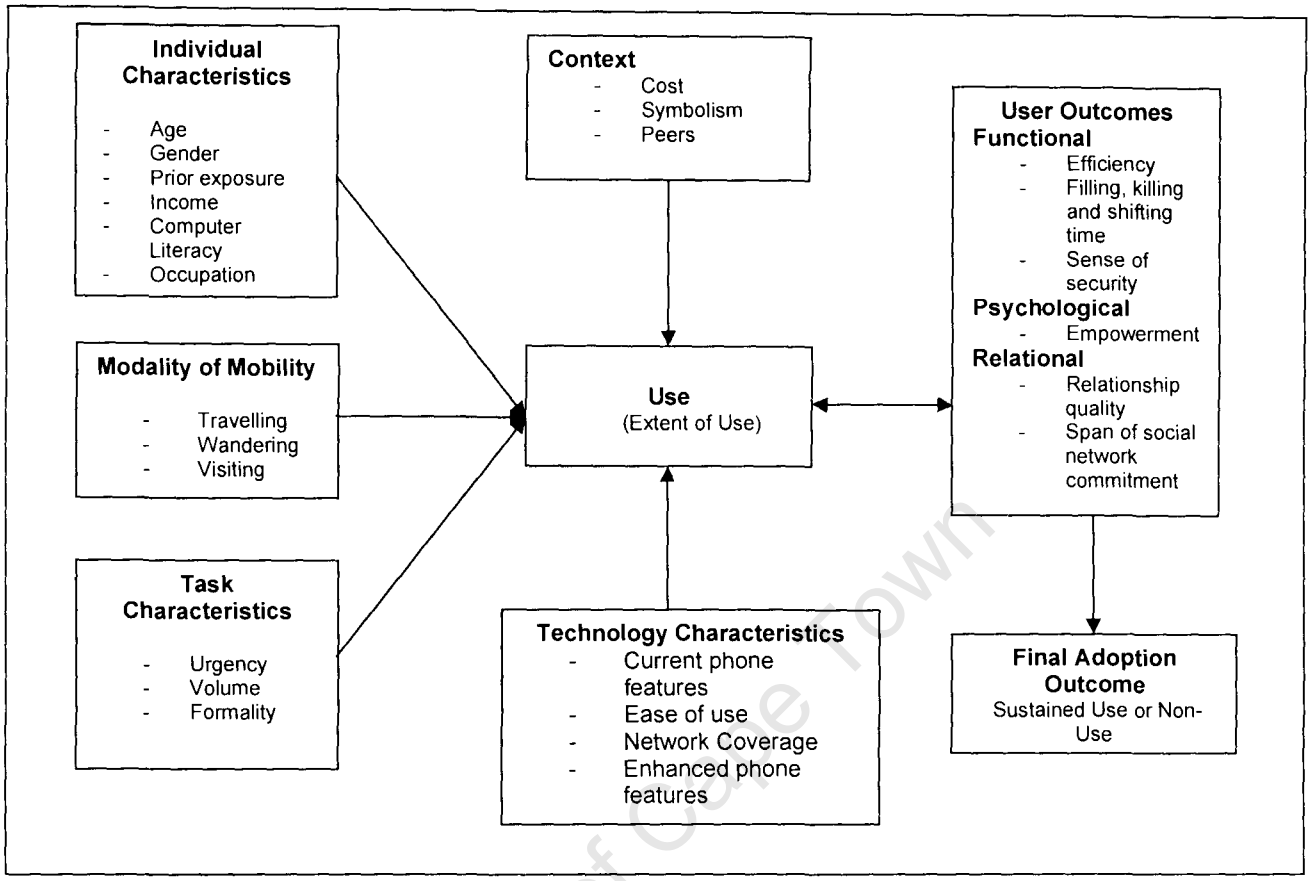

Figure 14: The modified I-P-O model (Sarker & Wells, 2003; Sarker, Urbaczewski & Wells, 2003)

3.2 Research Model explained

As depicted in Figure 14 above, the I-P-O model is a three stage model characterised by the input, process and output phases. The input segment consists of individual, context, mobility, task and technology factors. In this study, the process phase is referred as the 'use or extent (level) of use'. This is the phase where users use and adapt to the technology. It should be noted that 'use' in this context refers to the initial adoption of mobile data services. This is an important distinction to make with other models such as the TAM as the latter has measured the intention to adopt instead of actual use (adoption). The output phase is distinguished by the user outcomes and the final adoption outcome.

The input phase includes factors which influence users' decision to use mobile data services. Use then leads to the output phase, whereby a positive experience on behalf of users in terms of functional, psychosocial and relational outcomes results in users' commitment to technology and sustained future use. However, a negative experience leads to non-use of the technology.

3.3 Research Questions and Objectives

Based on the literature review and research model proposed, the research questions to be investigated are follows:

- Can the I-P-O model proposed by Sarker and Wells (2003) be used as a standard platform to explain use and adoption of mobile data services?
- Assess the validity of the model proposed by investigating the extent to which the categories proposed in the input, process and output phases of the framework are applicable to both South Africa and Mauritius?
- Are there additional variables explaining use of mobile data services in both countries?
- Assess the similarities and differences of the main inhibitors and determinants of mobile data services in the two countries?

The primary research objectives are as follows:

- Design an instrument to validate the Sarker and Wells (2003) model.
- Using the instrument, validate the Sarker and Wells model (2003) quantitatively in both countries.
- Assess the validity of the results through a qualitative lens.
- Identify and compare the main differences or similarities noted in the results obtained from each country.
- Create a contingency model based on the Sarker and Wells (2003) theory. Contingency in this context refers to the similarities and differences noted in the results of the two countries as compared to the original study.
- Investigate other factors applicable to the Sarker and Wells (2003) model which have not been included in the original models.

In addition to the above objectives, the research will also attempt to:

- Explore in more detail why people are critical towards the use of mobile data services.
- Identify the major inhibitors and determinants of using mobile data services in both countries.

3.4 Proposed Hypotheses

Based on the above research questions and objectives, the main research hypotheses are as follows:

H_1: The I-P-O model proposed by Sarker and Wells (2003) explains adoption of mobile data services in both South Africa and Mauritius.

This hypothesis will be broken down into eight sub-hypotheses in section 4.5.

H_2: There are differences between the relative importance of variables in South Africa and those in Mauritius.
(Related research objective: create a contingency model for the Sarker and Wells theory)

H_3: There are additional factors/variables that explain adoption of mobile data services besides those postulated in the Sarker and Wells (2003) framework.

4.0 Chapter Four: Research Methodology

This section explains the way in which the research is conducted and at the same time, justifies the research approach, strategy and tools that are used.

4.1 Research Paradigm & Approach

Orlikowski and Baroudi (1991) identified three research paradigms namely; positivist, interpretive and critical. This research follows a positivist philosophy as it attempts to obtain quantifiable data from a sample to validate the Sarker and Wells (2003) model. The next phase of the research seeks to enhance the I-P-O model and understand the use of mobile data services. For this purpose, both quantitative and qualitative research approaches will be used. This implies that the model proposed by Sarker and Wells (2003) will be validated and enhanced through triangulation. Triangulation is the integration of both qualitative and quantitative rese arch approaches in order to obtain a more accurate picture of the phenomenon under investigation (Myers, 1997). Using triangulation also enhances the scope and richness of the analysis. "Triangulation puts the researcher in a frame of mind to regard his or her own material critically, to test it, to identify its weaknesses, to identify where to test further doing something different" (Fielding & Fielding, 1986, pp.24 as cited by Anfara, Brown & Magione, 2002).

For this particular research, a quantitative research approach is initially used to allow collection of data from a wider population to validate Sarker and Wells (2003) model in both Mauritius and South Africa. Thereafter, a qualitative research approach is undertaken to validate the significance of the results obtained through a quantitative lens and to thoroughly explore the model in both countries, hence allowing a deeper level of understanding and explanation to the different use patterns in the two countries.

4.2 Research Objective

The research is both descriptive and exploratory. The descriptive part of the study aims at validating the research model proposed in section 3.1. The first objective is to evaluate the validity of the Sarker and Wells (2003) model as a standard platform for understanding the use of mobile data services by assessing its applicability in South Africa and Mauritius. In order to achieve this, it is necessary to first develop and validate an appropriate survey instrument. Meanwhile, this study is also exploratory in the sense that it seeks to expand and refine the model proposed in both countries. This implies that other factors which may have been omitted by the initial model, but which are still deemed important in both countries, are unravelled. Furthermore, the research attempts to explain and refine the impact of use on the user outcomes and the final adoption outcome.

4.3 Research Time Frame

The research time frame corresponds to a cross-sectional time horizon. A cross-sectional time horizon is suitable because of the constant evolutionary nature of mobile data services and mobile technologies. There are new mobile data services being introduced at a very rapid pace; therefore, cross-sectional time is deemed to be more appropriate as it allows the researcher to assess the current situation of the use of mobile data services over a specific time period.

4.4 Research Phases

The research process is divided into three main phases:
Using an interpretative qualitative lens, Sarker and Wells (2003) proposed a model for the use and adoption of mobile devices for M-commerce. However, they did not operationalise and validate the model. Thus an important element of this research process is to develop an appropriate, pre-tested survey instrument which can be used to operationalise the model. A standardised questionnaire is thus built in the first phase of this research as explained in section 4.5.2. The second phase focuses on the quantitative analysis of this research while the final phase comprises of the qualitative analysis.

The next section provides a detailed overview of the three research phases. Phases one and two are discussed simultaneously in section 4.5 followed by the third one in section 4.6.

4.5 Questionnaire

As mentioned briefly in section 4.4, the first phase of the research process is to develop a research instrument towards making the Sarker and Wells (2003) model operational. This research instrument can thereafter be used and/or built upon by other researchers seeking to adopt the framework in the future. Thus, the development and validation of a research instrument to test the Sarker and Wells model is seen as a valuable research contribution in its own right. Questionnaires are deemed to be suitable for this purpose as they allow objective data to be collected from a large sample in a standardised way.

4.5.1 Aim of the Questionnaire

Through the use of the questionnaire, the study attempts to assess the validity of the Sarker and Wells (2003) model. The following research hypotheses are investigated in this section.

Question	Statement
H_1	The input-process-output model proposed by Sarker and Wells (2003) explains use of mobile data services in both South Africa and Mauritius.
H_2	There are differences between the relative importance of variables in South Africa and those in Mauritius.

Table 6: Research Objectives

As mentioned earlier, hypothesis H_1 has been subdivided into the following: hypotheses:

Hypotheses	Description
H_{1a}	Individual characteristics (gender, country, income, age, occupation, computer literacy and prior experience) influence the level of use of mobile data services.
H_{1b}	Context factors (cost, symbolism and peers) influence the level of use of mobile data services.
H_{1c}	Modality of mobility (convenience, freedom to access information and safety) influences the level of use of mobile data services.
H_{1d}	Task characteristics (urgency, formality and volume) influence the level of use of mobile data services.
H_{1e}	Technology characteristics (current phone features, ease of use, and network capability and enhanced phone features) influence the level of use of mobile data services.
H_{1f}	The user outcomes influence the level of use of mobile data services.
H_{1g}	The level of use influences the user outcomes.
H_{1h}	The user outcomes influence the final adoption outcome of mobile data services.

Table 7: Proposed Hypotheses

4.5.2 Design of the Questionnaire

Using inputs from both the Sarker and Wells (2003) study and some prior relevant studies and questionnaires, a pilot questionnaire has been devised. The prior studies and questionnaires used were obtained from the IS world database and the relevant test items were adapted to suit this particular research. The different studies which have been used for this purpose are as follows: Joubert, 2006; Suoranta, Mattila and Munnukka, 2005; Anckar, Calsson and Walden, 2003; Moore and Benbasat, 1991. Using the test items from previous questionnaires and studies is advantageous as they have been validated already, thus adding to the credibility of the instrument of this research. However, some of the factors of the Sarker and Wells (2003) model are new and have not been previously validated and operationalised. In these instances, inputs from the original study have been used to construct the related test items.

Section A of the questionnaire measures the current, previous and future level of use of respondents by focusing on both the variety and frequency of use of the different mobile data services. The use of 11 mobile data services has been investigated. These are as follows: SMS, ring tones, MMS, content, cell phone banking, top up, email, web browsing, mobile video, online games and online chats. Respondents have been asked to choose the different services they use and their frequency of use based on a scale ranging from several times a day to never.

Section B forms the core of the questionnaire. The test items in this section have been designed to test the constructs of the I-P-O model. Table 8 below illustrates all the factors, sub-factors and constructs of the model while Table 9 lists all the test items of each of the constructs being investigated with its associated hypotheses. Except for the demographic constructs, most of the independent constructs of the model have at least three related test items. A 7-point Likert scale ranging from Strongly Agree to Strongly Disagree has been used to measure most of the above questions. A 7-point Likert scale is seen

to be appropriate as an educated research sample has been targeted in both countries. Most of the respondents have a tertiary education; hence they are deemed capable of using a 7-point scale instead of a 5-point scale. Moreover, an odd number Likert scale does not force the participants to choose an option when they are indecisive on how to rate a particular question (Ghauri & Gronhaug, 2002).

Section C to E tests the secondary research questions/objectives as stated in section 3.3. Section C asks respondents to state the reason why they are not using any of the mobile data services while section D and E ask respondents to rate the three most influential factors which they believe will inhibit or encourage their use. The focus of section F to J is on the demographics of respondents while section L is designed for open-end comments on behalf of respondents. The final version of the proposed questionnaire is illustrated in Appendix 2B.

Factors	Sub Factors	Constructs
Individual Characteristics	Demographic factors	Gender, Age, Occupation, socio-economic status(income)
	Technological self efficacy	Computer Literacy and Prior Exposure
Context	Economic Factors	Cost incurred
	Peers	Critical Mass
	Symbolism	Fashion, Status
Modality of Mobility	Travelling	Convenience, freedom to access information and safety and security
	Wandering	
	Visiting	
Task characteristics	Communication	Urgency and formality of transactions
	Information Access	Volume
Technological Characteristics	Physical Interface	Current and enhanced phone features **
	Logical interface	Ease of use
	Network capabilities	Network Coverage and reliability
User Outcomes	Functional	Efficiency
	Psychological	Empowerment
	Relational	Relationship quality

Table 8: Factors, sub factors and constructs of the model

**Due to the high number of constructs falling under phone features, the latter has been divided between, firstly, the impact of respondents' current technological features of mobile phones on level of use, denoted "current phone features" and, secondly, the impact of better technological features on the level of use, referred to as "enhanced phone features".

Constructs	Questions Asked	Related Hypotheses
Individual Characteristics		
Gender	Please tick your gender.	H_{1a}
Age	Please tick your age.	

Constructs	Questions Asked	Related Hypotheses
Income	Please tick the most accurate category of your monthly net income (income after tax deductions).	
Computer Literacy	Please tick your personal computer literacy level.	
Occupation	Please specify your occupation.	
Prior Exposure	I had the opportunity to use MDS on a trial basis.	
	I had adequate opportunities to try out the different MDS.	
Context		
Cost Incurred	MDS are highly priced.	H_{1b}
	MDS are fair value for money	
	I will certainly use mobile data services and mobile commerce if I start earning more.	Duplication with income
Symbolism/Status	The use of MDS is a status symbol.	H_{1b}
	MDS makes me trendy.	
	MDS are fashionable.	
	People in my organisation who use MDS have a high profile	
	People using MDS are more prestigious than those who do not.	
Peers	I use MDS as most of my friends/colleagues use it.	H_{1b}
	My peers influenced my decision to use MDS.	
Modality of mobility		
Convenience	MDS are convenient when I am visiting family, or different places or cities.	H_{1c}
	MDS are convenient when one is going from one place to the other using public or private transport.	
	Mobile data services and mobile commerce are convenient when I am visiting family, or different places or cities.	
Freedom to access information anywhere	MDS provides the freedom to access information from anywhere when one is going from one place to the other using public or private transport.	H_{1c}
	MDS give me the ability and freedom to move around.	
	MDS provides the freedom to access information from anywhere when I am visiting family, or different places or locations.	
Safety	Using MDS is safe when I am visiting family, or different places and cities (for instance using cell phone banking is more secure than internet banking).	H_{1c}
	The use of MDS when moving around gives me a sense of personal safety (For instance, if you are lost while travelling you can SMS someone or use services such as look4it, hence giving you a sense of personal safety).	

Constructs	Questions Asked	Related Hypotheses
Task Characteristics		
Immediacy/Urgency of response desired	MDS are ideal for urgent situations.	H_{1d}
	MDS are suitable for situations where immediate feedback/response is necessary.	
Formality of Situations	MDS are appropriate for formal communication or transactions (banking, emailing clients...)	H_{1d}
Volume of communication	MDS such as online chats are suitable for situations involving high volume communication (where there is a lot of information to convey).	H_{1d}
	MDS (email, checking weather) are suitable for accessing individual information.	
	MDS such as MMS and SMS and online chats are not suitable in situations involving 3 or more people.	H_{1d}
Technology Characteristics		
Small Screen	MDS are difficult to use because of the small screens.	H_{1e}
Small Keyboard	MDS are cumbersome to use because of the small keyboards.	
Low resolution	The resolution of my mobile phone is suitable for MDS.	
Graphical Features	The graphical features of my phone are suitable for MDS.	
Interface	The interface of my phone is well suited for MDS.	
General Interface	I have no problems with the screen (interface) of my mobile phone to perform MDS.	
Battery Life	The battery life of my mobile phone is suitable for MDS..	
General Features	The features provided by my phone allow me to use MDS and mobile commerce.	
WAP enabled	I use MDS because my phone is WAP enabled/GPRS enabled.	
Bandwidth	The speed I can download content is suitable for MDS.	
Ease of Use/Text input mechanism	It is easy for me to use my phone for MDS to do what I want.	H_{1e}
	It is difficult to register and set up my phone to use MDS.	
	It is easy for me to remember how to operate my mobile phone for MDS.	
	Overall, I believe using MDS is easy.	
Enhanced phone features	I would certainly use MDS if my phone had a longer battery life.	H_{1e}
	I will certainly use MDS if I could download at a higher speed.	
	I will certainly use MDS if the services were more reliable.	
	I will certainly use MDS if the coverage of mobile technology (network) gets better.	
Network capability (reliability and coverage)	MDS are not reliable.	H_{1e}
	MDS are not suitable because of the limited coverage of mobile technology.	

Constructs	Questions Asked	Related Hypotheses
User Outcomes and Final Adoption Outcome		
Functional	Using MDS allows me to be more efficient when I am waiting in the traffic or on my way home from work.	H_{1f}/H_{1g}
	I use MDS when I am bored.	
	I use MDS to fill time when I am waiting for someone.	
Psychological	I feel professional when using MDS.	H_{1f}/H_{1g}
	MDS make me feel empowered.	
	Using MDS makes me feel more prestigious.	
Relational	I have reduced contact with some people because they do NOT use or are not able to access certain mobile services which I use myself.	H_{1f}/H_{1g}
	Using MDS changed my relationship with many people.	
	My personal relationship with my parents and friends improved because of MDS.	
	I feel left out as I do not use MDS.	
	Using MDS made me closer to some people.	
Final technology Adoption	I will stop using MDS if I experience unfavourable situations.	H_{1h}
	Overall, I have had a POSITIVE experience with MDS.	
	I enjoyed using MDS in the past and this influenced my decision to keep up using it.	

Table 9: Questions relating to each construct

4.5.3 Research Population

A stratified sampling approach has been chosen as different sub groups based on age, occupation and income have been investigated. Sarker and Wells (2003) used three different groups of five individuals each from the population of a large university (5 officers of a student club from USA, 5 exchange students from Norway and 5 part time students of a business group from the Asian Pacific Region). In this particular research, the selected sub samples in Mauritius and South Africa consist of university students, academics and other university support staff (Managers, administrators and librarians). However, it is also important to include a sub sample from the business environment where people are thought to achieve direct financial and time efficiencies from using the technologies. Therefore, people from the corporate world, more precisely, people working in banks, Small to Medium Enterprises (SMEs) or large companies have also been targeted in both countries. This overall sample consisting of students, academics, support staff and people from the corporate world has been chosen based on the research model which incorporates the concepts of mobility, economic status and social factors. Thus, this sample is deemed to be suitable for the purpose of this research as the participants represent different background and socio-economic status. The research population is relatively similar in both countries. This is relatively important in order to enable comparison with the Sarker and Wells (2003) model in both countries. In Mauritius,

owing to the country's small size, this selected sample is geographically distributed, thus, representing a fair geographical representation of the country's population. In South Africa, the sample is mostly from the Western Cape. Even though this is not fully representative of the country's population, a key issue is practical feasibility and resource constraints. This limited geographical representation of the South African population is therefore one of the limitations of this research.

Table 10 and 11 below illustrate the research population that has been targeted in both countries. A total of 370 questionnaires were delivered in South Africa while 360 were handed out in Mauritius.

Organisation	Description of the sample	Targeting research population to ensure optimal participation	Number of participants targeted
University of Cape Town	3rd year and part Time Honours Class of Information Systems, and some Masters and PhD students and Part time accounting students	The researcher obtained permission to hand in questionnaires after or at the beginning of a lecture to ensure optimal participation from the students.	150
University of Cape Town	Academics from various departments (Information Systems, Management, Accounting, Economics, Statistics)	Academics were contacted via the phone or email first and then upon their approval, questionnaires have been delivered to them.	50
University of Cape Town	Support Staff (Administrators, Managers, Librarians)	The questionnaires were sent via internal mail.	50
Standard Bank, SAP, Old Mutual, Toyota and Investec	Managers, and analysts, accountants, administrators and bank employees.	The researcher made some initial contact with managers or any prominent staff of a company and requested him to encourage his/her staff to participate. Questionnaires were delivered to the different companies.	100
The Zone	Managers and Sales People	The manager at the gym was approached to encourage participation of the sales people.	20

Table 10: The sample targeted in South Africa

Organisation	Description of the sample	Targeting research population to ensure optimal participation	Approximate number of participants targeted
University of Technology of Mauritius	2nd and 3r year computer science and software engineering students.	The researcher obtained permission to hand in questionnaires after at the beginning of a lecture period to ensure optimal participation from the students.	150
University of Technology of Mauritius	Academics from various departments	A lecturer was contacted and permission to contact other academics was obtained.	20
University of Technology of Mauritius	Part time Class of Diploma in purchasing and Supply Management	The researcher obtained permission to hand in questionnaires after or at the beginning of a lecture to ensure optimal participation from the students.	100

Organisation	Description of the sample	Targeting research population to ensure optimal participation	Approximate number of participants targeted
	(People working in various government agencies)		
University of Technology of Mauritius	Support Staff (Administrators, Managers, Librarians)	Permission to contact the support staff was sought and obtained	20
State Bank, Ceridian Software Company and Investec	Managers, Financial Analysts, Business Analysts, Sales People	Initial contact with a relevant staff was first made and questionnaires were subsequently delivered to the different offices.	50
Meteorological Station of Mauritius	Analysts, Administrators	Initial contact with a senior analyst was first made and questionnaires were subsequently delivered.	20

Table 11: The sample targeted in Mauritius

4.5.4 Data Collection and Preparation

A pilot study was conducted in January 2007 in both countries. The pilot questionnaires were distributed to a sub sample of the selected sample comprising of students, academics and people from the corporate world. The pilot study allowed the researcher to uncover whether the questionnaire was user-friendly, clear and understandable to the intended sample. Based on the feedback received, the pilot questionnaire was reviewed and refined.

The refined questionnaires were then delivered to the respective samples. As mentioned in Table 10 and 11, the researcher first made some initial contact with a few targeted respondents. This initial contact was made in order to encourage participation of the respective samples, hence ensuring a higher response rate. Some questionnaires were hand-delivered by the researcher, while others were sent via internal mail.

Responses received were checked for completeness and accuracy. Questionnaires which were not answered or not filled in completely have not been considered for the analysis. In Mauritius, 218 questionnaires were returned out of which 19 have not been used due to incompleteness and inaccuracy. On the other hand, 247 questionnaires were obtained from the South African sample. 35 of them were inappropriate to be used for the analysis.

4.5.5 Data coding and Analysis

The results of the accurate questionnaires in both countries have been coded using Microsoft Excel spreadsheets and then transferred to Statistica. It was noted that respondents, in general, did not properly answer the questions relating to previous and future level of use in section A. The pilot study did not reveal that respondents would have difficulty in answering this section; hence this section has not

been included in the analysis. Some of the negatively phrased test items in section B were reversed. A section of the initial coded Excel spreadsheet is attached in Appendix 2C. Due to the high volume of data, the whole spreadsheet has not been included. Different tests such as descriptive statistics, correlation, regression, reliability and factor analysis have been performed using Statistica. These are discussed in more detail in chapter 5.

4.5.6 Limitations

- One of the main limitations is that the distribution of the questionnaire is mainly focused in the Western Cape Province due to time and resource constraints. Although this sample is representative of the South African population in terms of age, gender and race, the results will not be representative of the total mobile commerce market of South Africa.

4.5.7 Key Assumptions

- The research population has an understanding of the subject under study and share general beliefs related to particular issues of the research (McKeown, 2003).
- It is expected that this understanding and beliefs can be quantifiable (McKeown, 2003).

4.5.8 Ethics

A cover letter stating the purpose of the research is attached to each questionnaire. The cover letter clearly states that no personal information, with the exception of age, income, occupation and gender is required and that no individual details will be published. Participants interested in obtaining the final results of the study have been asked to provide their email addresses. The cover letter is included in Appendix 2A. The questionnaires have been sent to the University of Cape Town's Ethics committee for approval.

4.5.9 Expected Outcome

It is expected that the sample chosen have interest in this particular area of study and hence, be keen to participate in the survey. The framework proposed by Sarker and Wells (2003) is expected to have a fair degree of validity in both countries. However, there may be some differences revealed.

4.6 Semi-Structured Interviews

The final phase of the research focuses on the qualitative approach. Semi-structured individual interviews have been designed to refine the Sarker and Wells (2003) model. Participants have been asked about the factors which affect their usage, their initial perceptions and their experiences with regards to mobile data services.

4.6.1 Aim of the interviews

In this phase, the main research objective is to support the quantitative findings. Interviews provide richer insights with regards to respondents' perceptions and experiences of using mobile data services, thus, the differences and similarities unveiled in the quantitative results can be explained qualitatively. They also provide scope to refine the use and output phases of the I-P-O model. The interviews have also been used to unveil whether there are additional factors which explain use of mobile data services besides those postulated in the Sarker and Wells (2003) model. The following hypothesis has thus been validated qualitatively.

H_3: There are additional factors/variables that explain use of mobile data services besides those postulated in the Sarker& Wells (2003) framework.

4.6.2 Interview Design

The format of the interviews is semi-structured as some questions have been asked spontaneously based on the answers given by interviewees. An initial guideline of interview questions based on the research model and the research questions proposed in section 3.3 have been used. Face-to-face interviews were scheduled in both Mauritius and South Africa. Interviewees were given the opportunity to talk freely on their perceptions and experiences of mobile data services but the interviewer occasionally intervened to ensure the interviewees' answers remain pertinent to the area of research. The duration of the interview was 30 minutes. However, 45 minutes sessions were allocated for each interview to allow sufficient time for detailed discussions. At most, two interviews were conducted per day.

A proposed interview guide is included in Appendix 2D. Each interview started with an introductory session where the interviewer first welcomed and thanked the interviewee for his time as denoted by section A. This was an important step and it aimed at making the interviewee more comfortable which eventually ensured better participation. The interviewer then briefed the participant on the research objectives and the purpose of the research. Section B dealt with some ethical issues, while in section C, the interviewer asked the interviewee about the different mobile data services the latter was currently using. In section D and E, the questions asked focused on the promoting factors, inhibitors, perceptions and experiences of using mobile data services.

4.6.3 Research Population

13 interviews were carried out in Mauritius in February 2007 while 12 were conducted in South Africa in May and June 2007. Interviews in both countries were carried out until a saturation point was reached whereby no richer insights were gained. The same criteria used for the research population of the questionnaires were applied here. Students, academics and working people were targeted. All the interviewees had their own mobile phones and they all had previously either used or experimented with some mobile data services.

4.6.4 Preparation of Data

All the interviews were recorded. Notes were also taken during the interviews. After the initial interviews, the data collected was reviewed and analysed. Although, this process was time consuming and spread over several days, it was still an important phase to uncover whether the data collected was suitable. However, where necessary, some slight changes were brought in the initial design of the interviews.

4.6.5 Data Analysis

The data analysis comprises of several steps as discussed below.

Step 1: Transcriptions and Labelling

The first step involves the transcriptions of all the interviews. An example of a transcribed interview is included in Appendix 2E. Although being a time consuming process, this step is repeated for each interview to allow in depth analysis. The interviews are formatted in a standard way to facilitate analysis. Interviews in Mauritius are referred as M1 TO M13 while the South African interviews are labelled S1 TO S12. Furthermore, each paragraph is also numbered using a numeric number starting from 1 to ensure that data is more manageable and easier to locate.

Step 2: Text Coding

Each interview is read several times. Significant text quotes are coded in a standard Excel spreadsheet. Table 12 below illustrates two sample entries.

Interview /Paragraph No	Text Quote	Concept/ Theme	Category	Dimensions	Relationship	Services
S4/3	For instance, using MSN chat or MXIT will cost almost 10 times cheaper than a SMS and 100 times cheaper than making an actual voice call, hence the convenience of some of the services.	cost	context	low cost of some services	convenience	Msn or Mxit as compared to SMS
M12/7	A good phone having all the nice features is more than 10000 rupees; people in Mauritius are getting 15000 rupees a month on average, so perhaps they cannot afford one.	cost	context	high cost of handsets/low income	income	N/A

Table 12: Spreadsheet used to code the interviewees

Step 3: Concept and Category

Each text quote is assigned a relevant concept/theme based on the research model or the literature review. This step is repeated for each interview in both countries. The concepts are then grouped in

higher level categories. For instance COST as shown in Table 12 above forms part of context in the Sarker and Wells (2003) model.

Step 4: Dimensions and Relationships

Based on the text quote, the concept and the category allocation, relevant dimensions and relationships are then assigned where applicable. This is an ongoing process which is reviewed after each interview is coded. Dimension refers to the different aspects of a concept/theme. For instance, interviewees may perceive the cost of transactions to be either high or low. Relationships look at how different concepts are associated with one another and to the level of use. For instance as seen in the first quote, S4, cost is associated to convenience while in the second quote is linked to income.

Step 5: Revision and Refinement

After coding all the interviews as explained above, steps 3 and 4 are repeated to ensure consistency of the terms used to denote different concepts and categories throughout all the interviews.

Step 6: Colour Coding and Summarisation

All the similar concepts are sorted and highlighted using a standard colour. For instance, all the cost related concepts are highlighted in red. This step makes it easier to identify the different quotes and dimensions relating to a specific concept/theme.

Step 7: Exploratory Analysis

The key themes are analysed. Important relationships and dimensions are described and explained. The key themes are used to support the results of the quantitative analysis.

Step 8: Research Hypothesis

The themes are reviewed to determine whether hypothesis H_3 as described in section 4.6.1 is supported or rejected.

4.6.6 Limitations

- The main limitation revolves around threats introduced by interviewee bias. In order to ensure objectivity of the interviewees, the personal views of the interviewer has not been mentioned during the interviews and the constructs of the research model has also not been introduced initially.
- Some people had difficulty in understanding and speaking English in Mauritius, therefore, the researcher had to carry out the interview in either Creole or French. Interviewees replied using the language they were comfortable with (French or Creole). In these situations, the researcher translated the recordings to English. However, some of the richness of the data may have been lost in the process.

4.6.7 Key Assumptions

- The interviewees are relatively knowledgeable in this area of study and their contribution is valuable to the research.

- The participants have effectively contributed to the interviews and did not withhold important information
- Participants have a mobile phone and most of them have already used some mobile data services
- The range of people interviewed is representative of both countries' population in terms of race and gender.
- The demographic profiles of the interviewees in both countries are relatively similar.
- All the interviews conducted in both countries were consistent in the approach followed.

4.6.8 Ethics

All the interviews were recorded. The interviewer assured confidentiality and anonymity by withholding names and ensuring that no individual details are published in the final report. The interviewees may request a copy of the final research results.

4.6.9 Expected Outcome

The interviews have been an efficient way of obtaining richer information. As opposed to questionnaires, the interviews did not restrict the interviewees to constrained answers. Instead, they freely gave their opinions on different issues. This thus adds a deeper level of analysis to the overall research.

5.0 Chapter Five: Analysis

This chapter investigates the use and adoption of mobile data services in Mauritius and South Africa both quantitatively and qualitatively. The structure of this chapter is as follows:

Section 5.1 provides some descriptive demographic distinctions between the Mauritian and South African samples in terms of gender, age, income, occupation and computer literacy. The quantitative sample is presented first, followed by the qualitative one.

Section 5.2 presents the usage profile of mobile data services. Both samples have been combined to form a single dataset for this purpose. A comparison analysis of the usage trend in both countries then follows. In the second part of this section, a measure used to denote the dependent 'use' variable representing the level of use of mobile data services is discussed.

Section 5.3 looks at the reliability and validity of the data collected, while section 5.4 tests the Sarker and Wells (2004) model using both quantitative and qualitative data. The focus of section 5.4 changes from quantitative to qualitative in each sub section, i.e., after the testing of each hypothesis, the results are validated qualitatively. Section 5.5 focuses on the impact of demographical variables on the independent factors of the Sarker and Wells (2003) model.

Section 5.6 and 5.7 explains the differences in the results of the two countries by looking at the country as a situational variable. Thereafter, a contingency model is proposed. Section 5.8 tests whether there are additional factors influencing use of mobile data services besides those postulated in the Sarker and Wells (2003) model. In section 5.9, the major inhibitors and determinants of mobile data services are revealed. This chapter ends with a short discussion on the results obtained.

5.1 Demographic Analysis

The model proposed by Sarker and Wells (2003) incorporates a range of demographic factors including gender, occupation, income, computer literacy and age. This section provides an overview of the Mauritian and South African samples in terms of these demographic variables and their subsequent impact on the frequency of use. The quantitative sample is first presented followed by the qualitative one.

5.1.1 Gender

The South African sample consisted of 212 respondents while there were 199 respondents in Mauritius. Figure 15 below illustrates the gender distribution of the two countries. The South African sample consists of 128 (60%) males and 84 (40%) females while the Mauritian sample comprises of 109 (55%) males and

90 (45%) females. The gender distribution in both countries is thus fairly equal and well balanced. In addition, a difference of means test between the South African and the Mauritian sample gives a high p-value of 0.252, indicating that there is no significant difference in the means of the two countries. Thus, the two samples can be adequately compared. The detailed result of the test is included in Appendix 3A.

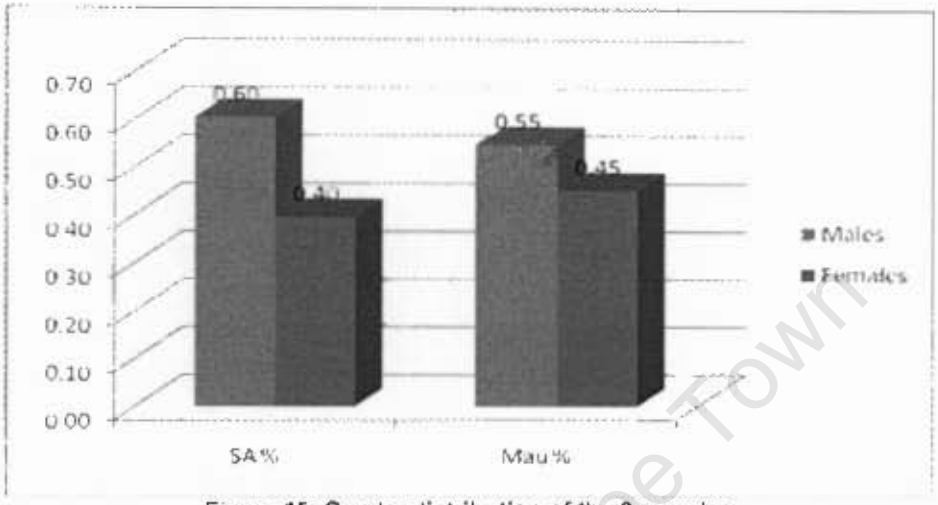

Figure 15: Gender distribution of the 2 samples

5.1.2 Occupation

Occupation is another important demographic factor. In both countries, the target sample comprises of both students and working people. The students are mainly from the university, while the working people consist of academics, analysts, programmers and software developers, accountants, researchers, administrators, sales people and marketing executives. However, no distinction has been made between the different professions of the working people. Instead, the sample has been assessed in terms of whether they are students or working people. In South Africa, 53% of the sample comprises of students and 47% accounts for working people while the Mauritian sample consists 36% of students and 64% working people as demonstrated by Figure 16 below.

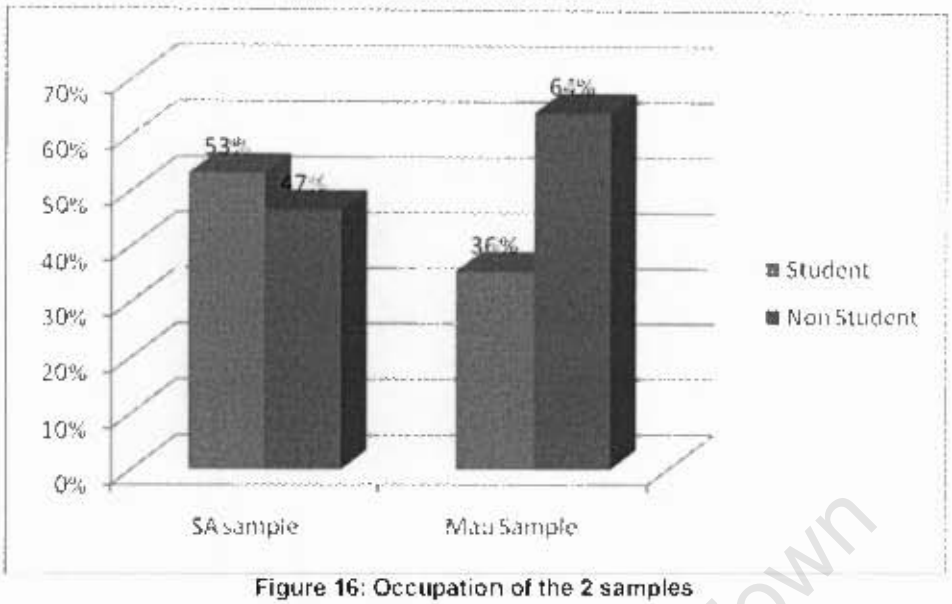

Figure 16: Occupation of the 2 samples

5.1.3 Age

Figure 17 below shows the age distribution of the two countries. More than 40% of the respondents are aged between 21-25 years in both countries. This percentage relates mostly to the student population in both countries. 15 respondents (8%) in Mauritius and 39 (15%) in South Africa are 20 years old. There are very few people older than 40 years in both samples. Although people above 40 years old have been targeted, they were either very reluctant to fill in questionnaires or they did not use any of the mobile data services provided. Only 9% of the South African sample and 8% of the Mauritian sample consist of respondents above 40 years old.

A chi square test between the two samples shows a high p-value of 0.24, indicating that there is no significant difference in the means of the two countries. The average age distribution of both samples falls in the 26-30 range. Appendix 3B depicts the test.

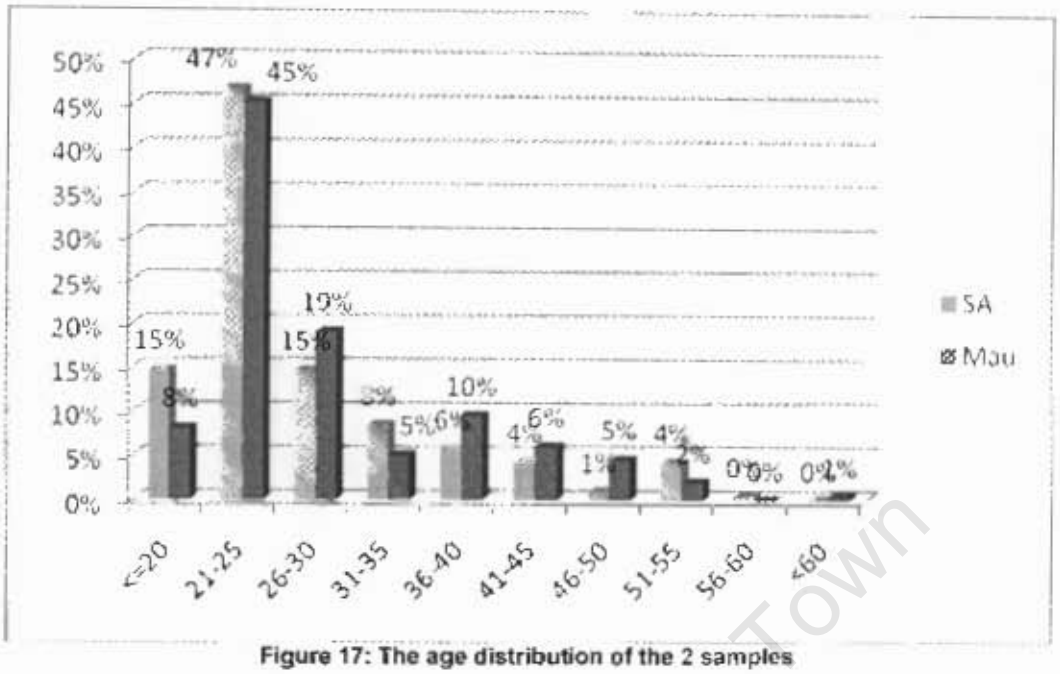

Figure 17: The age distribution of the 2 samples

5.1.4 Income

Figure 18 below illustrates the income distribution of the two samples. It should be noted that the currency value in use in the two countries differs considerably. South Africans earn in rand while Mauritians earn in rupee. However, both questionnaires have the same ranges in terms of income. The Mauritian questionnaire asks the respondents to select their income in rupee while the South Africans select their income in rand. Currently, one rand is approximately equal to 4.40 Rupees (Currency Exchange Rate, 2007) and as mentioned in the literature review the purchasing power parity of the two populations differs considerably. A chi square test is deemed inappropriate in this situation because of these reasons.

54 % of the sample in South Africa earns less than 5000 rand while 30% of the Mauritian sample earns less than 5000 rupees. This percentage relates mostly to the student population of the two countries and as illustrated earlier the South African sample consists of more students than the Mauritian one. The remaining income ranges do not show any major differences.

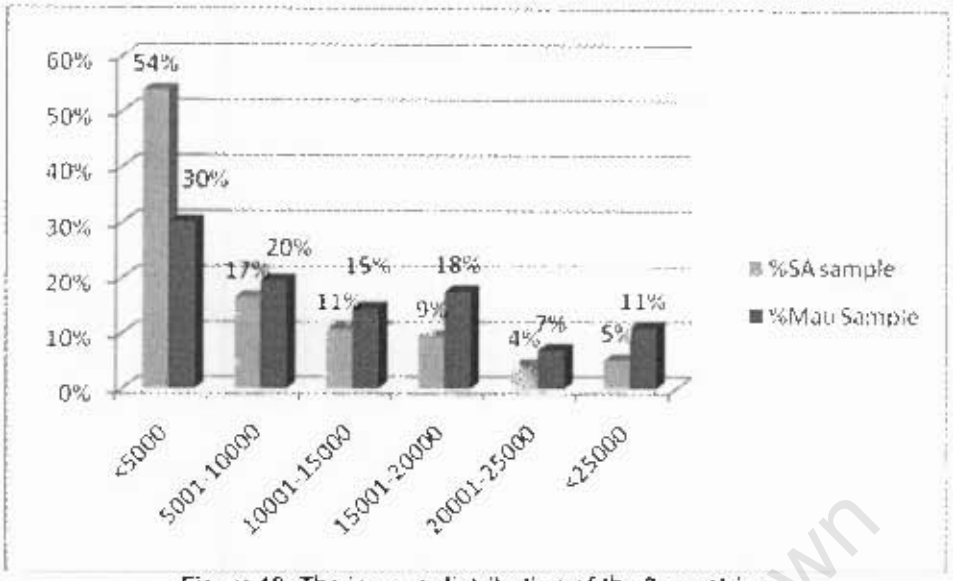

Figure 18: The income distribution of the 2 countries

5.1.5 Computer Literacy

In terms of computer Literacy, there is a major difference in the two samples as depicted by Figure 19 below. 61 % of South Africans and 30 % of the Mauritians have rated themselves as being highly computer literate. This indicates that the South African sample, which consists of more students compared to the Mauritian sample, is more biased in terms of computer literacy

On the other hand, 43 % of Mauritians and 25 % of the South Africans consider themselves having good computer skills. 11 % of South Africans and 25 % of Mauritians rate themselves as being adequate A chi square test shows a p-value of 0.000, indicating a highly significant difference in the two samples. This is a surprising observation which may impact the results of the Sarker and Wells (2003) model in the two countries. The test is included in Appendix 3C.

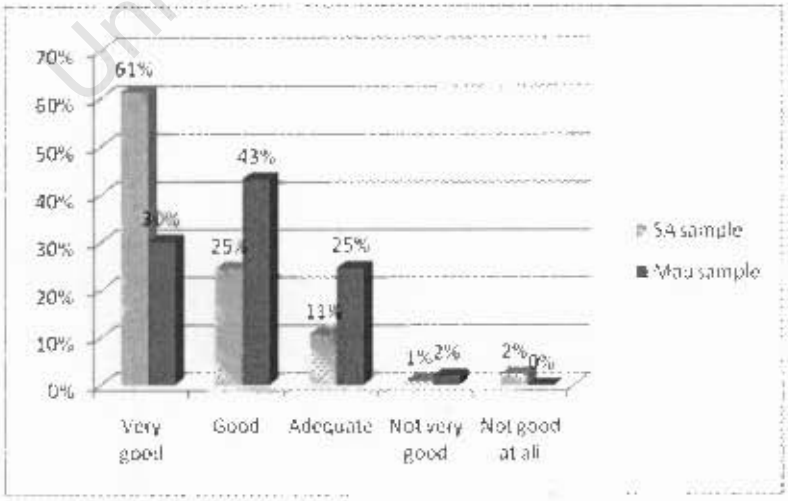

Figure 19: The computer literacy rate of the 2 samples

Qualitative Analysis

The demographic profiles of the interviewees are illustrated in Table 13 and 14 below. As mentioned in chapter 4, similar criteria to the quantitative sample have been applied. Students, academics and people from the corporate world have been targeted.

Interviewee ID	Gender	Age Group	Income (Rupee)	Computer Literacy	Occupation
M1	Female	25-30	10 001-15 000	Good	Research Assistant
M2	Male	20-25	25 000+	Good	Financial Analyst
M3	Male	20-25	<5000	Very Good	Student
M4	Male	26-30	10 001-15 000	Very Good	IT Support
M5	Male	26-30	20 001-25 000	Very Good	Lecturer
M6	Male	20-25	<5000	Very Good	Student
M7	Male	41-45	25 000+	Good	Engineer
M8	Male	31-35	25 000+	Very Good	Manager
M9	Female	25-30	20 001-25 000	Adequate	Sales person
M10	Female	36-40	15 001-20 000	Good	Lecturer
M11	Female	20-25	<5000	Good	Student
M12	Female	21-25	25 000+	Very Good	Software Engineer
M13	Male	21-35	20 001-25 000	Good	Lecturer

Table 13: The demographic profile of the Mauritian Interviewees

Interviewee ID	Gender	Age Group	Income (Rand)	Computer Literacy	Occupation
S1	Female	46-50	20 001-25 000	Good	Lecturer
S2	Male	Not disclosed	25 000+	Very Good	Software Engineer
S3	Male	36-40	25 000+	Very Good	Consultant
S4	Male	20-25	<5000	Very Good	Student
S5	Male	31-35	25 000+	Very Good	Consultant
S6	Male	26-30	5001-10 000	Adequate	Sales person
S7	Female	21-25	5001-10 000	Good	Student
S8	Male	Not known	Not disclosed	Very Good	Lecturer
S9	Male	Not known	Not disclosed	Very Good	Lecturer
S10	Male	21-25	20001-25000	Good	Financial Analyst
S11	Female	20-25	<5000	Good	Student
S12	Male	26-30	15 001-20 000	Very Good	Lecturer

Table 14: The demographic profile of the South African interviewees

5.2 Usage profile and the level of use of mobile data services

The first part of this section focuses on the usage profile of mobile data services of the respondents while the second section describes the dependent 'use' variable

5.2.1 Usage Profile of mobile data services

Figure 20 below shows the usage profile of the respondents. Both the Mauritian and the South African samples have been combined. Thus, the results below display the usage profile of the respondents in both countries

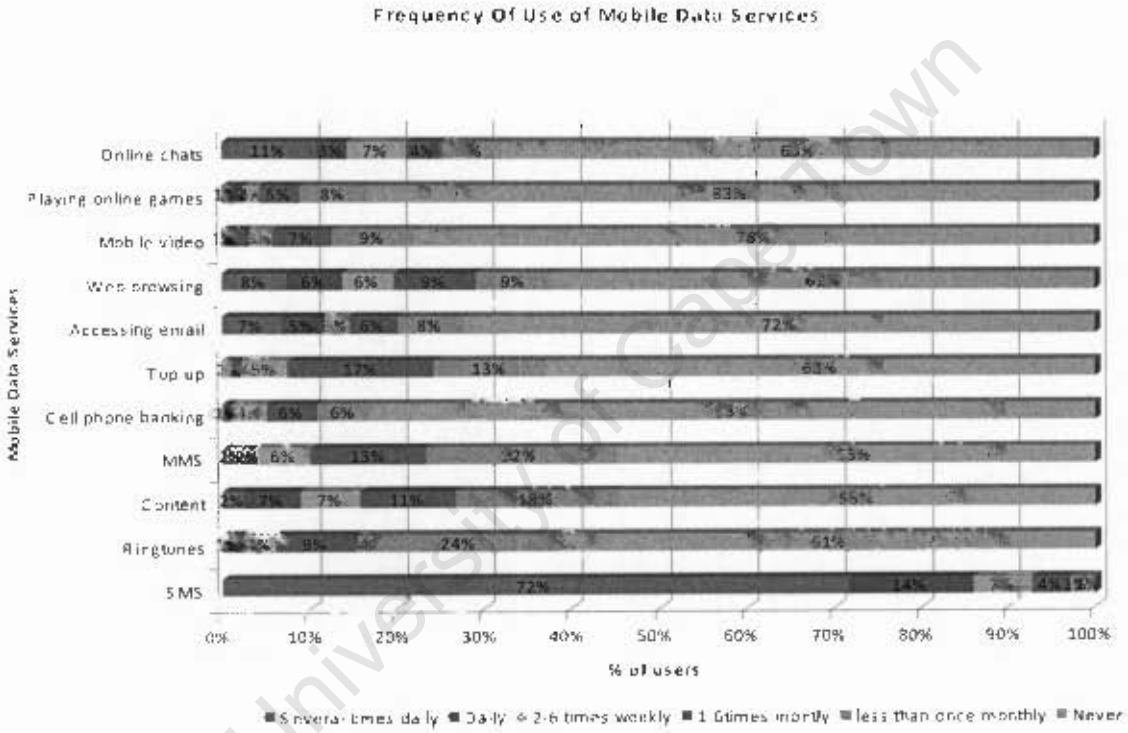

Figure 20: Frequency of use of the combined dataset

SMS is the most frequently used service with 294 respondents (72%) using it several times a day. Downloading of content and MMS are each used by 45 % of respondents. 38% of the sample use web browsing, 32% use online chat services while 28% access email from their mobile devices. 22% of the sample use mobile video. Cell phone banking and playing online games are the least popular services with 83 % of the sample not using these 2 services at all. As for frequency of use, except for SMS, very few respondents use the other services more than once daily. 11% of the sample (45 respondents) use online chats several times daily while 8% (31) use web browsing and only 7% (28) use Email more than once daily. The rest of the services are accessed less frequently as shown by Figure 20. Table 15 below

provides a comparison analysis of the individual usage profile of the Mauritian and South African samples.

	Several times daily		Daily		2-6 times weekly		1-6times monthly		Less than once monthly		Never	
	Mau	**SA**	**Mau**	**SA**	**Mau**	**SA**	**Mau**	**SA**	**Mau**	**SA**	**Mau**	**SA**
SMS	76%	67%	11%	17%	7%	7%	4%	5%	2%	1%	2%	1%
Ring tones	3%	0%	2%	0%	6%	2%	11%	8%	28%	20%	51%	70%
Content	2%	3%	5%	8%	7%	7%	13%	9%	22%	15%	52%	57%
Mms	3%	2%	1%	2%	4%	9%	7%	19%	14%	29%	72%	39%
Cell banking	0%	0%	0%	0%	4%	4%	7%	5%	7%	5%	80%	85%
Top Up	3%	1%	1%	0%	4%	7%	20%	14%	18%	8%	56%	69%
EMAIL	5%	9%	2%	8%	3%	3%	4%	8%	6%	9%	82%	63%
Web browsing	4%	11%	2%	11%	3%	9%	3%	16%	5%	12%	84%	41%
Mobile video	2%	0%	3%	2%	3%	2%	7%	7%	12%	8%	75%	81%
Online gaming	3%	0%	1%	1%	4%	0%	6%	3%	10%	6%	77%	89%
Online Chats	4%	17%	2%	5%	5%	9%	2%	6%	6%	8%	82%	55%

Table 15: Comparison analysis of the usage profile of the Mauritian and South African samples

The comparison analysis shows that there is a similar usage pattern for services such as SMS, downloading of content and cell phone banking. SMS is the most popular service in both countries. In Mauritius, 76% of the sample use SMS several times a day and 11% use it daily while in South Africa, 67% of the respondents use it more than once daily and 17% use it daily.

Approximately 50% of the sample use content services in both countries. While 20% of the Mauritian respondents use cell phone banking, only 15% of South African respondents use it. It should be noted that cell phone banking is still immature in Mauritius as compared to South Africa. At present, in Mauritius, one can only receive a balance enquiry through mobile phones. Only one bank (State bank of Mauritius) and one mobile network provider (Cell plus) offer this particular service. In South Africa, on the other hand, mobile banking is a mature industry with a number of services available to users.

The major differences lie in the usage of MMS, web browsing email, top up and online chats. Whilst MMS, web browsing and email are highly used services in South Africa, very few Mauritians are currently using them. While 61% of South Africans use MMS, 59% use web browsing, 45 % use online chats and 37% use emails, only 28% of the Mauritians use MMS, 16% use web browsing and 18% use online chats and emails. On the other hand, ring tones and top up seem to be more popular in Mauritius with almost 50%

of the Mauritians claiming to download ring tones and 45% of them using Top Up. Approximately 30% of the respondents download ring tones and use top up in South Africa.

5.2.2 Critical Dependent Variable: Use

Use is an important component of Sarker and Well (2003) model (Figure 12). However, because their study is qualitative in nature, they did not operationalise this component. This section proposes a suitable single quantitative measure to represent this dependent variable of the model. The level of use includes both a 'use' and an 'experimentation' aspect. Thus the proposed measure needs to be based on the respondents' current use pattern, counting fully those data services currently being used by the respondents and also incorporating the other data services which the respondents use(d) very infrequently as "experimental use" by giving those services a smaller weight. Thus, the measure should include both variety and extent of data service use. The two options are to either operationalise use as a discrete or a categorical variable.

"Use" as a categorical variable

In this instance, the users are categorised as being low, medium and high users of mobile data services. However, the main problem with this method is determining the cut off values for these three groups. Determining the cut-off boundary values is rather arbitrary and would be different for each type of data service. Therefore, to avoid possible bias in the results, the researcher has attempted to measure the overall level of use as a discrete variable.

"Use" as a discrete variable

The function used to depict the level of use is as follows:

Use = (Number of services used) + ½ Number of services experimented

The use variable can, however, be treated as a continuous variable for statistical computations since it can take more than 20 possible values as shown in Table 16 below. A service is considered "used" if respondents utilise it for at least once a month or more while a service is regarded as "experimented with" if used less than once monthly. Respondents have indicated their current usage pattern of a particular service in section A of the questionnaire.

Therefore, based on this score, the range of the critical dependent variable ranged from 0 to 11. A respondent not using any of the service gets a score of 0, while an extensive user making use of all the services frequently gets a score of 11. Table 16 below illustrates the usage trend of the respondents using the combined dataset of the Mauritian and South African samples. In addition, the usage pattern of each individual sample is also depicted. Figure 21 depicts the cumulative frequency distribution chart of the usage trend of the three datasets. Since, all the graphs show continuous and intuitive curves, the researcher opted for this function to represent the overall level of use.

Level of Use	Number of respondents			Level of Use	Number of respondents		
	Combined Dataset	Mauritius	South Africa		Combined Dataset	Mauritius	South Africa
0	3	1	2	6	25	9	16
0.5	2	1	1	6.5	11	4	7
1	44	26	18	7	14	3	11
1.5	42	25	17	7.5	3	1	2
2	55	30	25	8	6	1	5
2.5	33	19	14	8.5	4	0	4
3	33	19	14	9	2	1	1
3.5	29	12	17	9.5	2	1	1
4	32	18	14	10	2	2	0
4.5	20	6	14	10.5	1	1	0
5	30	8	22	11	1	1	0
5.5	17	10	7				

Table 16: The level of use of mobile data services

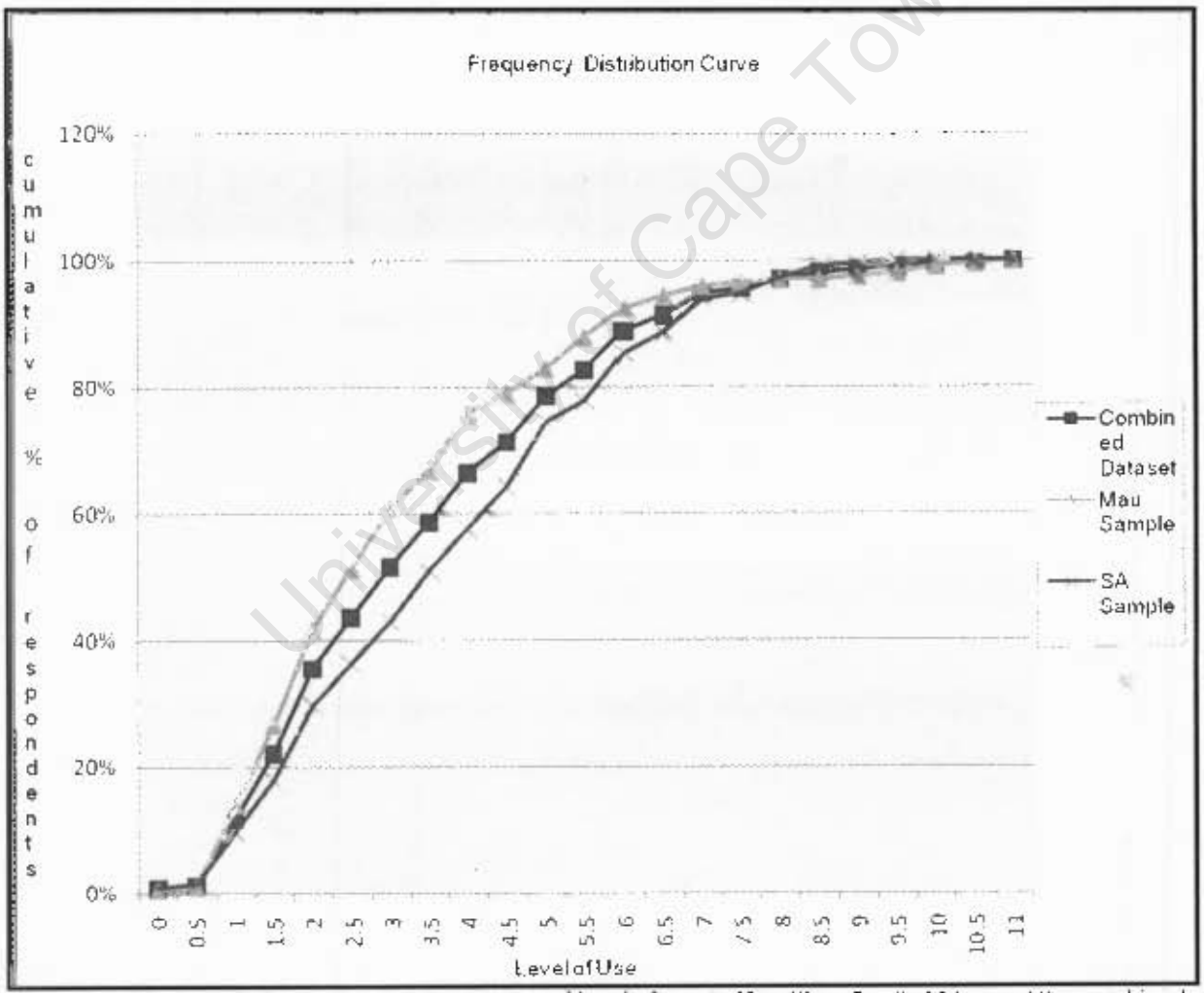

Figure 21: The cumulative frequency distribution of level of use in Mauritius, South Africa and the combined dataset

Sensitivity Analysis

An alternative technique to establish an appropriate measure for the overall level of use is included in Appendix 4A. This alternative method has been used to test the sensitivity of the use variable when using different functions to depict its value. This particular measure of the level of use has also been used to validate the different hypothesis proposed but a comparison analysis shows that the above proposed method representing the level of use as a discrete variable generates better results.

5.3 Reliability and Validity Testing

Reliability and validity tests are crucial to ensure the dependability, consistency and strength of the test items proposed in the new survey instrument (Boudreau, Gefen & Straub, 2004). The researcher has used Reliability/Item analysis (Cronbach Alpha) to test for reliability and factor analysis to test the validity of the variables. Both of these tests have been first performed using the combined dataset followed by each country's dataset. For all the subsequent quantitative analysis, the researcher has first used a combined dataset of the two countries. This is deemed important as the main research objective is to holistically validate the Sarker and Wells (2003) model in order to assess whether this model can be used as a standard platform to evaluate the use of mobile data services in any country. Individual country differences are revealed after the model is tested using the overall dataset. Therefore, all the quantitative tests have been performed three t imes consecutively; first on the combined dataset then on each individual country's sample.

5.3.1 Data Preparation

The different questions (test items) related to a particular construct have been grouped together as shown in Appendix 5A. Most of the constructs have three or more associated test items, however some have only two.

5.3.2 Reliability Measures

Using Statistica, Cronbach Alpha values have been sequentially computed on the constructs having three or more associated test items on the combined dataset, Mauritian and South African samples. For the constructs having only 2 related test items, a correlation coefficient has been used to show reliability.

Table 17 below depicts the Cronbach Alpha values and correlation values of the main constructs of the Sarker and Wells model for the three datasets. Appendix B displays a more detailed result of the reliability tests showing the Cronbach Alpha values of each test item and the new Cronbach Alpha value if the test item is deleted (Alpha if Deleted) . Previous studies have used Cronbach Alpha values within the range of 0.5 to 0.7 as a cut off value to indicate good construct reliability (Ha, Yoon & Choi, 2007; Carlsson et al., 2006; Nysveen et al., 2005). The results in Table 17 below show that most of the Cronbach Alpha values of the three datasets are higher than 0.6 and 0.7 hence indicating high reliability of constructs. Similarly, the correlation values show good correlation amongst the different test items. The correlation matrix of

the combined dataset with the factors having two related test items is included in Appendix 5B1 (highlighted in green). Appendix 5B2 and 5B3 depicts the correlation amongst grouped factors and the use variable of the South African and Mauritian samples respectively.

A comparison analysis of the Cronbach Alpha values of the constructs in the two countries shows that most of the values have similar trends. The main area of difference lies in the Cronbach Alpha values of the functional, cost and technology adoption constructs as highlighted in Table 17 below. These differences may be explained as follows: One of the test items related to the constructs may have been phrased badly leading to contrasting responses in the two countries. The respondents of the two samples may have thus understood and answered the questions differently. This discrepancy was unfortunately not uncovered through the pilot study.

For instance, a closer look at the detailed results of the different test items in both countries (in Appendix 5A1 and 5A2) shows that the Cronbach Alpha value of cost will increase considerably if test item Bcos03 is dropped. The same applies for technology adoption. The deletion of test item Badp03 can increase the overall Cronbach Alpha value of technology adoption substantially in both countries leading to a more consistent value (from 0.43 to 0.64 in Mauritius and from 0.27 to 0.65 in South Africa). This, therefore, confirms the earlier reason given for the difference. These two test items have been deleted from the original questionnaire since they also show poor internal validity, as shown below in the validity testing section.

The correlation values of the two samples also show similar trends for most of the constructs except for prior exposure (as italicised in Table 17) where a considerable difference is noted. The same reasons as mentioned above may account for this difference.

Factor	Construct	Alpha/Correlation of Mauritian sample	Alpha/Correlation Of SA sample	Alpha/Correlation Of Combined sample	Test Performed
Adoption Outcome	Psychological	0.79	0.79	0.79	Cronbach Alpha
	Relationship quality	0.72	0.80	0.76	Cronbach Alpha
	Functional	0.45	0.64	0.54	Cronbach Alpha
Context	Symbolism	0.75	0.78	0.77	Cronbach Alpha
	Cost incurred	0.26	0.46	0.34	Cronbach Alpha
	Peers	*0.66*	*0.55*	*0.71*	***Correlation Coefficient***
Individual Characteristics	*Prior exposure*	*0.26*	*0.59*	*0.54*	***Correlation Coefficient***
Mobility	Convenience	0.62	0.63	0.63	Cronbach Alpha
	Safety	0.31	0.38	0.33	***Correlation Coefficient***
	Freedom to access information	0.64	0.68	0.66	Cronbach Alpha
Task Characteristics	Urgency	0.47	0.55	0.53	Cronbach Alpha
	Formality	0.47	0.55	0.53	Cronbach Alpha
	Volume	0.47	0.55	0.53	Cronbach Alpha
Technology Characteristics	Current phone features	0.83	0.80	0.78	Cronbach Alpha
	Ease of use	0.61	0.62	0.63	Cronbach Alpha
	Network capability	0.30	0.20	0.25	***Correlation Coefficient***
	Enhanced phone features	0.76	0.62	0.78	Cronbach Alpha
User outcomes	**Final technology adoption**	0.43	0.27	0.37	Cronbach Alpha

Table 17: Cronbach Alpha and correlation values

5.3.3 Validity Testing

After the reliability tests, factor analysis has been conducted to test for construct validity. The tests have been carried out using Varimax normalized as the rotation method as the factors loaded more clearly and distinctively within this option. A cut off value of 0.5 has been used initially. However, in certain instances where a test item loads by itself or where some odd loadings have been noted, the cut off value has been lowered to reach relevant conclusive interpretations. Table 18 below displays the factor loadings of the combined dataset. Appendix 5C1 and 5C2 shows the detailed factor loadings of the Mauritian and South African samples and a comparative analysis between the two countries. The complete set of factor analysis results of the three datasets is also included in Appendix 5C3 to 5C5.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Observations
Bsym01	0.64							The symbolism and psychological test items load together.
Bsym02	0.64							
Bsym03	0.71							
Bsym04	0.68							
Bsym05	0.66							
Bpsy01	0.71							
Bpsy02	0.60							
Bpsy03	0.67							
Btec02		0.75						Except for test item 1 and 8, all the current phone features test items load together. Using a cut off value of 0.3 instead of 0.5 shows that 2 'ease of use' test items also load on the same factor.
Btec03		0.77						
Btec04		0.50						
Btec05		0.53						
Btec06		0.81						
Btec07		0.77						
Btec09		0.53						
Btec10		0.37						
Beas01		0.44						
Beas04		0.30						
Bcon01			0.61					The 3 convenience test items load with the urgency test items on factor 3, indicating a link between these set of variables.
Bcon02			0.62					
Bcon03			0.35					
Burg01			0.75					
Burg02			0.52					
Bfut01				0.48				All the enhanced phone features test items load cleanly on factor 4.
Bfut02				0.80				
Bfut03				0.82				
Bfut04				0.82				
Brel01					0.54			4 of the 5 relational test item load on factor 5. Relational test item 4 shows poor loading (0.14). Lowering the cut off value to 0.3 shows the loading of 2 functional test items and a technology adoption test item.
Brel02					0.78			
Brel03					0.72			
Brel04					0.14			
Brel05					0.67			
Bfun02					0.35			
Bfun03					0.32			
Badp03					0.38			
Badp01						0.52		One of the technology adoption test item loads on itself.
Bcos01							0.81	2 out of the 3 cost items load together.
Bcos02							0.75	

	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Comments
Bexp01 Bexp02	0.82 0.78							The 2 exposure factors load together.
Bpee01 Bpee02		0.64 0.64						The 2 peer test items load together.
Bfun01 Bfun03			0.76 0.54					2 out of 3 functional test items load on factor 10
Bsaf01 Bsaf02				0.48 0.60				The 2 safety test items load together.
Beas01 Beas02 Beas04					0.31 0.48 0.55			3 out of the 4 ease of use test items load on factor12.
Binf01 Binf02 Binf03						0.57 0.53 0.62		All the freedom to access information factors load on factor 13
Badp02 Badp03						0.43 0.30		Lowering the cut value to 0.3 shows that 2 out of the 3 technology adoption test items load on the same factor in addition to 1 volume test item.
Bvol02						0.60		
Btec01 Btec09 Beas01 Beas02 Beas03							0.40 0.51 0.35 0.36 0.43	2 technology test items and 3 out of the 4 ease of use test items load on factor 14.
Bfor01 Bvol01 Bsaf01							0.35 0.61 0.43	2 test items relating to task characteristics (volume and formality) and one odd loadings of a safety test item also load on factor 14.

Table 18: Factor loadings of the combined dataset

Interpretation

Most of the test items show high clean loadings. The test items related to symbolism and psychological constructs load together in all the 3 samples. This is an expected result as the questions associated with these 2 constructs are very similar. The current phone features and some of the ease of use test items load together on factor 2. This is attributed to the fact that both current phone features and ease of use broadly relate to the technology factor in the Sarker and

Wells (2003) model. Likewise, test items relating to convenience and urgency load on the same factor indicating a high correlation between these 2 constructs as shown by the correlation coefficients values in Appendix 5B1 (highlighted in yellow).

Test items related to enhanced phone features, functional, relational, cost, exposure, peers and freedom to access information show high and clean loadings. 2 of the cost test items (Bcos01 and Bcos02) load together for cost while test item Bcos03 shows poor validity. This observation is also prominent in the results of both countries. Since the Cronbach Alpha value of test item Bcos03 shows poor internal reliability as well, this test item has been subsequently dropped from the questionnaire.

Besides urgency, the remaining task characteristic constructs (volume and formality) do not show clean loadings. While only one volume test item, Bvol01, loads together with the formality test item (Bfor01) on factor 14, test item Bvol02 loads with constructs of freedom to access information and ease of use. This may be attributed to the fact that all these test items broadly relate to the perceived advantages of mobile data services. Furthermore, the correlation matrix reveals a significant correlation value amongst these test items.

All the test items loaded on 14 factors and most of the test items relating to a particular construct showed clean and high loadings as shown by Table 18. Ideally, all the test items should have loaded on 19 factors since there are 19 constructs being investigated. However, it should be noted that factor analysis only produces meaningful results if the data is "truly continuous and multivariate normal" (O'Connor, 2005 as cited by Joubert 2006). Therefore, the results obtained are acceptable and indicate high validity of constructs.

The above item reliability and the factor analysis tests show that the data collected are both reliable and valid, hence, allowing the researcher to proceed with the testing of hypotheses.

5.4 Regression Tests and Model Testing

This section focuses on validating the model through the testing of hypotheses. The hypotheses tested are displayed in Table 19.

Hypotheses	Description	Section
H_{1a}	Individual characteristics (country, age, culture, computer literacy and prior experience) influence the level of use of mobile data services.	5.4.1
H_{1b}	Context factors (cost, symbolism and peers) influence the level of use of mobile data services.	5.4.2
H_{1c}	Modality of mobility influences the level of use of mobile data services.	5.4.3
H_{1d}	Task characteristics (urgency, formality and volume of communication) influence the level of use of mobile data services.	5.4.4
H_{1e}	Technology characteristics (current phone features, ease of use, network capability and enhanced phone features) influence the level of use of mobile data services.	5.4.5
H_{1f}	Relational, functional and psychological outcomes influence the level of use of mobile data services	5.4.6
H_{1g}	The level of use impacts the functional, psychological and relational outcomes.	5.4.7
H_{1h}	The user outcomes impact the final adoption outcome	

Table 19: Hypotheses proposed

Multiple regression has been used to test the above hypotheses. Although each of the constructs of the model has been tested using simple linear regression, the results have not been considered. Simple regression overlooks the relationships which may exist amongst variables and generally, a variable is always influenced by other variables to a certain extent. Multiple regression takes into account these variations, thus making the results more significant.

Multiple regression has been carried out three times consecutively on hypotheses H_{1a} to H_{1b}. The first set of regression has been carried out on the combined dataset of the Mauritian and South African samples to test the Sarker and Wells (2003) model as a whole without looking at individual country differences. The second and third sets of multiple regression look at the model by focusing individually on each country's sample. A two-tail test has been used on all the hypotheses using a significance level of 5%. With the exception of hypothesis H_{1a}, a qualitative discussion (analysis) follows all the subsequent quantitative tests in section 5.4.

The qualitative discussion has been used in three different aspects. In some instances, the qualitative analysis lends support to the quantitative analysis and confirms the results while in other cases; it either provides a deeper level of understanding of the results obtained through quantitative lens or contradicts the findings of the quantitative analysis.

5.4.1 Individual Characteristics

H_{1a}: Individual characteristics (gender, income, age, occupation, computer literacy, country and prior experience) influence the level of use of mobile data services.

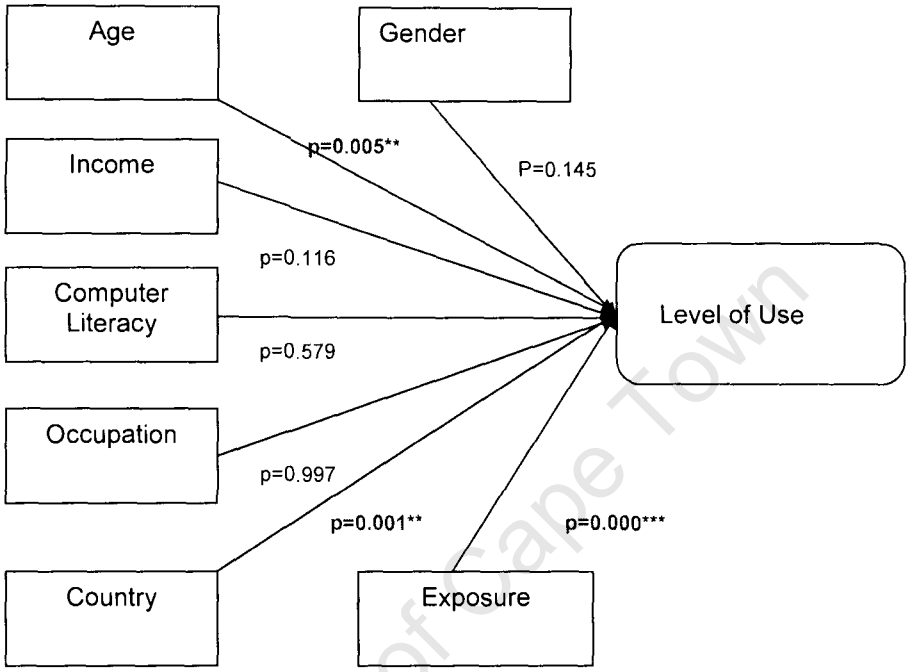

Figure 22: Relationship between individual factors and level of use

The results illustrate that only 3 (age, country and exposure) out of the 7 individual characteristics constructs show significant influence on the level of use of mobile data services as shown by Figure 22 above. Together, they account for 16% of the variance in the model. Table 20 below illustrates the beta, t and p values of the individual characteristics in all the three datasets. Since country is a noteworthy factor influencing the level of use of mobile data services as denoted by the small p-value of 0.001, the results from each of the countries are expected to differ substantially.

In this particular situation, country represents a bio-demographic factor influencing level of use of mobile data services. However, generally, country is seen as a more situational variable rather than a demographic one. Country as a situational variable looks at the macroeconomic condition of a country, that is, its geographical, economical, cultural and technological conditions. Section 5.6 looks at the macroeconomic facet of the two countries and proposes a contingency model based on the results obtained.

Mauritius vs. South Africa

Table 20 below displays the beta, t-value and p-values of the three datasets. While the beta values show the importance of the variables, the t and p-values show the statistical significance of the variables. It should be noted that the negative beta and t-values result from the use of a reverse scale. The Likert scale in Section B of the questionnaire ranges from strongly agree to strongly disagree with a score of 1 denoting strongly agree and a score of 7 for strongly disagree, while the scale for low to high users of mobile data services ranges from 1 to 11. Therefore, for almost all the tests, the beta and t-values are expected to be negative.

Individual Factors	Mauritius			South Africa			Combined Dataset		
	Beta	T-value	P-value	Beta	T-value	P-value	Beta	T-value	P-value
Gender	0.008	0.306	0.914	-0.086	-1.263	0.208	-0.066	0.205	0.168
Age	-0.071	0.111	0.458	-0.299	-3.307	**0.001****	-0.181	0.075	**0.005****
Income	-0.089	0.116	0.349	-0.100	-0.991	0.323	-0.108	0.089	0.116
C Literacy	0.045	0.196	0.552	-0.105	-1.550	0.123	-0.028	0.123	0.579
Occupation	0.053	0.393	0.562	-0.045	-0.502	0.616	-0.002	0.273	0.977
Country							0.170	0.215	**0.001****
Exposure	-0.317	0.105	**0.000*****	-0.185	-2.874	**0.004****	-0.264	-5.560	**0.000*****

Table 20: The beta, t and p values of the individual factors

Further analysis shows that while exposure is a significant factor influencing use of mobile data services in both countries, age exerts no influence on the level of use in Mauritius. While, the demographical factors only explain 12% of the variance in Mauritius, that of South Africa is 20%. This percentage of variance explained is relatively low in both countries indicating that there may be other individual factors influencing the level of use of mobile data services.

Except for age, none of the demographic variables show direct significant influence on the level of use of mobile data services. Since these results are remarkably surprising and unexpected, the researcher has performed an additional test to verify whether the Sarker and Wells (2003) model is a multi stage model where the demographic factors influence the other independent factors (context, mobility, task and technology) of the model rather than directly influencing the level of use. The detailed results are displayed in section 5.5. The test provides significant statistical evidence of the influence of the demographic variables on some of the independent variables of the model instead of the level of use as shown in Table 28.

5.4.2 Context

Quantitative Analysis

Cost, peers and symbolism have all been extensively validated in the numerous mobile commerce studies (Luarn & Lin, 2004; Brown et al., 2005; Gilham & Van Belle, 2005; Carroll et al., 2003). The Sarker and Wells (2003) study stated that all the three factors show significant influence on the level of use of mobile data services, hence this study is expected to disclose similar results.

H_{1b}: Context factors (cost, symbolism and peers) influence the level of use of mobile data services.

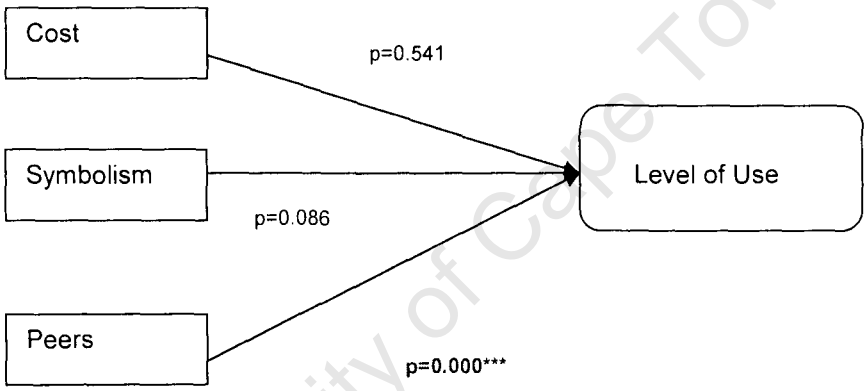

Figure 23: Relationship between the context variables and level of use

The results show that only 1 (peers) out of the 3 context constructs significantly influences the overall level of use of mobile data services as shown by Figure 23 above. Together, they account for 7% of the variance in the model. Table 21 below displays the results.

Mauritius vs. South Africa

	Mauritius			South Africa			Combined Dataset		
Variables	Beta	T-value	P-value	Beta	T-value	P-value	Beta	T-value	P-value
Cost	-0.012	-0.169	0.866	-0.036	-0.529	0.598	-0.030	-0.612	0.541
Symbolism	-0.153	-1.958	0.052	-0.089	-1.248	0.213	-0.090	-1.723	0.086
Peers	-0.162	-2.076	**0.039***	-0.232	-3.180	**0.002****	-0.206	-3.886	**0.000*****

Table 21: The beta, t and p values of the context factors

A comparison analysis of the Mauritian and South African samples shows that only peers show significant influence on use of mobile data services in both countries as depicted by Table 21 above. Although cost and symbolism show no statistical support in any of the countries at a 5%

significance level, symbolism shows statistical support at a 10% significant level in Mauritius and in the combined dataset. Therefore, it can be implied that a larger sample may have produced more significant results for symbolism in both countries.

The next section provides qualitative support for the results obtained above in both countries. Each of the constructs (cost, symbolism and peers) is discussed separately.

Qualitative Analysis

Cost

As will be discussed below, the results of the quantitative and qualitative analysis relating to cost in both countries are contradictory. Statistically, there is no evidence of cost influencing the level of use of mobile data services while the qualitative analysis shows otherwise. The qualitative analysis shows that in both countries participants refer to different aspects of cost and the subsequent impact on the level of use of mobile data services. The first type of cost relates to the cost of transactions (the cost the interviewees have to pay for using mobile data services) while the second type of cost refers to the cost of handsets and the third one to the perceived risk of losing money while transacting.

Cost of the transactions

Mauritian respondents assert that only mobile data services such as SMS and Top Up are priced reasonably while other services are still relatively expensive. Very few interviewees are using services such as ring tones, content, web browsing, MMS and chats due to the high cost. They are keen to use services which provide them with 'value for money'. However, at present very few services actually offer them with 'value for money'. They are reluctant to try services where cheaper alternatives are available. Examples include sharing information using Bluetooth instead of MMS where possible, or using Internet on their personal computers (PC) or laptops to download ring tones and content. Low cost of transactions and promotional costs of services were also seen as an initiative to try new services being introduced.

"I [...] use SMS constantly but will think thrice before using MMS."-M10

"I will try new services if I find they benefit me and if they provide me with 'value for money'."-M2

South African respondents find services such as ring tones, MMS and online games, where they have to subscribe to the service provider, still very expensive while services such as chats, cell phone banking and email, where they only pay for the data usage fee, relatively cheaper. They also mention that if costs of these services are reduced, people will be encouraged to use them more frequently. For instance, one interviewee mentions that some useful services such as

'Look4me' provided by Vodacom, despite being very beneficial and useful, are not yet affordable to the average person.

"Look4me is certainly a very useful service in the face of all the kidnapping and hijacking that occurs in SA but this service is priced at around R11 per month and I believe this is still relatively expensive and one will not be using unless the situation really arises."-S4

Furthermore, even though cost is an influential factor influencing the level of use of mobile data services, most interviewees say that they will not stop total use of a service if the cost of a useful service increases. They may not use it as much as they would like to but they will still make use of it in urgent and necessary situations. On the other hand, if the cost of services used for entertainment purposes increase, interviewees state they will most probably stop usage and look for cheaper alternatives.

Finally, some interviewees mentioned that although the use of mobile data services may be convenient and make things easier, it nevertheless still adds up to their overall expenses. They, thus, prefer using the traditional alternatives to cut back on any new expenses.

"Even though mobile data services are becoming an integral part of our lifestyle, there are also different expenses which need to be catered for and mobile data services only add to these expenses, therefore, sometimes it is more economical to rely on traditional alternatives."-M1

Cost of handsets

Respondents in both countries feel that the cost of handsets is a major factor inhibiting use of mobile data services. Only 3 out of the 13 Mauritian interviewees have 3G cell phones and 2 of them do not have a GPRS enabled phone. They point out that Mauritius has no contract phones offer, as in other countries, and this is seen as a key inhibitor of use in addition to cost of handsets.

"Probably the main problem we face is with regards to the price of a handset. For instance, the 3G handsets are still quite expensive and technically the public at large has not had access to those services."-M7

"A good phone which is Internet enabled is more than 10000 [rupees], people in Mauritius are getting 15000 rupees a month on average, so not everyone can afford one."-M12

Most South African interviewees using mobile data services extensively have top range handsets and agree that the handset itself is a major factor influencing use of mobile data services. Interviewees not using mobile data services extensively state that their mobile phones do not have the required options for mobile data services and buying a new handset would be too expensive, hence they are unable to try out the different mobile data services in the market.

"A nice user friendly handset is costly and if one cannot afford it, then use of mobile data services is already limited. "-S7

"I am interested in 3G but the handset is too expensive and it is not a necessity right now, so this is why I did not get it. I would have used mobile data services more if I had a 3G phone."- S6

Perceived Monetary Risk

Respondents express their concerns with the technology risks which is partly cost related. Joubert (2006) identified this concept previously. Similarly, in this study, respondents from both countries have voiced their concerns with regards to the monetary risks/issues which may arise while using mobile data services. Respondents say they are unaware of the security measures provided for certain services such as cell phone banking, hence they are apprehensive to transact online with the fear of losing money. South African interviewees mention that they do not think that cell phone banking has been thoroughly tested and totally secure. They are thus very cautious and only use the service on a limited scale to avoid any possible monetary loss.

"I am concerned of the security features of cell phone banking and sometimes because of this, I do not use it as frequently as I could have. I am very cautious."-S2

On the other hand, Mauritians perceive mobile data services which are not SMS based to be risky. Mauritian respondents say there is a lack of transparency in the way some services are billed and there is also the fear of the technology not working and still be charged for trying to use the services.

"For instance, I tried sending SMSes to get information [about] weather. I sent 4 SMSes but never got any response. I still got charged for 4 SMSes."-M6

Perceived monetary risk is thus a major inhibitor of use in both countries.

The above section shows that while, statistically, there is no evidence of cost influencing use mobile data services, the qualitative analysis shows otherwise. Interviewees in both countries view cost as a factor which may encourage or inhibit use of mobile data services. This difference may be attributed to the limited number of cost questions in the questionnaire. There are only 2 cost related questions in the questionnaire which only focus on whether cost of mobile data services is fair. There are only a small number of respondents using mobile data services extensively in both countries. Therefore, respondents may have answered the quantitative cost questions based solely on the use of the services they are currently using. For instance, the cost of SMS is remarkably cheap in both countries and this service is incorporated in the everyday life of almost every Mauritian and South African, hence, cost is not a factor in this case. However, the

interviews have provided the respondents with a lot of scope to voice their perceptions and concerns and they unanimously regard cost as a significant factor.

Symbolism

While the quantitative results found that symbolism is not a factor influencing use of mobile data services in either country, the qualitative analysis allows some interesting points to be uncovered. Similar to cost, symbolism also has different aspects in both countries. These relate to fashion, status symbol, self-image and functional efficiency.

Fashion/Status

Interviewees in both countries think that the cell phone is regarded as a fashion item by others although they do not personally think so. They believe that people nowadays are using mobile phones more as a fashion item as compared to the earlier years. The interviewees say that although having nice handsets is a fashion trend these days, they do not use mobile phones to convey fashion but they believe that other people especially teenagers do. However, most interviewees express their desire to possess nice handsets whether or not they are using mobile data services. They believe that the handset in itself is the main attraction towards getting a new phone. One interviewee mentions that she needed her handset to match her all her outfits and to be small enough to fit in any size of handbag.

"To [me] the most attractive part of the mobile phone is the handset itself not quite the service. For most of the people it is about having a flashy handset."-M7

"I needed a black phone, so it matched all my outfits, shoes and small enough so it fits in all my bags. It is a fashionable item."-S7

"MDS didn't really change my lifestyle but having nice cell phones is like a trend."-M3

Similar to fashion, most interviewees say that they do not think having a top range phone or the use of mobile data services make them more prestigious than others. Although they do not think mobile phones convey status in general, they are still not comfortable using old-fashioned phones in their work environment.

For me mobile phones or mobile data services is not a status symbol, but if I see my colleague using a modern phone then definitely I won't remove my old fashioned phone from my bag. It is embarrassing. "-M12

Two interviewees have been straightforward in stating that a mobile handset can show a person's position in the corporate world while another interviewee says that he brags about the different mobile data services he is using to his spouse.

"Lots of the time, you can tell someone's business position from the phone they have. It happens in the work place. Nice cars, phones, clothing…[These] kind of things is expected in a work environment, well I suppose socially as well…but having said that I won't buy the most expensive phone."-S10

In both countries, most interviewees do not directly admit that mobile phones are used to convey fashion or status. Instead, they blame others for using mobile data services as a fashion item or a status symbol. A very thin line between fashion and status is noted. Some interviewees do not clearly distinguish between these two terms and they have used them interchangeably as shown by the following quote.

"Earlier, having a nice pair of NIKE shoes was a status symbol, now having a nice mobile phone with all the new data services is a fashion item"-M13

Functional Efficiency/ Self-Image

In both countries interviewees say they do not use top range cell phones to show prestige or fashion. Instead, most interviewees state they have bought new, top range mobile phone for the functionality it provides them, which in turn enhances their efficiency. Others believe having a decent mobile phone with all the multimedia features and 3G technology is convenient when constantly on the move.

"I look at a phone for its functionality more than the fashion side of it. Some people consider it fashionable but not for me…It is convenient to have a phone with all different features, cameras, mps, calendar, email, web browsing….it is just easier to carry one small device instead of separate devices"-S2

Interviewees also mention that using new mobile data services allow them to improve their self-image as it shows they keep up with technological innovations.

"It shows that I [am] able to keep track of innovations and development."-S4

Functionality and self-image are discussed in more detail in the user outcomes section (5.4.6). Similar to the quantitative results, the qualitative results show that none of the interviewees think symbolism directly influences the level of use of mobile data services. However, most of them believe that other people use mobile data services as a fashion item or an image builder.

Peers

The substantial influence of peers, on the extent of use of mobile data services in both countries, is confirmed by the qualitative analysis. Interviewees in both countries see their peers as prominent influence on their level of use. The respondents mention that they become more curious and are more likely to try and use a particular service if their peers are already using it.

"*I tried Mxit because I wanted to see what the whole fuss was about."-S3*

Critical mass is also a crucial factor influencing use of mobile data services. Certain services are only useful when a substantial number of people use them. While some interviewees have started using various mobile data services because of their peers, others have stopped usage of certain services because their friends/colleagues do not use those services.

I do not use MMS and video calling because I think not a lot of people are using it yet [...] so there is no point in using it."-M4

"I am no [longer] using Mxit as most of my friends stopped using it"-S10

Another aspect of peers, which has been revealed through the qualitative analysis, is the significant influence of 'word of mouth'. Although the marketing and publicity surrounding the launch of new services increases curiosity, it is not solely responsible for convincing people to try out the new services. Interviewees mention that if their peers are using a service and are happy about it, they automatically become more curious to try out that particular service. On the other side, if their peers criticise the service, they are reluctant to try it out. Some participants even point out that they will not try new services unless their peers try them first and subsequently recommend them the service.

"When a service is being introduced I will wait for a friend to try it out first and then if [...] he recommends it, I will try it."-M3

"The most effective way of media marketing is word of mouth communication. I think if a service is useful, people will tell other people and it will be indirect media. This is the most effective process of adoption. The more colleagues are using it and are happy about it, the more one is likely to use it as well."-S3

"I will be curious about new services but generally, before trying it out, I will talk to people and find out more about it."-S6

5.4.3 Mobility Variables

Quantitative Analysis

The mobility factors are one of the most prominent variables influencing level of use in the Sarker and Wells (2003) study. People who are constantly on the move (travelling, visiting and wandering) are more bound to use mobile data services as they are convenient to use, allow them to access information from anywhere at any time and gives them a sense of personal safety. Hence, in this study, it is expected to find convenience, freedom to access information and safety to significantly influence the level of use in both Mauritius and South Africa.

H_{1c}: Modality of mobility (convenience, freedom to access information and safety) influences the level of use of mobile data services.

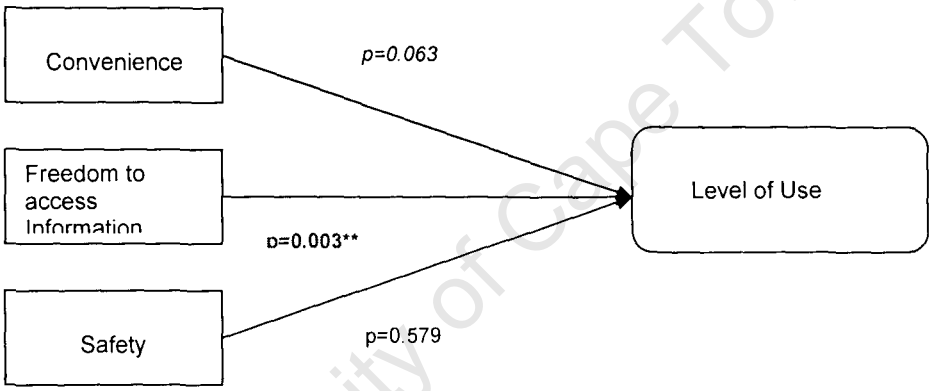

Figure 24: Relationship between the mobility variables and level of use

The results show that only 1 mobility construct (freedom to access information) shows significant influence on the level of use of mobile data services. This relationship is depicted by Figure 24 above. However, with a p- value of 0.063, convenience also shows some evidence of impacting the level of use of mobile data services at a 10%significance level. Although the relationship is not as prominent as the freedom of use, it nevertheless shows some impact on the overall sample. Therefore, it can be argued that a larger sample may have generated more significant results at a 5% significance level. Furthermore, as mentioned above, a two tailed p-test has been used for all the tests. A one tail test may have produced more significant results.

Mauritius vs. South Africa

Mobility Variables	Mauritius			South Africa			Combined Dataset		
	Beta	T-value	P-value	Beta	T-value	P-value	Beta	T-value	P-value
Convenience	-0.107	-1.252	0.212	-0.106	-1.382	0.168	-0.107	-1.867	*0.063*
Freedom to access information	-0.046	-0.523	0.601	-0.259	-3.512	**0.001****	-0.167	-2.959	**0.003****
Safety	-0.075	-0.909	0.364	0.081	1.128	0.261	0.030	0.556	0.579

Table 22: The beta, t and p values of the mobility factors

A closer look at the results of the two countries illustrate that none of the mobility factors show evidence of any influence on the use of mobile data services in Mauritius as shown by Table 22 above. The beta values of the three variables show that convenience is more important than freedom to access information and safety in Mauritius while freedom to access information is the most significant variable in South Africa. Mobility factors explain 9% of the variance of the model in South Africa while they only account for 4% of the variance in Mauritius.

This lack of significance of the mobility factors is a rather unexpected result as mobility of mobile phones has been touted as one of the primary advantages of using mobile data services. Several studies have focused solely on the mobility aspect provided by mobile phones (Ling & Haddon, 2001). The qualitative discussion below provides some explanations to this astounding result.

Qualitative Analysis

Convenience and Freedom to access information

The qualitative analysis shows that although convenience and freedom to access information are considered as perceived relative advantages of mobile data services in Mauritius, the interviewees do not associate these two factors with mobility (travelling, visiting and wandering). As mentioned by one of the interviewee, this result is attributed to the size of the Island. Since Mauritius is a small Island, people do not travel a lot. It does not take a long time to travel from home to office and vice versa. Therefore, there is no urgent or constant need to use any mobile data services while travelling and visiting family or places. The journey is so short that people would prefer to wait until they reach their home or office to use any required mobile data service.

"Mauritius is a small island so if you do not have a very long journey, by train or by bus, there is no urgency for someone to constantly check his email. One can check his mail at the office, then go back home and check his mail at home again. What I mean to say is that the journey is so short that there is no real need for it. "-M7

Using mobile data services while travelling or visiting is linked to distraction and additional stress instead. Another reason put forward is that mobility is taken for granted nowadays. People are forgetting that the principal reason for having mobile phones is to be more mobile and they no longer consider mobility as a factor which encourages use of mobile data services.

"I am so used to use my mobile phone while travelling [that] I take mobility for granted. Mobility is [the] primary function of having a phone, however, one tends to forget about it."_M4

These results can also be explained by the fact that the sample under investigation is not constantly on the move. Mobility factors would be more associated with use of mobile data services, if the respondents were constantly on the move for work purposes. For instance, sales people are more likely to engage in use of mobile data services while they are moving around for work purposes. In Mauritius, hardly any respondents are constantly on th e move for work purposes, hence explaining the results.

Similarly, in South Africa, the respondents do not associate convenience to mobility. While all the interviewees agree that having a mobile phone and being able to use mobile data services at any time is indisputably convenient in terms of time, efficiency, and accessibility of information, they still do not link convenience to mobility. Convenience is discussed in more detail as a perceived relative advantage of mobile data services at a later stage.

On the other hand, freedom to access information is a significant factor linked to mobility. They associate freedom to access information to services such as content, MMS, email, web browsing and online chats. Interviewees state that mobile data services allow them to access information anytime from anywhere. This is important particularly when they are going to different cities, they do not have to worry about finding an Internet café or carrying a laptop. Instead, they can move and freely communicate and access information whenever and wherever they need to.

"I use it a lot while travelling, [for instance] if I am in Bellville [and not] close to my PC. I will use my mobile to check my email or for banking before I use an Internet café."-S9

Safety

Similar to the quantitative analysis, the qualitative analysis does not provide much evidence that use of mobile data services gives interviewees a sense of safety. Instead, interviewees mention the security issues associated with use of mobile data services. Respondents in both countries are noticeably worried about the potential security risks which may arise while using certain services. As mentioned earlier, monetary risks depict the fear of losing money while transacting online due to the lack of visibility of the security aspects of some new services such as cell phone banking.

"There is also the security issue, Are the new services being introduced secure enough? For instance, how secure is cell phone banking."-S8

"Well some of the technology has not been tried and tested enough. For instance cell phone banking, I am still reluctant to try it as I think it is risky and I won't use it until I am sure that it is secure enough. "_S3

Respondents are also worried about the fear of losing their cell phones. Losing a cell phone means losing all their contacts and this is a serious drawback, as most of them do not keep a backup of their phone book. In Mauritius, two interviewees mention the fear of spoofing and were anxious about the security of their loved ones as cited in the quote below.

"Your child receives a message from your number telling him or her to meet you at x place and you as a parent know nothing about it because the hacker has entered the telephony system and has sent your child asking him to meet you at [a certain] place This is almost a kidnapping case which is very much possible-"M2

The fact that interviewees do not associate safety to use of mobile data services may be attributed to the high cost of useful services which may protect people from dangerous incidents such as hijacking and kidnapping as mentioned in section 5.4.2, in the cost section. Unless the need has arisen, people would not be keen to subscribe and use services such as Look4me.

Only one interviewee mentions how the use of mobile data services, SMS in particular, gives her a sense of great security. When she was stuck amidst the tsunami in Kerala (India) in 2004, her cell phone was the only way she could contact her family and friends to know what was happening and she referred to her cell phone as 'GOD' during that particular incident.

"Actually from my own personal experience, I realized the importance of cell phones in today's lifestyle. My cell phone gave a sense a security at that time. It was GOD for me when I was in a trouble. Actually at that time I was in a tsunami, I was in Kerala at that time, my parents were in Mauritius. I did not know what was happening and at that point of time the only thing which could connect me to my family and friends was my mobile phone. I could SMS my friends and asked what was happening and could SMS my parents to tell them I was ok. At that time, having my phone on me was the greatest gift I could have."-M1

5.4.4 Task Characteristics

Quantitative Analysis

The urgency questions focus on whether mobile data services are ideal to use in urgent situations, while the formality question judges the suitability of using mobile data services for formal purposes such as in the workplace. Lastly, the volume questions rate the appropriateness of mobile data services in situations where there is a high amount of information to convey.

H_{1d}: Task characteristics (urgency, formality and volume) influence the level of use of mobile data services.

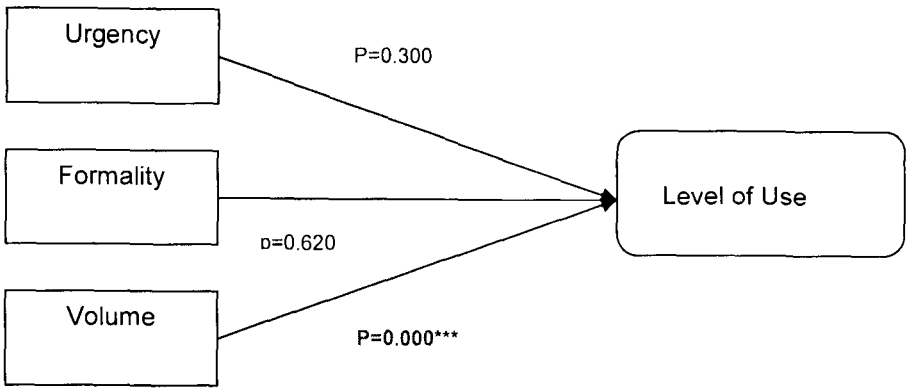

Figure 25: Relationship between the task characteristics and level of use

Figure 25 shows that overall only volume shows significant influence on the level of use of mobile data services. Formality and urgency do not show statistical support of influencing the level of use of mobile data services. However, it should be noted that the significance of volume on the overall model is exclusively due to the high level of significance it has in the South African sample as depicted by Table 23 below.

Mauritius vs. South Africa

	Mauritius			South Africa			Combined Dataset		
Task Variables	Beta	T-value	P-value	Beta	T-value	P-value	Beta	T-value	P-value
Urgency	-0.087	-1.182	0.239	-0.034	-0.480	0.632	-0.054	-1.038	0.300
Formality	-0.121	-1.625	0.106	0.021	0.294	0.769	-0.026	-0.497	0.620
Volume	-0.063	-0.867	0.387	-0.331	-4.785	**0.000*** **	**-0.190**	**-3.743**	**0.000*** **

Table 23: The beta, t and p values of the task factors

As illustrated by Table 23 above, urgency and formality appear to have very little influence on the use of mobile data services with beta values almost equal to zero in both of the countries. In Mauritius, task characteristics explain 4% of the variance in the model while they explain 11% of the variance in South Africa.

Qualitative Analysis

Urgency

Although, statistically, urgency was not a factor influencing use of mobile data services in any of the countries, the qualitative analysis allowed the emergence of some interesting insights which would have been impossible to reveal using a quantitative analysis only.

In both countries, interviewees undeniably agree that mobile phones are convenient devices to use in urgent situations. However, they relate this convenience more to the ability of using voice calls, rather than using data services in urgent situations. Voice calls are deemed to be more reliable in urgent situations (emergencies) as compared to services such as SMS, emails and chats. Even in certain cases, for example, where someone is getting late for a meeting, interviewees state that calling is more appropriate as it adds a personal touch. Besides, they deem SMS unreliable, as it is difficult to know whether the person has received the message on time or not. SMS is however acceptable when someone has a number of people to call, and cannot afford to call each and every one of them or if the meeting is a casual one with close friends.

"If I need people to respond I will rather call than SMS. SMS is not reliable in the sense that you giving the power to the next person while when you calling, you have the power, SMS is at the convenience of the next person."–S7

However, interviewees mention that there are some situations where use of certain mobile data services becomes very practical. Examples include, sending a SMS to someone to remind the person to buy something on his way home or checking an email to confirm the address of one's destination while going somewhere. One interviewee says he can instantly buy prepaid electricity from his mobile phone without having to drive to the nearest shop in instances where he runs out of electricity at night.

"Sometimes if you forget to buy electricity, and there is no electricity, the cell phone is a good alternative to use to get electricity. You cannot use your laptop/PC as there is no power. If [the] shops [are] closed, or if it is a long drive away, you can just use cell phones."-S8

The above discussion establishes that use of mobile data services in urgent circumstances is dependent on the nature of the situation. In critical circumstances such as accidents or sudden change of meeting time, voice calls is deemed to be more appropriate, however, on certain casual situations, use of mobile data services is practical.

Formality

Quantitatively, there is no evidence of formality influencing the level of use of mobile data services. The qualitative analysis provides some insights as to why respondents do not consider use of mobile data services suitable in formal situations.

Interviewees find that most of the mobile data services available are more suited for entertainment and casual purposes except for email and cell phone banking which may be used for functional and formal transactions.

"Most of the services [available] are for entertainment and very few look at the usefulness. Even news reading is more for entertainment [purposes]."-S3

Although SMS may occasionally be used for formal situations, most interviewees feel uncomfortable in doing so. Mauritian respondents are more reluctant to use SMS for work purposes as opposed to the South African respondents who are more comfortable using SMS for work purposes. This difference may be attributed to the conservative culture prevailing amongst Mauritians.

"I use SMS quite seldom. For important and formal matters, I prefer voice calls [...] and for work related purposes, I will always call. "-M2

Although cell phone banking can be used in formal situations, its use is sometimes restricted due to the limited functionality it offers.

"I hardly ever use my PC for Internet banking these days. I [however] have to use it for certain transactions/payments where I want the person to receive confirmation of payment as I am not sure if I can do it on my cell phone."-S8

Some interviewees strongly believe that they will be encouraged to use mobile data services more if some mobile data services could have been used for their work purposes, hence linking formality to future use and occupation.

"If I could start checking investment portfolios on the standard bank sites, then maybe I will use mobile data services more."-S10

Volume

Similar to the findings of Sarker and Wells (2003), interviewees mention that mobile data services are inappropriate to use in situations where there is a lot of information to convey. Services such as SMS and email are only suitable for short messages because of the limitations of the keypads and screens.

"I will only use SMS when I have to type a few words as my fingers are too big for the keypad."-S9

Similarly, some interviewees find reading news on the mobile phones to be tedious as they need to keep scrolling down, it takes time to move to different pages, and if they get disconnected, they will have to restart the whole process all over again. One interviewee even mentions the risk of eye and finger injury while reading news. The information displayed on the screen is small,

leading to straining of the eyes while reading and the constant scrolling down may consequently lead to finger injury.

"If you [are] reading a story [or] news, you have to go from one page to another sequentially. The browsing takes a lot of time."-S8.

"While you reading news on the phone screen, you have to scroll down and this could lead to finger [or] eyes injury."-S8

In cases where there is a lot of information to convey, interviewees would rather use their PC or laptop and most of them mention 'PC-laptop-mobile phones' as their preferred hierarchy of use.

5.4.5 Technology

Quantitative Analysis

Based on the Sarker and Wells (2003) findings, the technology factor, in this study, has been sub-divided into three main constructs, namely; phone features, ease of use and network capability. Phone features refer to the different technological aspects of a mobile phone such as Internet capability, speed, resolution, screen, key pad and battery life and its relative impact on the level of use. From the past literature and the Sarker and Wells (2003) model, it is expected that phone features of mobile phones influence the level of use. As mentioned above, due to the high number of constructs falling under phone features, this factor has been divided into current phone features and enhanced phone features.

The focus of ease of use, in this study, is on the logical interface of mobile phones. The questionnaire test items assess whether the ease of using different services and the simplicity of the set up procedures have a significant impact on the level of use. Ease of use has been extensively validated in the widely used TAM models as a significant determinant of use and adoption as discussed in the literature review (Fang et al., 2005; Kumar & Bruner, 2003; Luarn & Lin, 2004; Teo & Pok, 2003). Similarly, in this research ease of use is expected to influence the level of use of mobile data services. Lastly, network capability looks at the impact of network reliability and coverage of the mobile technology on the level of use. Although, not previously validated in the literature, Sarker and Wells (2003) established this factor as a significant determinant of use. Hence, similar results are expected in this study.

H_{1e}: Technology characteristics (current phone features, ease of use, network capability and enhanced phone features) influence the level of use of mobile data services.

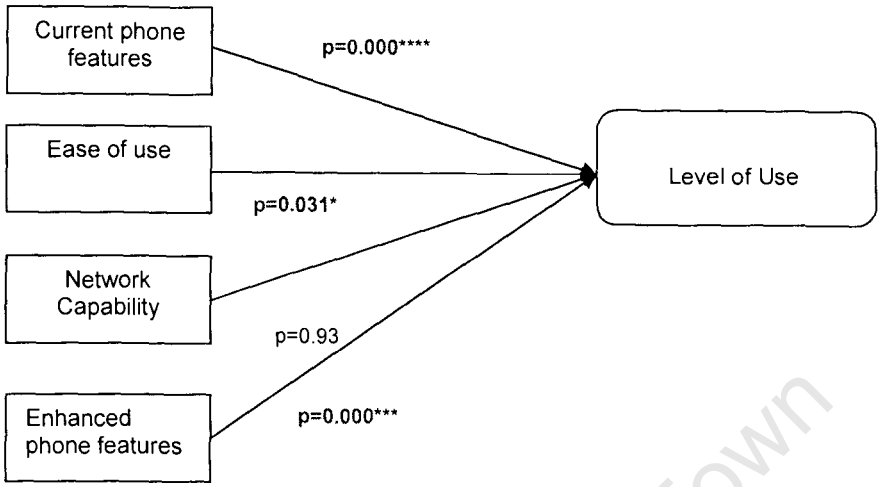

Figure 26: The relationship between technology characteristics and level of use

The results show that 3 out the 4 technology constructs (current phone features, ease of use and enhanced phone features) show significant influence on the level of use of mobile data services as illustrated by

Figure 26. Together these factors explain 18% of the variance of the model. This therefore entails that the technology variable is one of the most crucial aspects of the Sarker and Wells (2003) model.

Mauritius vs. South Africa

Task	Mauritius			South Africa			Combined Dataset		
Variables	Beta	T-value	**P-value**	Beta	T-value	P-value	Beta	T-value	P-value
Current phone features	-0.236	-2.953	**0.003****	-0.249	-3.449	**0.001****	-0.233	-4.392	**0.000****
Ease of use	-0.038	-0.466	0.642	-0.221	-3.087	**0.002****	-0.117	-2.170	**0.030***
Network capability	0.020	0.282	0.778	-0.006	-0.106	0.916	-0.004	-0.079	0.931
Enhanced phone features	-0.107	-1.480	0.140	-0.362	-6.098	**0.000*****	-0.233	-4.988	**0.000*****

Table 24: The beta, t and value of the technology factors

A comparison analysis of the two countries, as illustrated by Table 24 above, depicts that statistically, only current phone features significantly influence the level of use of mobile data services in Mauritius. In South Africa both current and enhanced phone features and ease of use provide significant evidence of influencing on the level of use. In Mauritius, technology factors

account for 9% of variance in the model while they account for 31% of the variance in South Africa.

This variation in results may be attributed to a number of reasons. The way the mobile telecommunication industry operates in both countries may be one of the reasons. Only a limited number of people use mobile data services extensively in Mauritius. Most of them only use SMS which is a reliable service and easy to use. Therefore, the participants may have answered the questionnaire based on the services they are currently using.

Qualitative Analysis

Current and enhanced phone features

In both countries, current phone features show strong statistical support on the level of use of mobile data services. The qualitative analysis supports the quantitative results in both countries. However, while the qualitative analysis supports the quantitative results with regards to enhanced phone features in South Africa, it contradicts the Mauritian ones.

The interviews make it evident that people having top range mobile phones with good current phone features are more likely to use or experiment with mobile data services.

"My cell phone is relatively well adapted for the services I use. Maybe the keypad is still relatively difficult to use compared to a PC but it is better than the average cell phone"-S4

Wireless Internet and high bandwidth are key technological features encouraging trial ability and use of mobile data services. Similarly, high connection speed, good screen resolution and battery life, further enhance the usability of mobile data services, hence promoting use. Although speed of connection is dependent on the network, it is also associated with phone features. For instance, 3G phones will automatically have higher speed of connection as compared to GPRS-enabled phones.

"We also use our mobile phones on campus to check our mails, especially in times when connection on campus is slower than that of our phones."-M3

On the other hand, interviewees, not using mobile data services extensively, associate their limited usage to the current phone features of their phones and state that they would have certainly used more advanced mobile data services had their phones been equipped with better features.

"Right now I am only using SMS as my phone is only enabled for SMS. I would have definitely used mobile data services more, if my phone had mobile Internet and better features."-M12

The small keypads and screens of mobile phones are amongst the most popular inhibitors of mobile data services as pointed out in numerous studies. In the same way, this study provides continuous evidence that small keypads and screens decrease usability of mobile phones, hence discouraging people to use mobile data services. Interviewees find certain services such as web browsing and cell phone banking particularly complex to use on the small screens of a mobile phone. A PDA is deemed to be more suitable for these services.

"I do not use web browsing as [my] cell phone has a small screen."- S12

"I may get a PDA, and use MDS more. In the end, it all comes down to not having a stylus at the moment. It is all about usability. A SMALL keypad adds to the complexity of using things."-S12

Besides the keypads and screens, low connection speed and poor battery life may also act as inhibitors of mobile data services. Interviewees said that low connection speed is frustrating as a considerable amount of time is lost in waiting and this leads to functional inefficiency resulting in non-use of certain services.

"I am used to have high speed of connection the minute I want it at work so if I have to wait for it on the phone, I would put it away and use pc."-S10

"Something that happens to me frequently is that I am unable to use my mobile phone and [subsequently] the data services, as the battery is down. This is more a disadvantage of the mobile phone, rather than MDS, but it is an important point of failure."-M5

Ease of Use

The quantitative results of this study illustrates that that ease of use only shows significant influence on level of use in South Africa. While the qualitative findings support the quantitative results in South Africa, they contradict the Mauritian one. The interviewees provide ample evidence of ease of use influencing the use of mobile data services in Mauritius as well.

In both countries, most interviewees say that they are more likely to use mobile data services if they find the services easy to use. As mentioned above, in this study, ease of use not only refers to whether the use of mobile data services is simple enough for users but also includes the ease of use of the initial set up procedures.

"I prefer using my phone for balance enquiries as you only send a SMS and you get your enquiry, it is hassle free and ease to use."-M2

"The new data services should be easy to use and the procedures to set up should be quick and they should make things easier such as Top Up."-M10

Ease of use of mobile data services is associated with the type of handset used. Whilst some phones are quite user-friendly and enhance the overall 'ease of use' experience, others further add to the complexity of use.

"I think the phone itself limits the usage of mobile data services. My phone has a relatively big screen and a keyboard as well, so it makes certain things easier"-S5

"I have a sensitive phone, it is a Samsung phone and not as user friendly as a Nokia one so it took [me] a bit longer to get used to the different services."- S7

On the other hand, complexity of a technology is more likely to discourage/inhibit use of mobile data services and this is a prominent reason accounting for non-use of mobile data services, predominantly, by the older generation (mostly people above 40). While the younger generation may show more patience and keep trying the new services until they succeed, the older generation is less willing to persevere. Complexity of a technology adds to unnecessary stress and the interviewees believe they do not have the time to learn how to use different mobile data services.

"Even for my generation which is not that old, people take time to grasp the concept of the different services but for the teenagers, it is not such a problem. For instance, I tried using caller tunes once, and I did not find it user friendly, so I did not try it again."-M13

"I tried using video conferencing, it did not work and I never used it again."-M7

There is also a distinct relationship between ease of use, computer literacy and occupation. Users who are more technically focused and conversant with computers, struggle less to set up their device and it becomes easy for them to use mobile data services. In contrast, users who are less computer literate and not technically focused rely more on getting help from more technically focused users, call centres and websites to set up and learn how to use mobile data services.

"My occupation makes it easier t o use mobile data services because [I] understand these services and it is not a hassle trying to understand and coping with the new services and changes."-S2

"My brother set up the [mobile] Internet for me, he is an Engineering student."-S10

Furthermore, lengthy set up procedures add to the complexity of using mobile data services and may act as an inhibitor. People are keen to use services that are quick and simple and that do not add any further stress to their life. Some respondents complain about the tedious set up procedures of certain services such as MMS, emails, and chats. They say that these services are very complex to set up and one has to struggle a lot to set up the phone successfully.

"Using MDS is fairly easy, however the hard part is establishing a connection. This initial set up is hard but once this has been done everything else is easy. Some services were easy to set up [while] others [were] harder."-S3

"One needs a degree of expertise in order to set up some of these services."-S4

In Mauritius, interviewees have complained of the lack of support from the call centres leaving users very disappointed. The lack of help and support has been mentioned in almost all the interviews in Mauritius whereby interviewees mention bad customer service relating to set up of phones.

"We are lagging behind in terms of services provided and support in Mauritius as compared to European countries. The support staffs are not trained and do not have the required material and people to explain and solve the problem."-M6

"I do not use email and web browsing, I actually configured my mobile for GPRS but it is not working."-M3

In South Africa, on the other hand, customer service seems to be more reliable and most interviewees expressed their satisfaction with the help available from call centres. However, the interviewees mention that the online web support is not as efficient as the call centres. The websites of mobile network operators are not updated regularly and in some cases there are no instructions on how to set up the most recent types of phones.

"However when I bought my phone, it was not on the list [posted] on Vodacom's site, they do not update the list that often."-S5

"When you phone call centres, they are very good on the helpline but the web support is not really as good as it should be."-S9

The qualitative analysis thus establishes ease of use as both a determinant and inhibitor of mobile data services in both countries.

Network Coverage/ Reliability

In the Sarker and Wells (2003) study, the interviewees have said that limited network coverage and lack of reliability decrease their sense of freedom and trust in mobile data services. In South Africa, the qualitative findings support the quantitative findings as the analysis shows no evidence of network coverage/ reliability impacting on the level of use of mobile data services. However, in Mauritius the results are contradictory and more of a debatable issue as will be discussed below.

In South Africa, most of the participants are satisfied with their network coverage and reliability. Some users complain that sometimes they do not have network coverage in certain places and buildings, but overall, they do not have any major problems.

In Mauritius, the interviewees, especially the students, have expressed a general dissatisfaction with the network coverage and reliability. They state that network coverage is so bad that that they use both mobile network operators (MNO). Whenever they experience network-related problems, they switch over to the other MNO. They are also unhappy with the quality of 3G services provided as they were expecting better reliability and quality regarding the speed and connectivity. One interviewee mentions that services such as content and mobile videos are still not very reliable as shown by the two quotes below.

"For instance while you watching a video, it just stops or breaks. I expected better quality…I tried sending SMS to get information on weather news, and I sent 4 SMS but never got any response."-M6

The students mention that they are reluctant to use more advanced mobile data services such as cell phone banking because of the lack of reliability. The working people however show more understanding towards the network-related problems and they say that although sometimes there may be problems with coverage and reliability, they understand and compromise with the system.

"Sometimes network gets busy for instance for New Year and Christmas, I send SMS and people get it after 2 days, but you understand and I won't stop using the service. You do not blame the system instantly, instead you make a compromise."-M2

5.4.6 User Outcomes

Quantitative Analysis

The functional user outcome, in this study, refers to the ability of being more efficient and effective at any point in time. The test items in the questionnaire ask respondents whether the use of mobile data services make them more efficient in certain situations, for instance when they are waiting in traffic or while they are waiting for someone. The psychological user outcome focuses on whether the interviewees experience a sense of self-worth while using mobile data services. It should be noted that the psychological test items were closely related to the symbolism test items. Lastly, relational user outcome establishes whether use of mobile data services has any impact on users' relationship with others (makes them closer to certain people or improves their relationship quality in general).

Although the above-mentioned user outcomes have not been extensively validated in previous literature, the Sarker and Wells (2003) study explained their impact on the level of use. Therefore, in this study, the user outcomes are expected to significantly influence the level of use.

H_{1f}: User outcomes (functional, psychological and relational factors) influence the level of use of mobile data services.

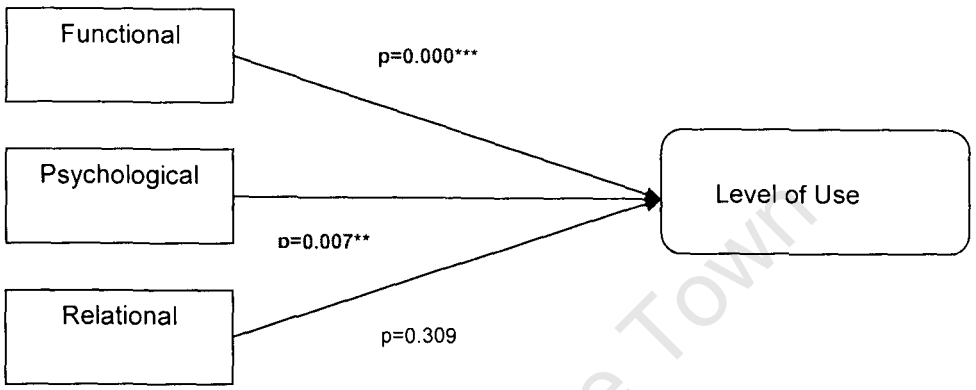

Figure 27: The relationship between user outcomes and level of use

The results show that only 2 out of the 3 user outcomes (functional and psychological) have a significant influence on the level of use of mobile data services. The relational user outcome surprisingly does not show evidence of influencing the level of use. Together, the user outcomes account for 14% of the variance of the model.

Mauritius vs. South Africa

	Mauritius			South Africa			Combined Dataset		
	Beta	T-value	P-value	Beta	T-value	P-value	Beta	T-value	P-value
Functional	-0.237	-3.085	**0.002****	-0.355	-5.099	**0.000*****	-0.328	-6.470	**0.000*****
Psychological	-0.250	-2.887	**0.004****	-0.090	-1.155	0.249	-0.157	-2.723	**0.007****
Relational	0.128	1.407	0.161	-0.041	-0.503	0.616	0.061	1.019	0.309

Table 25: The beta, t and p values of the user outcomes

As depicted by Table 25 above, while the functional user outcome shows high significant influence on the level of use of mobile data services in both countries, psychological outcome only shows a statistical relation on the level of use in Mauritius. On the other hand, relational outcomes do not show evidence of a strong relationship in either of the countries contrary to the findings of Sarker and Wells (2003). The user outcomes account for 17% of the variance in the model in South Africa and 11% of the variance in Mauritius

Qualitative Analysis

Functional User Outcome

The qualitative analysis supports the quantitative one in both countries. Interviewees in both countries cite that they are more likely to use mobile data services if the services make them more functionally efficient. They say some mobile data services allow them to be more efficient as things can be done faster and at a low cost. No time is wasted in driving to shops to pay for services or banks to perform transactions.

"Things can be done easier, cheaper and without having to move and lose time."-S9

Interviewees also mention that in today's society, use of mobile data services certainly makes their life easier and more convenient as time is fast becoming a limited resource. People are not willing to waste time while waiting for something/someone or while sitting in traffic, therefore use of certain mobile data services allows them to fill the gap.

"It makes me more efficient in a way. When waiting for someone before a meeting, you can just SMS, check your mails and clarify some issues."-M8

Similarly, if respondents feel that they are wasting time by using certain mobile data services, they are more likely to stop usage. Low connection speed, prolonged loading time of services and web pages, being constantly disconnected while using a service, having to log in repeatedly and lengthy set up procedures to register for a new service have been cited as examples which make respondents less efficient. Hence, a distinct relationship between ease of use and functional user outcome is noted.

"There is a lot of step before you can actually get something set up and start using a service. It is time wasting because you expect new technologies to be more speedy and efficient."-S6

Users who are constantly on the move also associate mobile data services with functional efficiency. Most of the mobile data services are quick and easy to use and allow people to access information from anywhere and at any time, hence making them more proficient. Services such as emails and chats allow them to communicate easier while services such as cell phone banking allows them to be functionally more efficient as they do not have to find a PC or physically go to a bank to perform any banking transactions.

"For instance, if I have to do a banking transaction, previously I would have had to physically go to the bank but with cell phone banking I can do it anywhere anytime."-S4

"I need frequent access to my email; I need to communicate a lot with my colleagues and at the same time, I need to use my time efficiently."-S4

Being functional and efficient has also been associated to urgency. For instance, participants explain that mobile data services allow them to react spontaneously as soon as the need arises.

"If you want to ask/tell someone something, you can do it when you [are] thinking about it."-S12

"Sometimes if you forget to buy pre paid electricity, and there is no electricity, the cell phone is a good alternative to use to get electricity. You do not have to lose time in driving and if shops are closed, you can still get your electricity through your cell phone."-S8

Functionality has also been linked to trial ability and future use. If respondents feel that a service is useful and will allow them to manage their time better, they will be more encouraged to try them out. Similarly, if mobile data services may be used for functional purposes, users will be more willing to try and experiment with those services.

"If there were services suited to help me with my work, I would be encouraged me to use MDS more."-S10

Psychological Outcomes

While the quantitative analysis only focuses on whether use of mobile data services provide respondents a sense of self-worth, the qualitative section discovers that besides a sense self-worth, interviewees also experience a sense of freedom and a sense of emotional attachment with use of mobile data services.

Self-Worth

As briefly discussed in the symbolism section, it is observed that use of mobile data services allow respondents to improve their self-image. Interviewees mention that trying out the new mobile data services show that they could keep up with new, changing technology; others said they enjoyed getting new cell phones frequently to see what new services are being introduced and how fast technology is changing. They find it interesting to explore the different mobile data services being introduced to keep track of new development and innovations.

"I like trying out new things, so it is interesting to me. I will see if I can get new cell phones and see what I can do with it."-S5

"I have bought a new phone to be up to date so you know what is happening with the new technologies so you not lagging behind."-M9

Emotional Attachment /Dependency

There is also evidence of people being highly dependent on their cell phones and some mobile data services. They feel totally out of place and left out if they do not have their cell phones on them as they cannot be in touch with people. Some of the services which interviewees are highly reliant upon are SMS and chats. They sense a feeling of incompleteness when they do not have

their cell phones with them at all times, as they cannot check their incoming SMS or chat messages.

"I left my phone at work the other day and I felt out of place the whole evening."-M13

Interviewees also mention that they cannot leave their house without having their cell phones on them and the cell phones are now amongst the basic things that they would take while leaving home. Respondents also feel the need to have their cell phones switched on at all times and hate switching them off during meetings or in areas where cell phone is not allowed.

"Cell phones are very handy, I cannot live without mine."-M7

"I wouldn't go anywhere without my mobile, not even in the house. "-M8

Sense of Freedom

Interviewees also mention that mobile data services give them a sense of freedom as they can be on the move and still be connected and in touch with people they need. Similarly, they know that other people can reach them at anytime. It should be noted that this factor is linked very closely to the freedom to access information. However, some interviewees mention that the ability to be in touch constantly also has some adverse effects. For instance, people are always expected to be 'online' and using their mobile devices. There is a tendency to forget that mobile phones may not be switched on at all times.

"Being online is taken for granted, people just expect you to have your phones on you the whole time."-M4

Relational

Statistically, the relational outcome does not have any impact on the level of use in any of the countries. The qualitative analysis supports the findings. Although interviewees say that using mobile data services allow them to be more in touch and connected to people, this does not really impact their decision to use mobile data services. Interviewees say that, with or without mobile data services, they would have kept in touch with their family and friends anyway. Mobile data services do not necessarily make them closer to their families and friends. However, they mention that services such as SMS, chats and emails are great communication tools that help to keep in touch with family and friends.

"Well I am more connected to people and to my brother who is abroad but it does not make me closer. You can SMS someone when you need something; it helps you keep in touch."- S3

"It does help you to keep in touch with people. If you don't have time to meet someone, you can just SMS and they can reply when they have some time and are free and it is the same with emails."-M8

5.4.7 Influence of level of use on the user outcomes and on the final adoption outcome

The Sarker and Wells (2003) study established that level of use influences user outcomes which in turn determine the final adoption outcome. This is a crucial segment of technology adoption as it is the phase which, subsequently, determines whether users choose to continue use or stop further usage of mobile data services based on their initial experience of use. However, very few studies have focused on this part of adoption. The TAM model, innovation diffusion and UTAUT models have validated the factors affecting the intention to adopt but have not analysed the actual adoption process. As mentioned in the literature review, except for Sarker and Wells (2003), some interpretative studies (Carroll et al., 2003; Brown et al., 2005) have previously scrutinised this impact.

Quantitatively, this section is validated through two hypotheses, H_{1g} and H_{1h}. Hypothesis H_{1g} tests whether there is a relation between level of use and the user outcomes as pointed out in the Sarker and Wells (2003) study, that is, whether the experience of using mobile data services has an impact on the functional, psychological and relational user outcomes. Lastly, hypothesis H_{1h} tests whether the three user outcomes impact the final adoption outcome. It is expected that use of mobile data services influences the user outcomes and the latter in turn impacts the final adoption outcome. A qualitative discussion thereafter follows.

H_{1g}: The level of use impacts the functional, psychological and relational outcomes.

Three regression tests have been performed using the use variable as the independent variable and the user outcomes as the dependent ones. The hypothesis has been tested using linear regression analysis as the main focus is on the direct influence of the level of use on the user outcomes. Hence, use has been treated as an independent variable and has been regressed on each dependent user outcome consecutively. The use of linear regression in this manner is consistent with previous TAM and UTAUT studies and other technology adoption models (Davis, 1989; Agarwal & Prasad, 1999; Tan & Teo, 2000; Carlsson et al., 2006). Furthermore, the Sarker and Wells (2003) model shows a recursive relationship. Pindyck and Rubenfield (1998) state that "it *is worth noting that there is one special case in which ordinary least squares does yield consistent parameter estimates. We say that a system of equations is recursive if each of the endogenous variables can be determined sequentially, and the errors from each equation are independent of each other.*" (p. 348)

As depicted by Figure 28, the results show that there is significant evidence of a relation between the level of use and the user outcomes showing that the level of use indeed influences the user outcomes.

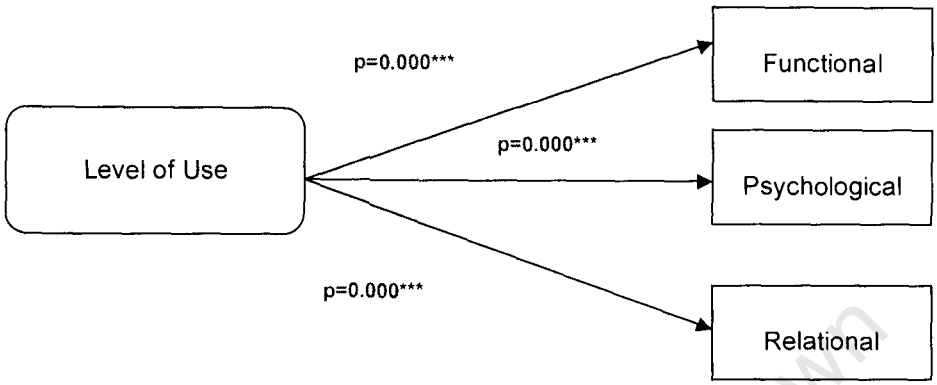

Figure 28: The relationship between level of use and user outcomes.

Mauritius vs. South Africa

	Mauritius			South Africa			Combined Dataset		
	Beta	T-value	P-value	Beta	T-value	P-value	Beta	T-value	P-value
Functional	-0.270	-3.931	**0.000*** **	-0.400	-6.330	**0.000*** **	-0.355	-7.667	**0.000*** **
Psychological	-0.258	-3.750	**0.000*** **	-0.227	-3.371	**0.001** **	-0.229	-4.748	**0.000*** **
Relational	-0.136	-1.925	0.056	-0.238	-3.555	**0.000*** **	-0.166	-3.411	**0.001** **

Table 26: The beta, t and p values of the level of use

A comparison analysis between the two countries shows that while the level of use influences all the three user outcomes in South Africa, it only shows significant influence on the functional and psychological outcomes in Mauritius as illustrated in Table 26 below.

H_{1h}: The user outcomes (functional, psychological and relational) influence the final adoption outcome.

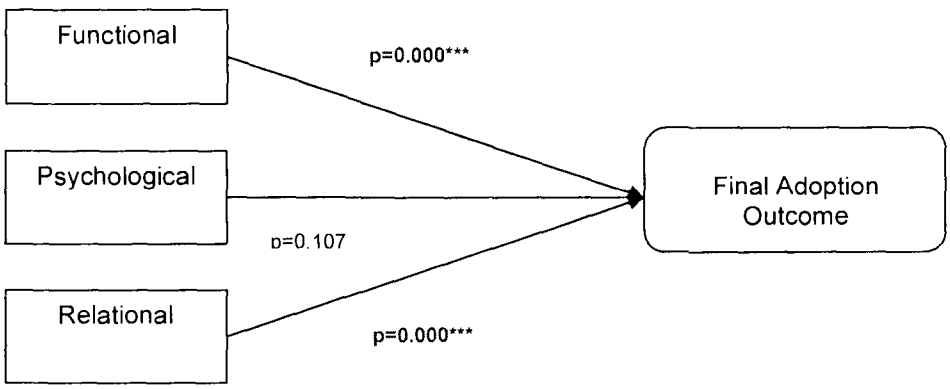

Figure 29: The influence of user outcomes on final technology adoption

In this test, the user outcomes are the independent variables while the final adoption outcome is the dependent variable. Figure 29 above illustrates that only the functional and relational user outcomes show significant impact on the final adoption outcome of mobile data services. User outcomes explain 31% of the variance of the model. This hypothesis is thus strongly supported quantitatively.

Mauritius vs. South Africa

	Mauritius			South Africa			Combined Dataset		
	Beta	T-value	P-value	Beta	T-value	P-value	Beta	T-value	P-value
Functional	0.255	3.702	**0.000*** **	0.455	7.563	**0.000*** **	0.392	8.644	**0.000*** **
Psychological	0.121	1.551	0.123	0.040	0.594	0.553	0.083	1.617	0.107
Relational	0.259	3.163	**0.001** **	0.245	3.516	**0.000*** **	0.208	3.898	**0.000*** **

Table 27: The beta, t and p value of the user outcomes

Table 27 below illustrates the results difference between the Mauritian and South African samples. Both functional and relational outcomes influence the final adoption outcome in the two countries while psychological factors show no significant impact on the final adoption decision. User outcomes explain 27% of the variance in the model in Mauritius and it accounts for 38% of the variance in South Africa. These relatively high percentages indicate the high significance of the impact of user outcomes on final adoption.

Qualitative Analysis

The Sarker and Wells study (2003) established that users assess their experience based on three levels, namely, the functional, psychological and relational aspects. This study revealed that besides these 3 levels, users also assess their experience based on the overall value (satisfaction) derived from the use of various services. The value derived can be in the form of the overall usefulness of the service, the need of a particular service or the functional, psychological and relational impacts it has on the individual. The more value and satisfaction users derive from use of a service, the more they will feel its necessity and the better the chances of appropriating these services in their daily lives, hence their decision to continue use.

"I will continue using the services if they make me efficient in what I am doing, or enhance what I am doing."-S1

Different services are however associated with different sources of value. For instance, SMS and some chat services allow users to communicate with a number of people at low cost. Hence, users who constantly need to communicate with a number of people find these services valuable. Services such as email and cell phone banking allow users to be functional while on the move, services such as content, web browsing are efficient to use in situations where their PCs and laptops are not readily accessible.

"Some mobile data services allow me to access information quickly, easily and at a reasonable price; so I am able to use my time more efficiently."-S4

On the other hand, services such as mobile gaming, ring tones, MMS and mobile video provide users with a source of entertainment.

Assessing the experience of using mobile data services is a continuous process. Using a service may change users' initial perceptions of that particular service in either a positive or negative way. For instance, the initial value derived from the use of mobile data services may decrease substantially if users experience bad occurrences. Respondents in both countries have identified a number of problems that they relate as bad occurrences. These include high costs, unreliability of the service, slow connectivity, tedious set up procedures, bad customer support, spamming and invasion of privacy and loss of personal data. Some of them may limit usage to a great extent while others may lead to non-use of the service. High costs, tedious set up procedures, bad customer support have already been discussed in the earlier sections.

Unreliability of the service

Unreliability of a service relates to either technology or network failure. A number of respondents found MDS to be unreliable in that aspect. Respondents said that experiencing minor problems with basic services such as SMS delay is tolerable. Minor problems may annoy them for a short while but they would nevertheless continue using the service.

"The peak times, I just do not get access. Sometimes SMS take long to be delivered. I have no signal on my phone, and in some instances, people do not get delivered SMS or they receive you twice. It annoys me for a short amount of time but does not change my view on technology."-S12

However, these experiences make them lose confidence in the service and this may have an adverse effect on experimentation and use of new and more complex services.

"They are still having problems with basic problems so obviously I expect them to experience problems with major, more advanced services and that is why I am not willing to try new services."-M6

Interviewees say they are more impatient towards use of advanced services such as MMS, content, mobile video and web browsing and if they experience any kind of problem, they are more likely to instantly stop usage. Respondents mention that while some new services worked the first time they tried them, they did not work properly the second time. This has caused them to lose confidence in the service and they are now reluctant to use these services again as they feel they are wasting their time. They would rather use an alternative service that would be more reliable.

"I tried finding location of a restaurant; it worked first time and did not for the second time...Same for video conferencing. This is very frustrating and hence I have not used the service again."-M7

Usability and slow connectivity/bandwidth

Throughout the interviews, users mention that poor usability and slow connectivity make the use experience less attractive. Interviewees have experienced a lot of connection problems while web browsing and emailing. They find web pages take long to load and sometimes they do not load properly. Concerning emails, some respondents have experienced problems with Yahoo mail and Group wise mail. They say setting up their phones to use emails was already tedious. After managing to set up, they are now experiencing problems sending emails. Interviewees found this very discouraging towards future use.

"I cannot send emails with my Group Wise mail, I can only check inbox. This is not good."-S11

As mentioned in the above sections, interviewees are not keen on wasting time and they are quite intolerant when it comes to slow connection. They say that connection needs to be fast and reliable every time and they find it frustrating when it is quick on one occasion and slow the next time. If they have to wait long, they will put away their phones and use a PC.

"Service must be quick, reliable and secure that is must be connected quickly to Internet every time I am connecting. If I have to wait, I will put my phone away and use PC."-S10

"I give up very quickly if the cell phone gives me trouble. The moment the site takes long to load, I will stop use"-S9

Spamming and Invasion of Privacy

A number of respondents see spamming as a major hindrance leading to invasion of privacy. Interviewees mention that receiving SMS/emails with regards to new mobile data services and mobile technologies is acceptable but they do not welcome advertisements that are not focused on mobile products and services. They see this practice as being distracting and frustrating. Although spamming does not result in instant non-use, it contributes towards decreasing the value derived from using these services thus making the overall use experience less pleasant.

"Some of the SMS are useful and good for instance when you get SMS for transactions you are doing, this is secure. For instance if you have your card with you and you get a SMS about [cash] withdrawal, you know something is wrong somewhere. However, others can be frustrating and not useful."-S8

Personal Data loss

Although none of the interviewees have experienced any type of fraud whereby they have lost confidential information via their mobile phones, they are still apprehensive of the security risks

which may arise. They say that if ever they lose confidential information while transacting via their mobile phones, they will be instantly discouraged from using the service again and instantly look for a more secure alternative.

"In case of personal data being stolen (violation of privacy), I will be reluctant towards the service, and search for another one, which is more secure."-M5

The above examples show how bad experiences during use of mobile data services impact the user outcomes, which in turn influence the final adoption outcome. It should be noted that this assessment is an ongoing process. Over time, users may very well change their minds and try the services they once stopped using. If they achieve the desired level of satisfaction, they will sustain use else they will stop further use once more. The final technology adoption is thus based on the overall experience of the level of use. In cases of bad experiences, the final adoption outcome is dependent on both the types of situations, that is, how bad the experience is, and the previous positive experiences which users have encountered as quoted below:

"In case of negative occurrences, future use depends on the type of bad experience. If the bad experience is a communication, IT or electronic problem then I will continue the usage. In case of personal data being stolen (violation of privacy), then I will mostly be reluctant towards the service, and search for another one, which is more secure."M5

"Well I've had many positive experiences with mobile data services, so I would not stop use for minor bad experiences".-S4

5.4.8 Summary of results

The above tests have aimed to validate the Sarker and Wells (2003) model both quantitatively and qualitatively in Mauritius and South Africa. Due to the abundant number of hypotheses tested, a summary of the results is presented in this section before proceeding to the remaining tests. The statistical significant variables of each tested hypothesis are first summarised using the combined dataset followed by a brief comparison of the quantitative and qualitative results obtained in both countries. The significant variables of the model are represented as 'supported', while non significant variables are characterised as 'not supported'. The qualitative analysis may support, contradict or provide richer insights to the quantitative results.

H_{1a}: Individual characteristics (gender, income, age, occupation, computer literacy, country and prior experience) influence the level of use of mobile data services.

Overall, age, country and prior exposure show significant influence on the level of mobile data services.

Constructs	Quantitative Findings		Qualitative Findings	
	Mauritius	South Africa	Mauritius	South Africa
Age	Not supported	Supported	No qualitative analysis performed	
Prior Exposure	Supported			

H_{1b}: Context factors (cost, symbolism and peers) influence the level of use of mobile data services.

Only one of the context factors (peers) shows statistical support on the level of use of mobile data services. Although cost shows no significant support of influencing mobile data services, the qualitative analysis contradicts the results and provides ample evidence of the influential impact of cost in both countries.

Constructs	Quantitative Findings		Qualitative Findings	
	Mauritius	South Africa	Mauritius	South Africa
Cost	Not supported		Contradicts quantitative findings	
Symbolism	Not supported		Provides richer insights	
Peers	Supported		Supports quantitative findings	

H_{1c}: Modality of mobility (convenience, freedom to access information and safety) influences the level of use of mobile data services.

Freedom to access information is the only mobility factor showing high significant influence on the level of use of mobile data services.

Constructs	Quantitative Findings		Qualitative Findings	
	Mauritius	South Africa	Mauritius	South Africa
Convenience	Not supported		Provides richer insights	
Freedom to access info	Not supported	Supported	Provides richer insights	
Safety	Not supported		Not supported	

H_{1d}: Task characteristics (urgency, formality and volume) influence the level of use of mobile data services.

Only volume shows significant influence on the level of use of mobile data services.

Constructs	Quantitative Findings		Qualitative Findings	
	Mauritius	South Africa	Mauritius	South Africa
Urgency	Not supported		Provides richer insights	
Formality	Not supported		Provides richer insights	

Constructs	Quantitative Findings		Qualitative Findings
Volume	Not supported	Supported	Provides richer insights

H_{1e}: Technology characteristics (current phone features, ease of use, network capability and enhanced phone features) influence the level of use of mobile data services.

3 out of the 4 technology characteristics namely, current and enhanced phone features and ease of use show high statistical significance of influencing the level of use of mobile data services.

Constructs	Quantitative Findings		Qualitative Findings	
	Mauritius	**South Africa**	**Mauritius**	**South Africa**
Current phone features	Supported		Supports quantitative findings	
Ease of use	Not supported	Supported	Contradicts and provides richer insights	Supports quantitative findings
Network reliability and coverage	Not supported	Not supported	Provides richer insights	Supports quantitative findings
Enhanced phone features	Not supported	Supported	Contradicts quantitative findings	Supports quantitative findings

H_{1f}: User outcomes (functional, psychological and relational factors) influence the level of use of mobile data services.

Both functional and psychological user outcomes show evidence of high statistical significance on the level of use of mobile data services.

Constructs	Quantitative Findings		Qualitative Findings	
	Mauritius	**South Africa**	**Mauritius**	**South Africa**
Functional	Supported	Supported	Supports quantitative findings	
Psychological	Supported	Not supported	Provides richer insights	
Relational	Not supported		Supports quantitative findings	

H_{1g}: The level of use impacts the functional, psychological and relational outcomes.

The level of use of mobile data services shows strong significant impact on all the three user outcomes in the overall dataset.

Constructs	Quantitative Findings		Qualitative Findings	
	Mauritius	**South Africa**	**Mauritius**	**South Africa**
Functional	Supported		Provides richer insights	
Psychological	Not Supported	Supported	Provides richer insights	

Constructs	Quantitative Findings		Qualitative Findings
Relational	Supported	Supported	Provides richer insights

H_{1h}: The user outcomes (functional, psychological and relational) influence the final adoption outcome.

Only the functional and relational user outcomes provide evidence of significantly influencing the final adoption outcome.

Constructs	Quantitative Findings		Qualitative Findings	
	Mauritius	**South Africa**	**Mauritius**	**South Africa**
Functional	Supported		Provides richer insights	
Psychological	Not supported		Provides richer insights	
Relational	Supported		Provides richer insights	

5.5 Impact of the demographic variables on the independent variables of the Sarker and Wells (2003) model in Mauritius and South Africa

As discussed in the literature review, the UTAUT model established the demographic variables as moderating variables influencing the independent factors (performance expectancy, effort expectancy, social influence and facilitating conditions). Similarly, this section tests whether there is a relationship between the demographic variables and the independent variables of the I-P-O model. Comparable results to the UTAUT model are expected in this research since none of the demographic variables, except for age, show any significant impact on the level of use.

Therefore, demographic variables (gender, age, income, computer literacy and occupation) are expected to influence the other independent variables of the Sarker and Wells (2003) model (context, mobility, task and technology factors and the three user outcomes). Several multiple regression tests have been performed on each of the variables of the model with the demographic variables as the independent variables. Table 28 below illustrates the results of the tests in both countries. The significant p-values (less than 0.05) are highlighted in red and in bold.

p-value	Gender		Age		Income		Computer Literacy		Occupation	
	Mau	South Africa	Mau	South Africa	Mau	South Africa	Mau	South Africa	Mau	South Africa
Exposure	0.23	0.21	0.83	0.75	0.15	0.73	0.56	**0.01***	0.30	0.59
Peers	0.16	0.19	**0.04***	**0.02***	0.42	0.22	**0.03***	0.77	0.75	0.68
Cost	0.57	0.96	0.08	0.78	0.69	**0.00*****	**0.01***	0.45	0.33	0.87
Symbolism	0.68	0.21	0.39	0.27	0.82	0.34	0.07	0.63	0.32	0.94
Convenience	0.86	**0.03***	0.61	0.26	0.61	0.57	0.19	0.10	0.79	0.32

Freedom to access	**0.00*** **	0.52	0.53	**0.01***	**0.04**	0.62	0.45	0.18	**0.01***	0.15
Safety	0.12	0.23	0.86	0.99	0.27	0.08	0.18	0.99	0.33	0.49
Urgency	0.94	0.07	0.48	0.07	0.96	0.23	0.44	0.46	0.51	0.29
Formality	0.50	0.31	0.21	0.59	0.78	0.73	0.31	0.15	0.55	0.18
Volume	0.38	0.30	0.35	0.24	0.41	0.71	0.81	0.19	**0.02***	0.97
Current phone features	0.39	0.22	0.25	**0.00*** **	**0.03**	0.10	0.49	**0.00*** **	**0.01***	0.72
Ease of use	0.86	0.69	0.30	**0.03***	0.60	0.53	0.16	**0.00*** **	0.53	0.22
Network capability	0.84	0.27	0.23	0.31	0.62	0.31	0.11	0.17	0.45	0.81
Enhanced phone features	0.54	0.69	0.43	**0.00***	0.39	0.29	0.36	0.27	0.47	0.05
Functional	0.63	0.51	**0.02***	**0.00*** **	0.63	0.50	0.24	0.06	0.35	0.50
Psychological	0.70	0.74	0.46	0.20	0.50	0.87	0.29	0.35	0.33	0.62
Relational	0.75	0.66	0.49	0.09	0.21	0.68	0.06	0.69	**0.04***	0.72

Table 28: The relationship between demographic variables and independent variables

The results show a significant relation between some of the demographic variables and the independent variables of the model. This may be a reason explaining the partial validity of the demographic variables, on the level of use, in Sarker and Wells model (2003) in both countries. These results show that the Sarker and Wells (2003) model is a multi-stage model with the demographical variables influencing the independent variables, which in turn influence the level of use. However, the results of the impact of demographic variables on the independent variables of the two countries vary considerably, hence further validating the fact that the Sarker and Wells model is not a generic one. The model will noticeably be different in any country. However, two similarities are noted; age influences both peers and functional variables in the two countries.

In South Africa, age is the most prominent demographic variable as it influences a number of independent variables as shown by Table 28 above. Computer literacy, income, gender and occupation then follow respectively. On the other hand, in Mauritius, occupation exerts more influence on the independent variables followed by income, computer literacy, age and gender respectively.

Income influences the cost variable in South Africa, while in Mauritius, it impacts on the freedom to access information and current phone features variables. In South Africa, in addition to peers, age also shows significant influence on the urgency, freedom to access information, current phone features, ease of use, enhanced phone features and functional variables. In Mauritius, apart from peers, age impacts the functional variable.

Computer Literacy influences exposure, current phone features and ease of use variables in South Africa whilst only showing a significant influence on the peers and cost variables in Mauritius. Occupation, on the other hand, influences volume, freedom to access information, current phone features and relational variables in Mauritius. It does not show any impact on any of the variables in South Africa. Finally, gender has a significant influence on convenience in South Africa and freedom to access information in Mauritius.

5.6 Relative Importance of the variables of the I-P-O model

The above sections illustrate that the Sarker and Wells (2003) model vary considerably in both countries. This section tests whether there is a difference in the relative importance of the variables of the model in Mauritius and South Africa. A difference of means test using the correlation coefficient (r) value of each construct related to the level of use in each country has been used. Th e correlation matrix is included in Appendix 5B2 and 5B3. The results are displayed in Table 29 below.

H_2: There are differences in the relative importance of variables in Mauritius and South Africa.

Variables	Mau	Sa	
	Correlation coefficient	Correlation coefficient	p-value
Gender	0.066	0.125	0.550
Age	0.133	0.369	**0.012***
Income	0.139	0.261	0.201
C Literacy	0.008	0.196	0.056
Occupation	0.143	0.214	0.482
Exposure	0.308	0.253	0.558
Cost	0.052	0.101	0.620
Symbolism	0.222	0.175	0.561
Peers	0.228	0.272	0.683
Convenience	0.159	0.187	0.823
Freedom to access information	0.148	0.284	0.133
Safety	0.148	0.025	0.227
Urgency	0.131	0.115	0.856
Formality	0.147	0.078	0.415
Volume	0.101	0.334	**0.015***
Phone Features	0.287	0.381	0.248
Ease of use	0.182	0.362	**0.048***
Network capability	0.010	0.029	0.883
Enhanced phone features	0.176	0.358	**0.049***
Functional	0.261	0.400	0.140
Psychological	0.254	0.227	0.737

Variables	Mau	Sa	
Relational	0.133	0.238	0.286

Table 29: The difference in the relative importance of the variables in the Mauritian and South African samples

The low p-values as highlighted in red, in Table 29, depicts that a significant difference in relative importance of age, volume, ease of use and enhanced phone features exists amongst the two countries. No other variables differ significantly in relative importance. As shown in the model testing section, age, volume, ease of use and enhanced phone features show significant influence on the level of use in South Africa but do not show any impact on the level of use in Mauritius.

5.7 Country as a situational variable

Country as a situational variable looks at the socio-economic conditions and technological environment of a country, which may be one of the reasons accounting for the differences in the results of the Sarker and Wells (2003) model in Mauritius and South Africa. This section thus explains the differences in the results by comparing the social, cultural, economic, and technological environments of the two countries.

Although, this study does not investigate the social, cultural, economical factors of the two countries, the qualitative analysis nevertheless provides some practical insight into these factors. As compared to the South African respondents, the Mauritians seem to be more reluctant to adopt mobile data services and the respondents attribute this behaviour to the conservative society of the Island where people are relatively averse to change. As mentioned earlier, the population has not readily accepted e-commerce and similarly, the adoption m-commerce has not taken off in the country.

"People in Mauritius are still reluctant to use e-commerce, we are reluctant to give our passwords, and account information to someone, so this could be the reason why m-commerce and mobile data services are still not that popular."-M7

"People are very conservative in Mauritius and they do not like to transact online. They would prefer to use ATM. It is the culture in a way preventing people to use new services."-M8

With respect to the technological environment, the key focus is on the telecommunication industry of the two countries. The mobile industry in South Africa is a competitive industry offering a number of advanced services, which include cell phone banking and purchasing of prepaid electricity. Cell phone banking is a popular service in South Africa, and all the four service providers as well as major banks offer this service. On the other hand, the mobile industry in Mauritius is not as mature as the South African industry. Services such as cell phone banking are still in the infancy stage. Only one bank and one service provider offer this service. Currently,

people can only receive balance enquiries in Mauritius. Hence, it may be implied that the different mobile industry set ups of the two countries may account for the different usage profile of mobile data services as seen in section 5.2. Services such as MMS, web browsing, emails and online chats are widely used in South Africa, but not very popular in Mauritius where SMS based services are still more likely to be used.

"The intriguing part is that certain services have not yet been adopted (web browsing, email, online gaming, chatting). Most of the services that are available here in Mauritius are based on SMS – account top up, banking services. I believe that we have inherited this typical usage of SMS based services because: firstly, a late adoption of 2.5G and 3G services; secondly, lack of proper campaigns concerning the adoption and usage of 2.5G and 3G like services and finally, because of the cost of the 2.5 and 3G Mobile phones here in Mauritius."-M5

As said in the above quote, the adoption of 2.5 and 3G technology in Mauritius has not been well accepted. Only one mobile network operator, EMTEL, provides 3G technology at the moment. The 3G handsets in the Island are still very expensive and not affordable to the majority of the population. Therefore, the users have not yet gotten a chance to experiment and use more advanced mobile data services such as web browsing, email, mobile video and online games. Furthermore, the fact that no contract phone offer is available in Mauritius is seen as a major inhibitor of use and this may be another possible reason accounting for the low usage of more advanced services.

The situation in South Africa is more flourishing. All the mobile network operators offer 3G and HSPDA technology and they have been well accepted. The qualitative analysis shows that most interviewees have 3G phones on contract and they are keen to try and experiment with new mobile data services.

The above discussion provides some possible reasons for the differences in the results of the Sarker and Wells (2003) model in the two countries. Figure 30 below illustrates the Sarker and Wells (2003) model in Mauritius and South Africa based on the quantitative results obtained with country as a contingency variable.

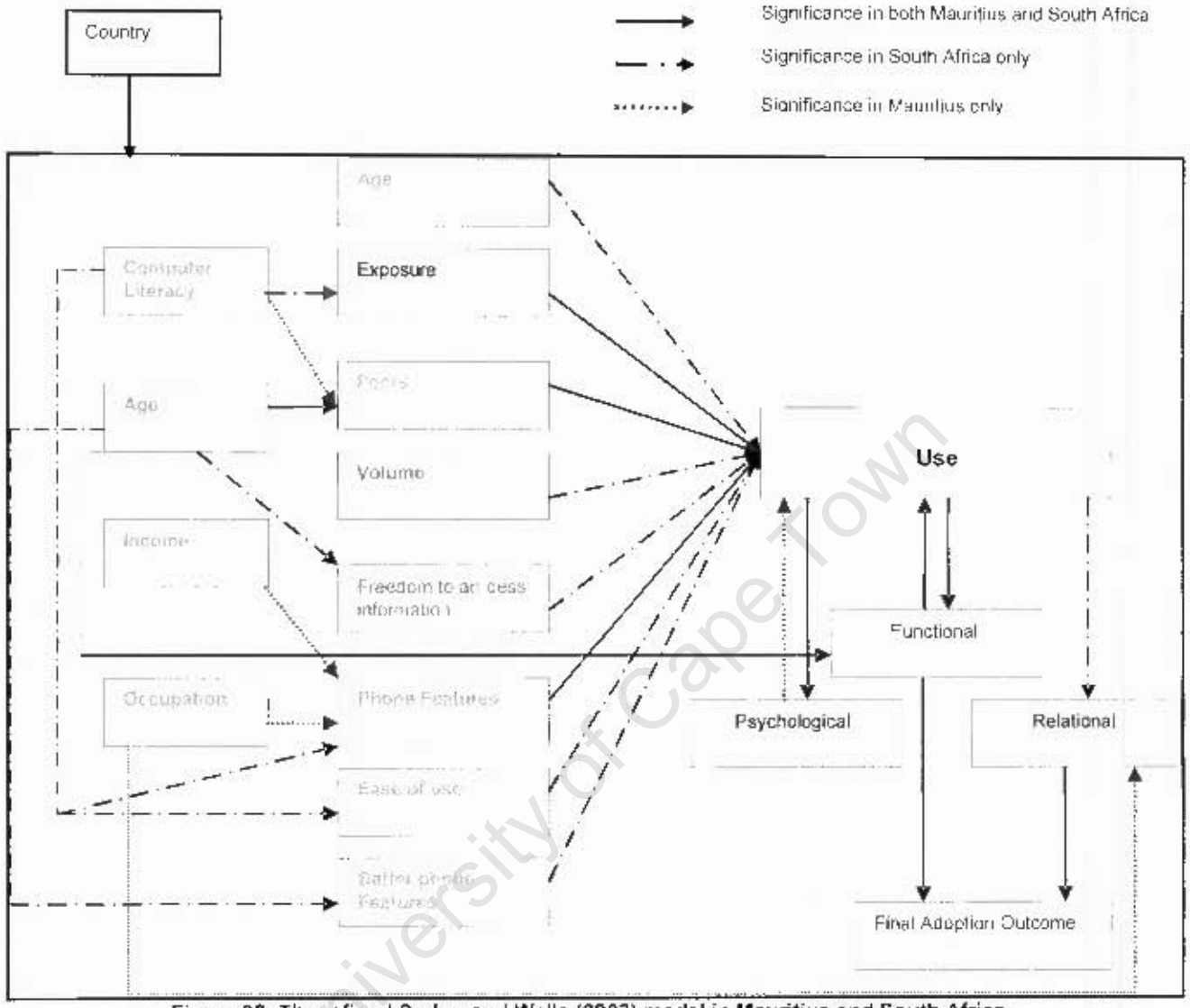

Figure 30: The refined Sarker and Wells (2003) model in Mauritius and South Africa

Only the significant variables from the original I-P-O model are illustrated. The red continuous arrows indicate the significance of the variables in both countries. The blue stripped arrows depict variables that are significant in South Africa only while the pink dotted ones show the significant variables in Mauritius.

Mauritius

Exposure, peers and phone features show significant influence on the level of use of mobile data services in Mauritius. The functional and psychological user outcomes also impact the level of use. The level of use in turn influences both of these user outcomes. Finally, the relational and functional outcomes influence the final technology adoption outcome.

None of the demographic factors show direct influence on the level of use in Mauritius. Instead, as depicted in Table 28 earlier, some of the demographic variables influence the independent variables of the model. Computer literacy shows an impact on peers while age influences both peers and the functional user outcome. Income has an impact on the phone features. Lastly, occupation influences both the phone features and the relational user outcome.

South Africa

The Sarker and Wells (2003) model is more applicable in South Africa as more factors show significant influence on the level of use of mobile data services as compared to Mauritius. Exposure, peers, volume, freedom to access information, current and enhanced phone features and ease of use all provide statistical evidence of influencing the level of use. The functional user outcome shows evidence of impacting the level of use, which in turn influences all of the user outcomes (functional, psychological and relational). Lastly, only the relational and functional outcomes show considerable impact on the final adoption outcome of mobile data services.

As for the demographic factors, age exerts significant influence on peers, freedom to access information, current and enhanced phone features, ease of use and the functional user outcome. Computer literacy influences exposure as well as current phone features and ease of use.

5.8 Emerging Concepts

The quantitative analysis above suggests that there are other factors explaining the use and adoption of mobile data services besides those in the Sarker and Wells (2003) model. Through the qualitative analysis, the prominent factors have been unveiled. These emerging factors have been grouped in two different categories as follows: Relative Advantage (convenience, freedom to access information, accessibility, overheads and efficiency) and awareness (Advertising, promotion and word of mouth).

H_3: There are additional factors/variables that explain use of mobile data services besides those postulated in the Sarker& Wells (2003) model.

Relative Advantage

Numerous studies consider perceived relative advantage as an important variable influencing use of mobile data services (Brown et al., 2005; Gilham & Van Belle, 2005; Mallat, 2004). Sarker and Wells (2003) did not include this category in their model; however they used some of the factors separately linked to other categories. For instance, convenience and freedom to access information form part of the mobility in the original study. However, in this study, interviewees distinguish convenience and freedom to access information as perceived relative advantages of mobile data services rather than factors associated with mobility. Other perceived advantages of

mobile data services are accessibility of information through the mobile phones and efficiency attained in terms of time, monetary value and functionality.

Interviewees find mobile data services to be convenient in a number of ways. Convenience is associated with low cost of communication made possible with services such as SMS, chats and emails, the constant availability of information from anywhere at anytime, accessibility of mobile phones at all times as compared to personal computers and laptops. Use of mobile data services is an easy, convenient way of being in touch and connected to people at all times.

Respondents also mention that while they can always have their mobile phones with them, they may not have a laptop or personal computer at all times. Mobile phones are small devices that may be carried around, as they are not bulky compared to laptops. This constant accessibility of mobile phones is a major advantage in terms of convenience as information can be accessed from anywhere at any time as opposed to traditional means.

For instance, students can check their mails or browse the Internet to access important academic information before the start of a class. Respondents can perform banking transactions or pay for services such as electricity at anytime without having to drive to the bank/ATM or shops. Interviewees also state that use of mobile data services while travelling is convenient and beneficial as they do not have to lose time looking for an Internet Café to check their emails.

"Also while you waiting in class, if you need something from your mail or you need to search for something you can use your phone quickly."-M3

"Earlier you had to drive to pay for services, now you can just do it on cell phone, so it is a big change."-S8

Respondents also mention that use of certain mobile data services has fewer overheads as compared to use of laptops for the same transactions. For instance one can quickly have his/her bank balance by sending a SMS as compared to a laptop where he has to switch on, access the required site, login, perform transaction and log out again. The latter process is thus relatively more time-consuming.

"Also, access to the mobile phone is faster than laptop as [the latter] has overheads in terms of starting up and shutting down."_S3

"I prefer using my mobile phone for balance enquiries as you only send a SMS and you get your enquiry whereas for Internet banking you have to first log in, put your password and then check your account…it is a hassle."-M2

Furthermore, respondents find it convenient that mobile phones incorporate a number of features as they can perform multiple tasks using only one device instead of carrying a number of devices to carry out each task. For instance, using a mobile phone, one can check emails, look for information and transfer money while watching TV or lying on the couch.

"It is convenient to have a phone with all different features, cameras, mps, calendar, email, web browsing….it is just easier to carry one small device instead of separate devices."-S2

"Basically I would tend to say that I carry a small PC (that has a web cam) connected to the internet, in my pocket."-M5

"So it is very convenient, even at home, when am sitting on the couch and watching TV, instead of going to the pc, and login in, to go to [different] websites, I rather just use my cell phone. I can transfer money, and do other transactions."-S8

Awareness

Awareness of mobile data services is another crucial factor unveiled in this study. The three different concepts linked to awareness are advertising, promotion and word of mouth.

Awareness of mobile data services is a major problem in both countries. Interviewees explicitly state that there is not enough advertising showcasing the different mobile data services currently available on the market. Awareness seems to be more of a concern in Mauritius whereby most interviewees are ignorant about the different services available on the market. Some Interviewees are not using services such as msn chats, web browsing and mobile banking as they believe these services are not yet available on the market. However, further investigation demonstrates that although these services exist, they are not being marketed enough, hence the lack of awareness on behalf of interviewees.

"In Mauritius, you cannot use msn chat, service providers are not providing it as yet."-M2

In the same way, in South Africa, some interviewees mention they do not use certain services such as mobile video, certain emails and cell phone banking because of lack of awareness.

"I use GroupWise mail, but I do not think I can have it on my phone."_S12
"I do not use mobile video, I actually do not even know about it."-S10

The South African respondents also express their concern with regards to the lack of information on the compatibility of different websites on a mobile phone. Interviewees say there is not enough advertising or other means to know which websites are compatible or accessible for use on mobile phones.

"As far as I can remember, I have never seen any advertising saying we have website functionalities for cell phones."-S12

"I was having trouble using my cell phone as a modem to access the Mweb site, so they sent me a message and said I can access it directly from my cell phone. This is when I knew they have a WAP compatible site. Apart from that, how do I know who else has a WAP website."-S8

Although respondents say that there are plenty of advertising concerning services such as ring tones, wallpapers and love poems, they do not think there is enough advertising on useful services such as cell phone banking. The interviewees think that the current adverts on TV and radio are mainly geared towards making money and mostly targeted at teenagers.

"They just seem to show money making adverts for kids, people who do not pay for these stuff. Kids do not pay for their accounts so they are easy to target"-S12.

Advertising and promotion of new services are strongly associated to trial ability. Interviewees feel that an increase in advertisements will make them more aware and more interested to try the new services being introduced. Promotional costs are also a strong initiative to encourage trial ability of new services as denoted by the quote below.

"I will try new mobile data services a lot if it is on promotional cost. Investing money in something not useful is not really worth it, but if it is on promotional cost, I would not mind trying it out. If the service is effective, I will continue use."-S2

Awareness has different dimensions associated to it whereby interviewees mention marketing (advertising) of the new services is not enough. The benefits of the new services, the costs of transactions, the security measures provided and the set up procedures are different aspects of marketing which interviewees think are very important as these aspects promote visibility. Interviewees say they are reluctant to use services without knowing about the benefits, the way billing is done and the security measures provided. Several interviewees say they are not using services such as cell phone banking and mobile video because of these awareness issues.

"In Mauritius what is missing is good campaigns, showing how the mobile data services are handy and beneficial and how they can be used for different things."-M7

"Maybe if there was some sort of advertising, [for instance] if they showed you how to set up your phone for a specific mobile data service, then it would have been easier and more encouraging to use new services."-M11

Finally, 'word of mouth' is deemed to be the most effective form of marketing. If users are happy using a service, they will recommend its use to other people but if they are disappointed, they will

let others know about their dissatisfaction. This has already been discussed earlier in section 5.4.2

The above discussion shows the importance of adequate marketing with regards to mobile data services. Thus, the stakeholders of mobile data services in both countries need to focus on good marketing campaigns to promote the mobile data services in an attempt to enhance awareness and use.

5.9 Further Analysis/Additional Tests

5.9.1 The major reasons accounting for non use of mobile data services

In section C of the questionnaire, respondents have stated the reasons why they are not using the mobile data services proposed. Figure 31 below shows the major reasons given for non-use of the mobile data services investigated in this study. The major findings are then summarised.

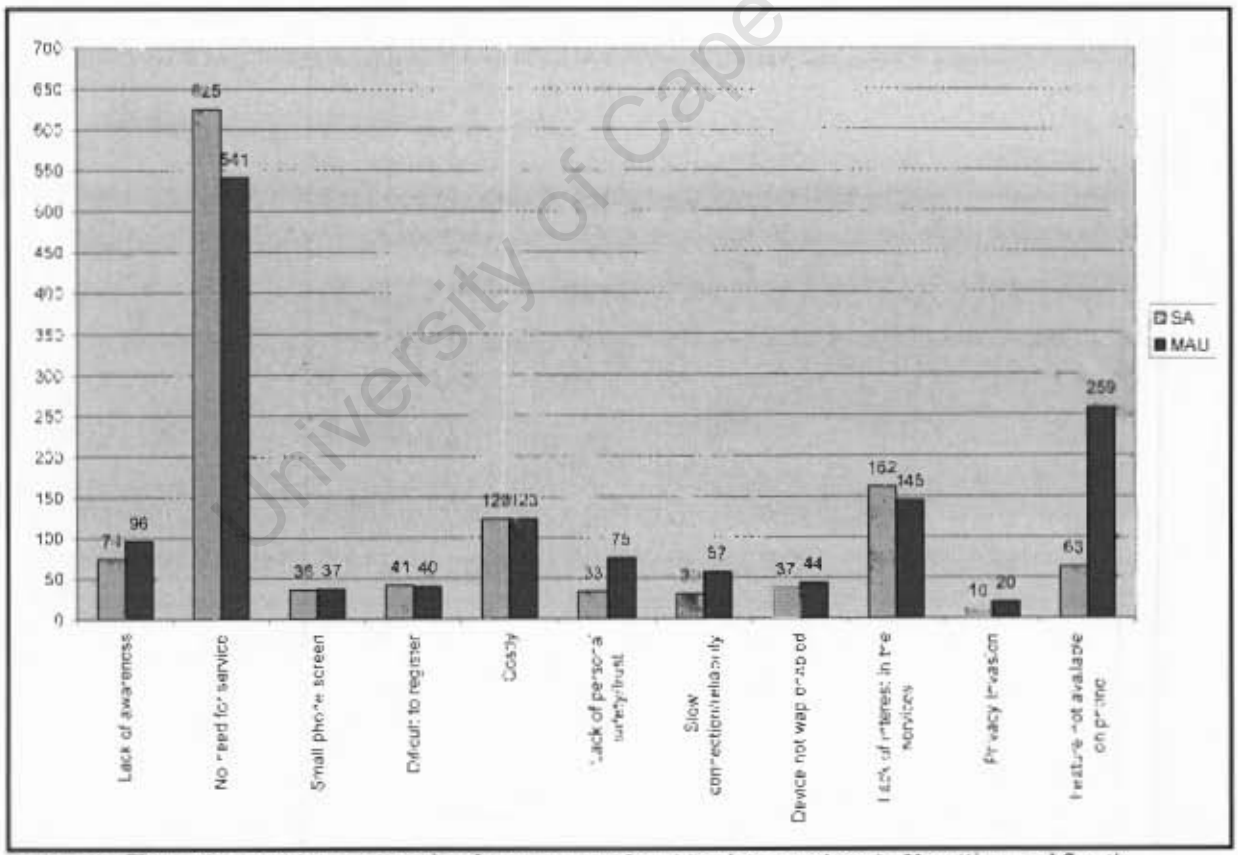

Figure 31: The major reasons accounting for non-use of mobile data services in Mauritius and South Africa

Respondents in both countries rate no need for the services as the main reason accounting for non-use of mobile data services. Lack of interest in the services, high cost of transactions and lack of awareness then follow. The major difference lies in the unavailability of the required phone features enabling use of mobile data service. This factor is more prominent among Mauritians.

5.9.2 The major inhibitors of mobile data services

Figure 32 and 33 illustrate the major inhibitors of mobile data services in South Africa and Mauritius respectively. Each inhibitor has been grouped in three categories namely; the number of times respondents rated them as the 1st, 2nd or 3rd major inhibitors. A comparison analysis then follows.

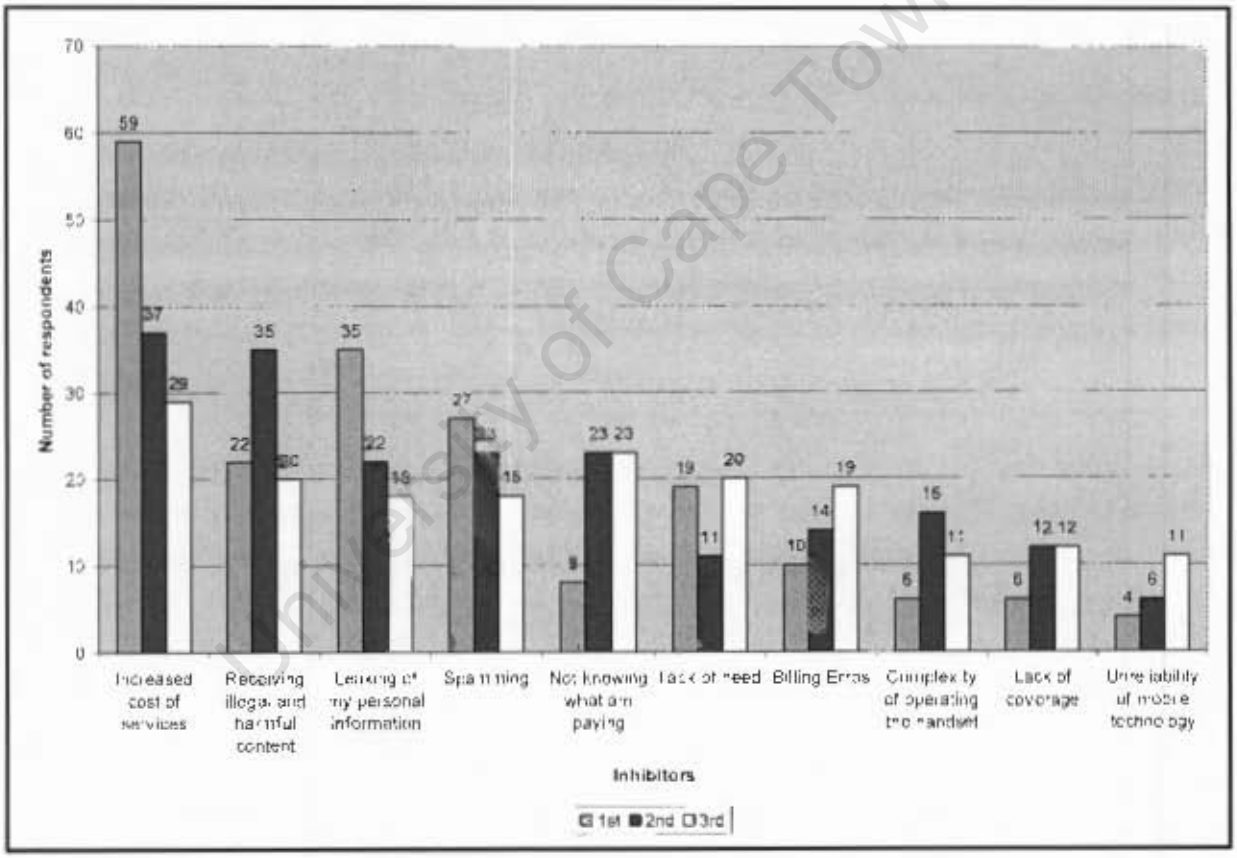

Figure 32: Inhibitors of mobile data services in South Africa

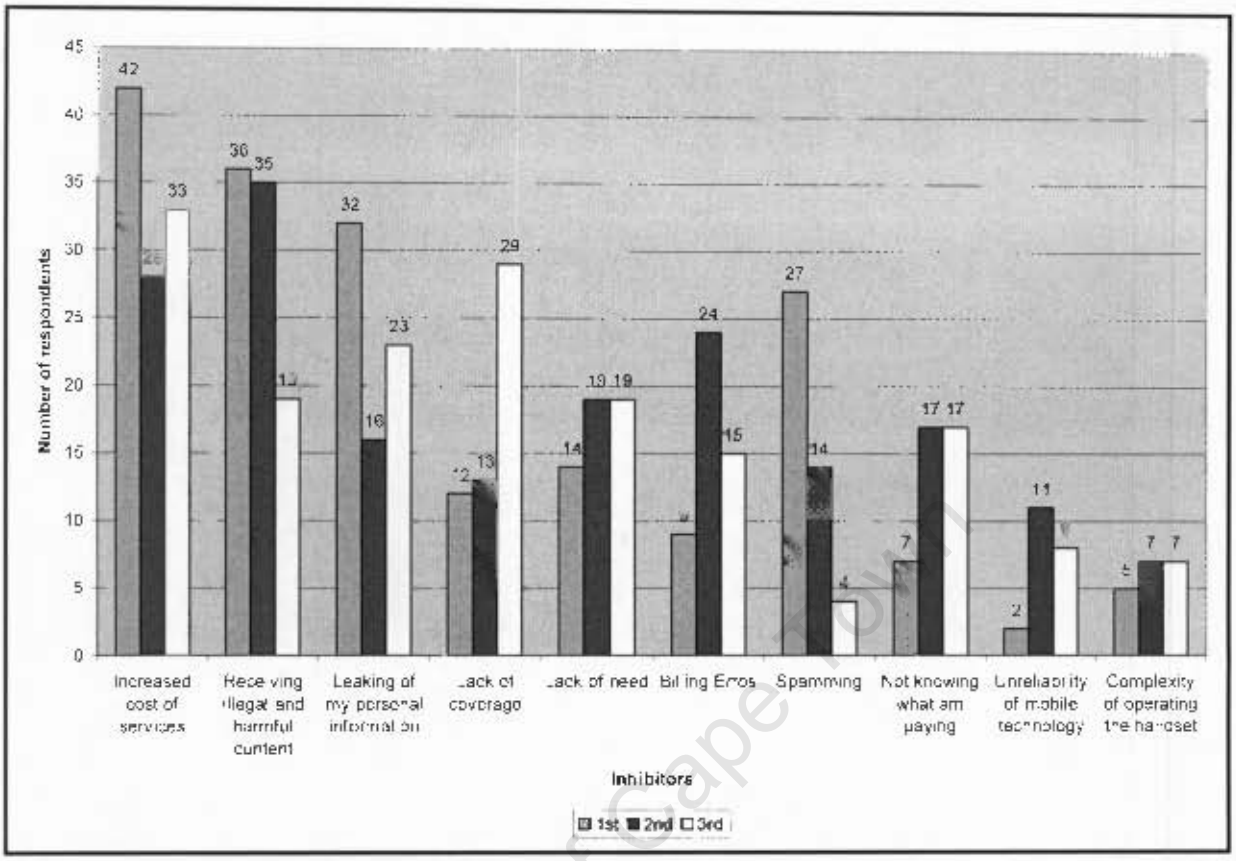

Figure 33: The major Inhibitors of mobile data services in Mauritius

Comparison Analysis

The two countries follow a very similar pattern. Increased costs, receiving harmful content and leaking of personal information are the three major inhibitors in both countries. Spamming, lack of need of services, billing errors and lack of knowledge on the cost of services closely follow. Most of these inhibitors have already been discussed in the qualitative analysis, hence increasing the validity of the results.

The only major difference is seen with regards to lack of network coverage as more Mauritian respondents have rated it as a significant inhibitor as opposed to South African respondents. This observation is comparable to the qualitative analysis as discussed in section 5.4.5. The Mauritian interviewees have unanimously expressed their frustration with regards to network coverage while the South African interviewees have shown more satisfaction with their network coverage capability.

5.9.3 The major factors encouraging use of mobile data services

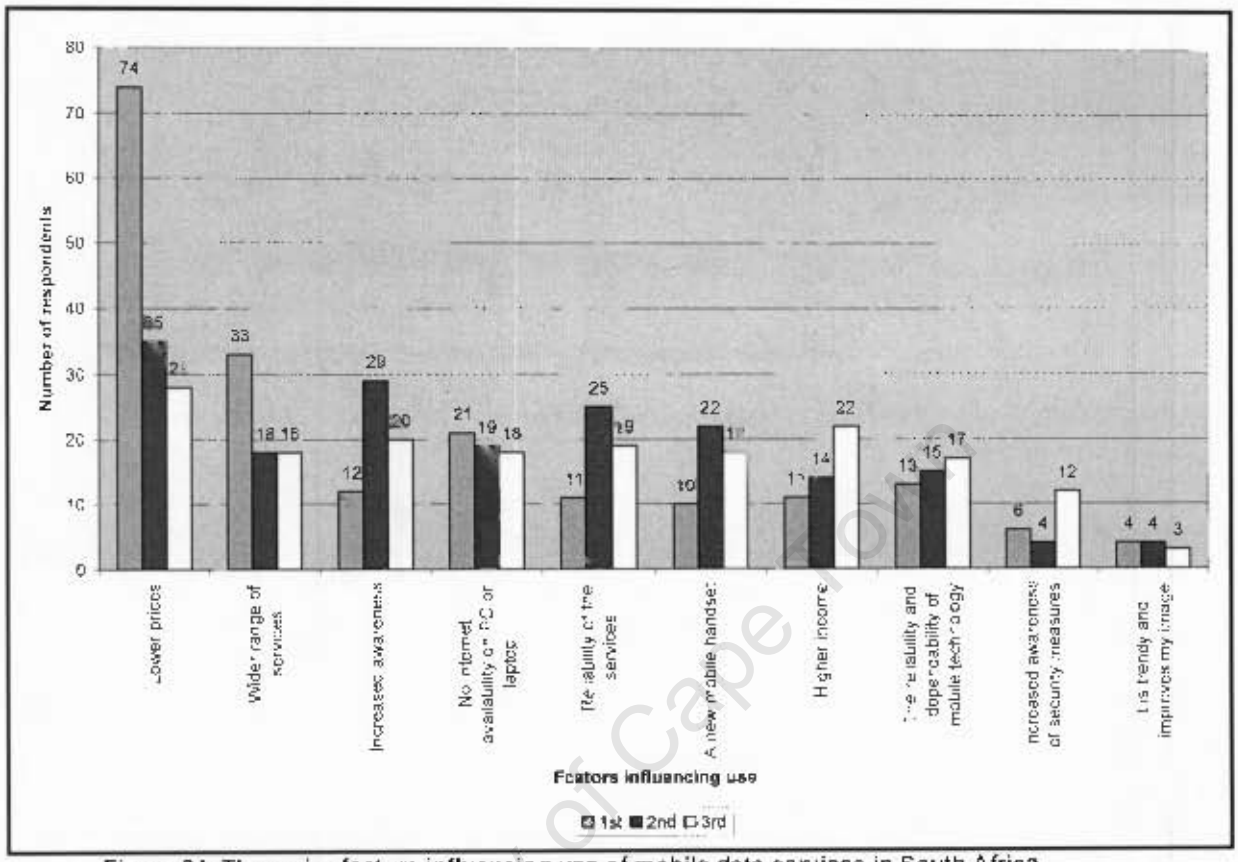

Figure 34: The major factors influencing use of mobile data services in South Africa

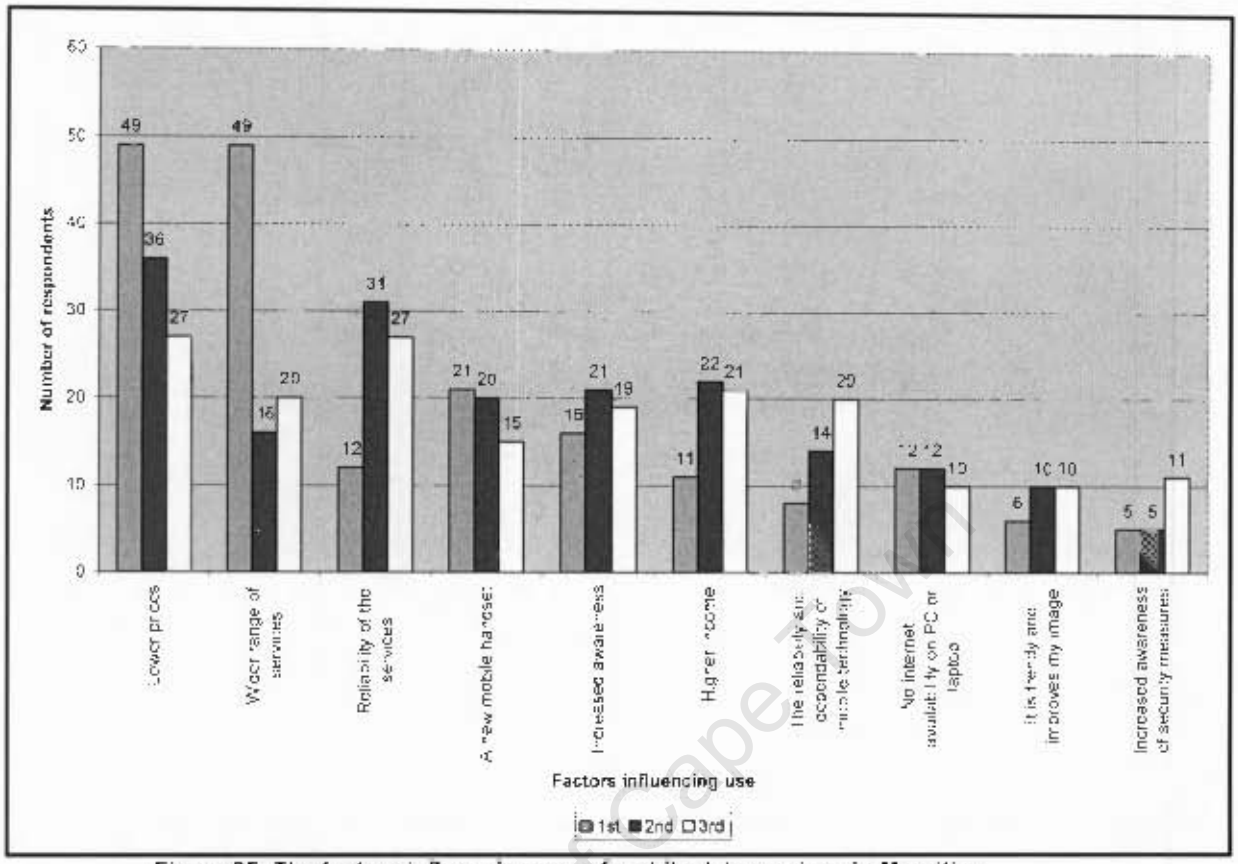

Figure 35: The factors influencing use of mobile data services in Mauritius

The above figures show that both countries follow a similar pattern when it comes to the major factors influencing use of mobile data services. The first two major factors influencing use of mobile data services are lower prices of services and a wider range of services in both countries followed by increased awareness of new services and better reliability of services.

The interviewees in both countries have mentioned all of these factors as determinants of mobile data services. The influential impact of cost as both a determinant and inhibitor of mobile data services has been discussed in detail in section 5.4.2. Interviewees believe that some of the mobile data services are still relatively expensive and if cost increases further, they will reduce usage of important services and stop further usage of entertainment-based services. Lower price of services, on the other hand, is a major incentive for trial ability of new services. As seen in section 5.4.3 (formality) and 5.4.6 (functionality), a wider range of services, allowing respondents to be more functionally efficient, would encourage them to engage in more frequent use of mobile data services. Lastly, increased awareness of mobile data services is a distinguished factor that may encourage trial ability and use as explained in section 5.6.

5.10 Discussion and Implications of results

The quantitative analysis has attempted to operationalise the Sarker and Wells (2003) model as a standard model which is applicable to different countries. The statistical tests show that although the model is not totally generic, it is applicable to other countries. Not all the factors proposed in the original study show significant influence on level of use of mobile data services as predicted by Sarker and Wells (2003). Both the quantitative and qualitative results depict that the I-P-O model differs considerably in both countries. The model works better in South Africa as compared to Mauritius indicating that country is a strong variable influencing use of mobile data services. This difference can be attributed to the different socio-economic conditions and technological environment of the two countries as has been discussed earlier.

The qualitative analysis provides some insights for the variation of the results in terms of the geographical, technological (mobile industry set up) and cultural aspects of the two countries. Geographically, Mauritius is a small tropical island as compared to South Africa. People do not have to travel around a lot, hence, rendering the mobility function of mobile data services less useful as compared to South Africa. Although people think that some mobile data services undeniably have made their life more convenient, they do not associate mobility as a factor influencing use. Some content services such as location-based services and downloading of weather reports are not necessary as mentioned by interviewees due to the size and stable weather conditions of the Island.

With respect to technology, the mobile industry setup of the two countries differs significantly. Not only were 2.5 and 3G technologies introduced at a much later stage in the Mauritian market, but also some of the mobile data services are still at an immature stage as opposed to South Africa. This accounts for difference in adoption patterns of certain services in the two countries. The qualitative analysis provides evidence of South Africans being more exposed to advanced mobile data services as opposed to Mauritians. Very few Mauritians use mobile data services such as mobile video, chats and web browsing while services such as cell phone banking are still at a very immature stage. SMS had been free for a few years in Mauritius and hence, alm ost everyone has appropriated the technology. Moreover, Mauritians seem to lean more towards SMS based services. Examples include using SMS for balance enquiry and Top Up.

Although this study did not investigate the cultural and economical effects on use of mobile data services, the qualitative study provides some evidence of the impact of these factors. Respondents in Mauritius are more reluctant to transact online using e-commerce and m-commerce in general. The interviewees attribute this behaviour to the rather conservative society. On the other hand, the purchasing power of Mauritians is lower than South Africans, and the

qualitative analysis shows that income of people and cost of handsets are amongst the major inhibitors in Mauritius.

The above arguments show that the Sarker and Wells (2003) model is not a standard model that can be used in any country. Although the model is a valid one, individual country results will always be dependent on the geographical, economical, technological, social and cultural factors of the country.

6.0 Chapter Six : Conclusion

6.1 Research Objective and Approach

This study focused on the use of mobile data services in South Africa and Mauritius. 'Use' in this research refers to adoption. In both countries, SMS forms an integral part of the daily lives of almost everyone but in the meantime, use of other more advanced mobile data services has not been enthusiastically adopted. This study, therefore, has investigated the factors influencing use of mobile data services using the Sarker and Wells (2003) model.

The Sarker and Wells (2003) model has been chosen as it focuses specifically on use of mobile phones and mobile data services as compared to models such as TAM, IDT, TRA, TRB AND UTAUT which are more generic technology adoption models. In addition, it is a recent model, which has been proposed through interpretative study and has not been quantified to this date.

The Sarker and Wells (2003) model adopts a holistic view of the whole adoption process. It is a three-stage model also referred as the input, process and output (I-P-O) model. The inputs are the factors that influence use of mobile data services. The process, also known as 'use process', explains the adoption of the services. It is a dynamic process encompassing constant feedback from the user outcomes, characterised by the functional, psychological and relational outcomes. Lastly, the output is the impact of the user outcomes on the final adoption outcome which may either be sustained use or non-use.

The research paradigm used is positivist as the core of the research aims to operationalise the Sarker and Wells (2003) model. A research instrument has been designed for this purpose. The research instrument is an enriching contribution to the literature and it can be used by researchers in the future. Besides, validating the Sarker and Wells (2003) model, the research instrument also uncovers the key inhibitors and determinants of mobile data services in the two countries. An exploratory section thereafter has been used to explain 'use' of mobile data services and the impact of the user outcomes on the final technology adoption. Therefore, initially, a quantitative analysis has been conducted to validate and operationalise the Sarker and Wells (2003) model, followed by a qualitative analysis to further enhance the results. Using both research approaches has ensured better quality and validity of the results. The results from each country were compared to one another to assess any similarities and differences. The qualitative analysis has also unveiled some additional factors influencing the level of use of mobile data services besides those postulated in the original I-P-O model.

6.2 Detailed Summary of Findings

This section summarises the analysis chapter by highlighting the main points.

Demographic Analysis

The demographic analysis of the two samples shows that they follow a similar pattern with regards to gender and age. While there are some variations in occupation and income, a major difference is noted with computer literacy.

Usage Profile

The usage profile shows that SMS is the most widely used service in both countries. MMS, web browsing, emails and chats are relatively popular in South Africa while the use of ring tones and top ups are more prominent in Mauritius. MMS, emails, web browsing and chats are not widely used in Mauritius.

The 'use' variable

The use variable depicts both the variety and frequency of services used by respondents. The variety in this instance refers to the different services which they are using whilst frequency represents the regularity of use. The use variable also takes into account the services experimented by respondents. The cumulative frequency of use represents an intuitive pattern in both countries.

Reliability and Validity of quantitative results

The questionnaire has been exclusively built to test the I-P-O model. The reliability and validity of the instrument is thus particularly important. Item reliability and factor analysis indicate high Cronbach Alpha values and clean factor loadings of the test items. The newly designed questionnaire thus indicates high dependability and validity.

Model testing

For most of the proposed hypotheses, both quantitative and qualitative analyses have been used. The quantitative tests have been carried out three times consecutively. The first test has been carried out on a combined dataset of the Mauritian and South African samples, hence validating the I-PO model as a standard model. The second test and third tests have been carried out on each country's sample to assess individual country's difference.

H_{1a}: Individual characteristics (gender, income, age, occupation, computer literacy, country and prior experience) influence the level of use of mobile data services.

Overall only age, country and exposure provide significant influence on the level of use of mobile data services. A comparison analysis between the Mauritian and the South African sample shows the significance of solely exposure in Mauritius while both age and exposure provide statistical evidence of impacting use of mobile data services in South Africa.

H_{1b}: Context factors (cost, symbolism and peers) influence the level of use of mobile data services.

Only peers show statistical support for influencing the level of use in the overall dataset and subsequently in both countries. Cost and symbolism do not provide evidence of any impact on the level of use. However, the qualitative analysis contradicts the quantitative analysis with regards to cost. The interviewees in both countries regard cost as a key factor, which may either encourage or inhibit use. A possible reason for this contradiction is attributed to the limited number of questions related to various aspects of cost in the questionnaire.

H_{1c}: Modality of mobility (convenience, freedom to access information and safety) influence the level of use of mobile data services.

Only freedom to access information shows significant support on the influence of mobile data services using the combined dataset. A comparison analysis between the two countries shows that there is no statistical evidence of any of the factors influencing use in Mauritius. Freedom to access information shows significant support solely in South Africa. Safety does not show statistical evidence of impacting use in any of countries.

The qualitative analysis provides ample support for the quantitative results and also allows a deeper insight into the reasons of the low significance of the mobility factors in the two countries. Although interviewees in both countries consider convenience as relative advantages of mobile data services, they do not associate it to mobility. In Mauritius, the interviewees mentioned that mobility factors do not impact them because of the small size of the Island.

H_{1d}: Task characteristics (urgency, formality and volume) influence the level of use of mobile data services.

Overall, only volume shows significant influence on the level of use. However, upon comparing the two countries, it is seen that the overall impact of volume is attributed to its high significance on the South African sample. There is no statistical support of any of the task characteristics impacting the level of use in Mauritius. The qualitative analysis supports the quantitative analysis.

H_{1e}: Technology characteristics (current phone features, ease of use, network capability and enhanced phone features) influence the level of use of mobile data services.

Technology characteristics form one of the key factors influencing use of mobile data services in this study with current and enhanced phone features and ease of use all impacting the level of use of mobile data services.

In South Africa, all of these three factors show high statistical significance on use whereas only current phone features show evidence of impacting use in Mauritius. The qualitative analysis supports the quantitative results in South Africa but contradicts the Mauritian results with regards to ease of use and enhanced phone features. The interviewees in Mauritius have established both ease of use and enhanced phone features as determinants and inhibitors of mobile data services.

H_{1f}: The user outcomes (functional, psychological and relational) influence the level of use of mobile data services.

The combined dataset of the two countries shows the influential impact of the functional and psychological user outcomes on the level of use. Upon comparing the results of the two countries, it is observed that only the functional user outcome emerges as a highly significant factor in both countries. Psychological user outcome shows statistical support only in Mauritius, while the relational user outcome does not show any support of influencing the level of use in the two countries.

The qualitative analysis lends ample support to the quantitative ones. Interviewees in both countries have mentioned that they are keen to use mobile data services, which enhance their efficiency. With regards to psychological impacts, interviewees state that use of mobile phones and mobile data services give them a sense of self-worth, a sense of emotional dependence and a sense of freedom. These three factors were not investigated quantitatively.

H_{1g}: The level of use of mobile data services influences the user outcomes.

In this test, the user outcomes are the dependent variables while use variable is the independent one. The results show that a strong relationship indeed exists between extent of use and the functional and psychological user outcomes. The extent of use however does not impact the relational user outcome. The qualitative analysis supports the quantitative results.

H_{1h}: The user outcomes (functional, psychological and relational) influence the final adoption outcome of mobile data services.

This is the final stage of the model. Statistically, all the user outcomes show a high significance on the final adoption outcome. Final adoption outcome in this case refers to either sustained use or non-use. The qualitative analysis depicts that besides these three user outcomes, there are a number of factors which can influence the final adoption outcome. While positive experiences derived from use of mobile data services encourage future use, negative experiences have adverse effects and may subsequently result in non-use. Examples of bad experiences are unreliability of the service, slow connectivity, spamming, invasion of privacy and loss of personal data.

H_2: There are differences between the relative importance of variables in Mauritius and South Africa.

A difference in correlation coefficient test shows a significant difference in the relative importance of some of the variables in the two countries.

H_3: There are additional factors/variables that explain use of mobile data services besides those postulated in the Sarker& Wells (2003) framework.

Relative advantage and awareness of mobile data services have emerged as the two main broad categories of factors influencing use of mobile data services in both countries. Relative advantage is the perceived benefits users derive from use of mobile data service with regards to

convenience, freedom to access information and accessibility of information. Awareness refers to the marketing and promotional campaigns of new services, which are used to increase users' knowledge in an attempt to encourage trial ability and use.

Key inhibitors of mobile data services

The main inhibitors of mobile data services are mostly cost-related and are as follows; high cost of transactions, billing errors and lack of visibility of transaction costs. Other prominent inhibitors include reception of harmful content, leakage of personal information, spamming and lack of need of the services. Most of these factors have also been unveiled in the qualitative analysis.

Main determinants of mobile data services

Lower prices of transactions, a wider range of services and increased awareness have surfaced as the major factors influencing use of mobile data services and these three factors have been mentioned by interviewees in both countries. The analysis includes a detailed qualitative discussion on them.

6.3 Limitations and future research

One of the main limitations of this study is that the sample used in South Africa is focused on the educated population of mobile users in the Western Cape Province. Although this sample is representative of the South African population in terms of age, gender and occupation, the results may not be representative of the overall mobile market of South Africa. There may be lots of people, not having the same education level as the sample of this study, using mobile data services in the rural areas of South Africa. Future research may, therefore, attempt to investigate the use of mobile data services in the more rural parts of South Africa.

In Mauritius, although the sample was geographically representative, some people had difficulty in understanding and speaking English. Future research may consider investigating the use of mobile data services in either French or Creole to encourage participation and obtain a wider and richer range of information.

Furthermore, this study did not investigate the impact of culture on the use of mobile data services. Future studies may therefore attempt to explain such impacts on use in the two countries. On a higher level, future studies may consider validating the Sarker and Wells (2003) model in Asian and European countries and the results may be compared to those of this study. The questionnaire designed is a valid and reliable instrument which may be further built upon by researchers seeking to use the I-P-O model. More test items relating to different aspects of some constructs such as cost and formality can be added. In fact, future researchers may consider further analysing the areas where the quantitative and qualitative analysis were contradicting (cost, task characteristics and mobility) by adding more test items to the respective constructs.

6.4 Recommendations

This research provides scope for a number of practical recommendations. It provides stakeholders of mobile data services with a comprehensive analysis of their target market. While a few studies of this nature have been conducted in South Africa, it is totally new to the Mauritian audience. Therefore, based on these results, the stakeholders may be able to better address the particular needs of their consumers.

Lack of awareness is a major problem in both countries, therefore more adverts and promotional campaigns need to be shown in order to increase consumers' knowledge about the new services being introduced. The adverts need to focus on educating the consumers with regards to the specific benefits of the services in terms of efficiency and effectiveness and the advantages of using them as opposed to other alternatives. The ease of use and set up procedures and security measures also need to be stressed upon. Although his research did not investigate trust with respect to use of mobile data services, the interviewees offered various insights on non-use of some services such as cell phone banking because of lack of trust in the security measures provided. Hence, stakeholders should aim to convey the trustworthiness of the different services by clearly specifying the measures taken to ensure the safety of consumers.

In Mauritius, customer service is a major problem. The call centres should equip their employees with more adequate training with regards to dealing with consumers and focus more on customer relationship management while in South Africa, the online web support, of the different MNOs, need to be more up to date.

With regards to cost, the analysis provides numerous examples on the influential impact of cost on use and non-use. Therefore, the cost of a number of services can be lowered to boost up use of mobile data services. New services may be introduced at a relatively low price for a specific time period to promote trial ability. There needs to be increased transparency with regards to the billing and cost of some transactions. Furthermore, the stakeholders in Mauritius may consider the option of providing contract phones to their consumers as this is seen as a major inhibitor of use.

6.5 Conclusions

This study attempted to operationalise and validate the I-P-O model proposed by Sarker and Wells (2003). A research instrument has been designed for this purpose. A qualitative discussion supported the quantitative findings, hence improving the overall validity of the conclusions made. The results indicate that although the model is partially valid on the whole, it works better in South

Africa as opposed to Mauritius. The socio-economic conditions and technological environment of the two countries may account for the noted differences. The qualitative analysis also provides evidence of some additional factors, not postulated in the Sarker and Wells (2003), influencing the level of use of mobile data services in both countries.

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Appendices

Appendix 1

1A Internet and mobile penetration in African Countries

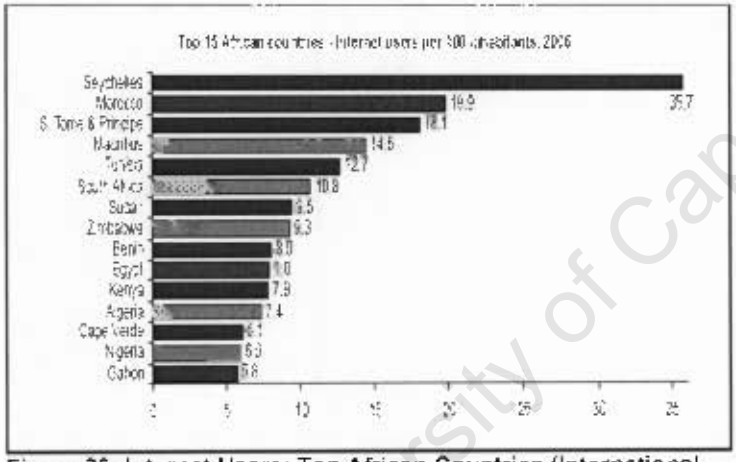


Figure 36: Internet Users: Top African Countries (International Telecommunication Union, 2007)

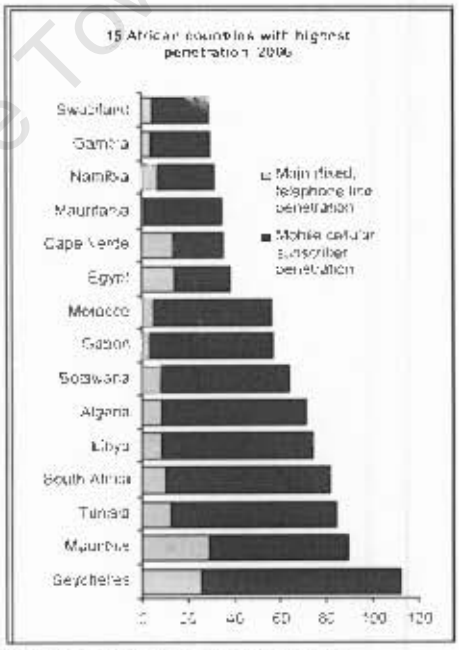


Figure 37: Mobile and fixed line penetration Users: Top African Countries (International Telecommunication Union, 2007)

1B Model of technology Appropriation

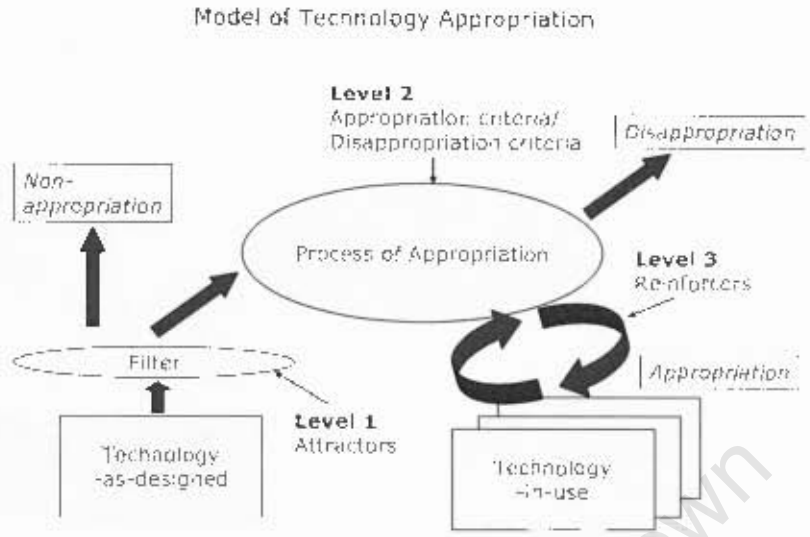


Figure 38: Model of Technology Appropriation (Source: Carroll et al., 2003)

1C Modified I-P-O model

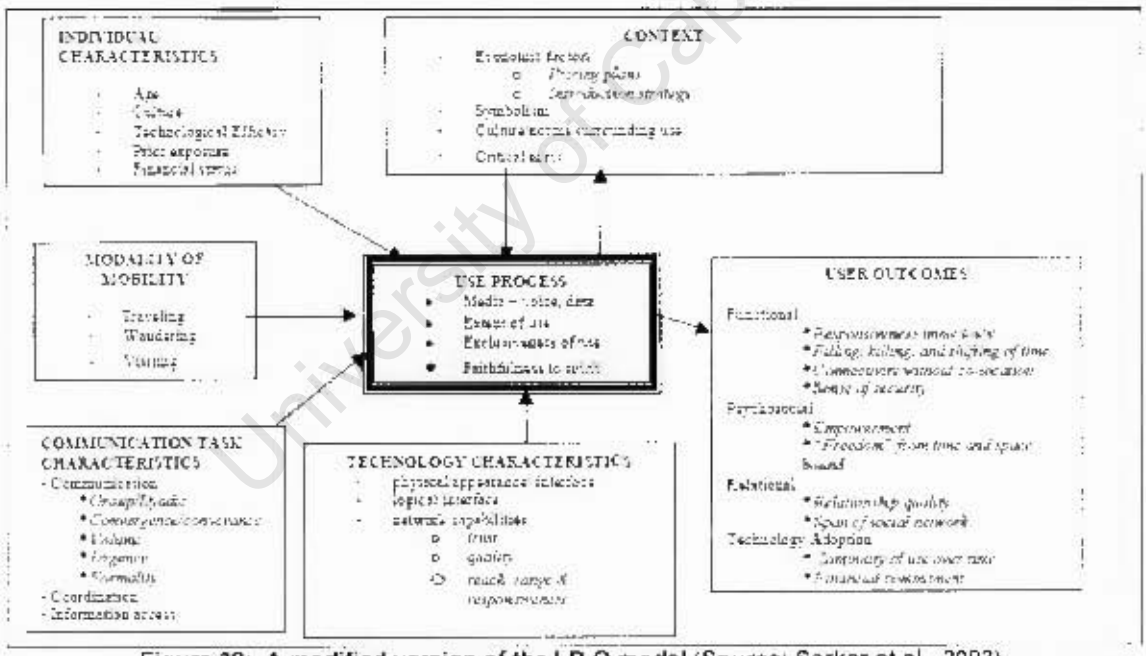


Figure 39: A modified version of the I-P-O model (Source: Sarker et al., 2003)

1D Studies performed in South Africa

Studies performed in South Africa	Researcher(s)
Cell phone banking predictors of adoption in South Africa – an exploratory study	Brown, I Cajee, Z., Davies, D., & Stroebel, S (2003)
Investigating adoption/non-Adoption of cell Phones for financial transactions in South Africa	Brown, I., Gordon, C , Janik, N. & Meyer, M. (2005)

Determinants of Internet and Cell phone banking Adoption in South Africa	Brown, I. & Molla, A. (2005)
Factors Affecting the Adoption of Mobile Content Services amongst Youth in the Western Cape	Gilham, C. & Van Belle, J.P.(2005).
The non-adoption of cell hones for financial transactions – a qualitative study	Gordon, C., Janik, N. & Meyer, M. (2004)
The importance of Trust in M-commerce	Joubert, J. (2006)
Mobile Marketing: the road ahead for South African marketers	Kloppe, H.B.(2004)
The phenomenon of M-commerce in the retail banking sector in South Africa	Muir, C. & Crystal, A.(2004)
An investigation into access control for mobile devices.	Perelson, S. & Botha, R. (2005).
Determinants of 3G Mobile Video Adoption by the South African Mobile Consumer	Richards, F. & Van Belle, J.P.(2006)
Mobile Commerce: Future OR Fallacy	Singh, A.M. (2003)
Mobile commerce: Usage and usability	Singh, I.K. (2003)
The adoption trends on mobile gaming in South Africa	Van Wyk, S. & Van Belle, J.P.(2005)
The uses and gratifications of mobile internet in South Africa	Kankwenda, G. & Manjoo, S.(2007)

Table 30: The studies focusing on mobile services in South Africa

Appendix 2

2A Cover Letter

Department of Information Systems
Leslie Commerce Building
Engineering Mall, Upper Campus
OR Private Bag Rondebosch 77001
Tel: 650-2261
Add: ALUMNI, Cape Town
Fax No: (021) 650-2280

Masters Dissertation Research Survey: Participant Consent Form

Dear Sir/Madam,

As an Information Systems Masters student at the University of Cape Town, I am completing my dissertation on understanding the use and adoption of mobile data services in South Africa and Mauritius.

Your participation to this research will be greatly appreciated. Your input will allow me to understand adoption factors, patterns and outcomes in both Mauritius and South Africa whilst also allowing me to complete my Masters degree successfully.

Participation is voluntary. Data collected will be stored electronically and will be kept strictly confidential. Participation will be anonymous as no personal details such as name and address will be collected. However, if you are willing to receive a copy of the final results of the research, you are welcome to give us your email address and the final results will be sent to you. The questionnaire and interview have been approved by the UCT Ethics committee.

If you have any further queries, please feel free to contact either the researcher or Professor Jean Paul Van Belle. The researcher's contact details are provided below.

Thank you for your time and cooperation.

Sincerely,

Anjali Ramburn
Masters Student
University of Cape Town
Paul.VanBelle@uct.ac.za
Email: RMBHIR001@MAIL.UCT.AC.ZA
Cell no: +27724116172 / +2307380522

Prof Jean Paul Van Belle
Supervisor
E-mail: Jean-

Department of Information Systems
University of Cape Town

PARTICIPANT CONSENT FORM

By signing this participant consent form, you are agreeing to participate in the research project entitled "Understanding Use and Adoption of Mobile Data Services in 2 African Countries"

Signature. _____
Date: _____

2B Questionnaire

Understanding Use and Adoption of Mobile Data Services in 2 African Countries

This survey will take approximately 20 minutes of your time. By completing this questionnaire, you give consent to participate in this research. Please be sure that your anonymity is ensured and all answers will be treated in the strictest confidence.

Do you have a cell phone	☐ Yes	☐ No
Do you have an active bank account	☐ Yes	☐ No

Section A

Mobile data services (MDS)	***How often do you do use the following services through your cellular phone?***						**Tick the services which you are using more this year as compared to last year**	**Tick the services you intend to use more next year as compared to this year**
	Several times a day	Once /twice a day	2-6 times weekly	1-6 times monthly	Less than once monthly	Never		
Example (Voice Call)	√						√	√
SMS (Text messaging)								
Downloading ring tones and logos								
Downloading Content: Information such as weather, sport and/or news								
MMS (Multimedia messages)								
Cell phone banking								
Top up (Re-crediting your phone through SMS)								

Accessing Email								
Web browsing								
Mobile Video								
Playing Online Games								
Online chats such as Msn messenger &Mxit								

Section B

Please circle the appropriate option.

		Strongly Agee	Agree	Somewhat Agree	Not Applicable/ Neutral	Somewhat Disagree	Disagree	Strongly Disagree
1	People using mobile data services (MDS) are more prestigious than those who do not.	1	2	3	4	5	6	7
2	MDS are convenient when I am visiting family, or different places or cities.	1	2	3	4	5	6	7
3	MDS are ideal for urgent situations	1	2	3	4	5	6	7
4	I had the opportunity to use MDS on a trial basis	1	2	3	4	5	6	7
5	MDS are suitable for situations where immed ate feedback/response is necessary.	1	2	3	4	5	6	7
6	MDS are highly priced.	1	2	3	4	5	6	7
7	I had adequate opportunities to try out the different MDS.	1	2	3	4	5	6	7
8	MDS are difficult to use because of the small screens.	1	2	3	4	5	6	7
9	I use MDS when I am bored.	1	2	3	4	5	6	7
10	MDS are fair value for money	1	2	3	4	5	6	7
11	MDS are convenient when one is going from one place to the other using public or private transport.	1	2	3	4	5	6	7
12	I will certainly use MDS if I start earning more.	1	2	3	4	5	6	7
13	Using MDS is safe when I am visiting family, or different places and cities (for instance using cell phone banking is more secure than internet banking).	1	2	3	4	5	6	7
14	The use of MDS is a status symbol.	1	2	3	4	5	6	7
15	The graphical features of my phone are suitable for MDS.	1	2	3	4	5	6	7
16	MDS makes me trendy.	1	2	3	4	5	6	7
17	I have reduced contact with some people because they do NOT use or are not able to access certain mobile services which I use myself.	1	2	3	4	5	6	7
18	I feel professional when using MDS.	1	2	3	4	5	6	7
19	MDS are fashionable.	1	2	3	4	5	6	7
20	MDS are appropriate for formal communication or transactions (banking, emailing clients. .)	1	2	3	4	5	6	7
21	People in my organisation who use MDS have a high profile.	1	2	3	4	5	6	7
22	I use MDS as most of my friends/colleagues use it.	1	2	3	4	5	6	7
23	My peers influenced my decision to use MDS.	1	2	3	4	5	6	7
24	It is easy for me to use my phone for MDS to do what I want.	1	2	3	4	5	6	7

Please circle the appropriate option.		Strongly Agee	Agree	Somewhat Agree	Not Applicable/ Neutral	Somewhat Disagree	Disagree	Strongly Disagree
25	The features provided by my phone allow me to use MDS and mobile commerce.	1	2	3	4	5	6	7
26	Overall I believe using MDS is easy.	1	2	3	4	5	6	7
27	MDS such as online chats are suitable for situations involving high volume communication (where there is a lot of information to convey).	1	2	3	4	5	6	7
28	I use MDS because my phone is WAP enabled/GPRS enabled.	1	2	3	4	5	6	7
29	The speed I can download content is suitable for MDS.	1	2	3	4	5	6	7
30	Using MDS allows me to be more efficient when I am waiting in the traffic or on my way home from work.	1	2	3	4	5	6	7
31	The interface of my phone is well suited for MDS	1	2	3	4	5	6	7
32	MDS are convenient when one is walking around, shopping or waiting for someone	1	2	3	4	5	6	7
33	Using MDS changed my relationship with many people	1	2	3	4	5	6	7
34	MDS provides the freedom to access information from anywhere when one is going from one place to the other using public or private transport	1	2	3	4	5	6	7
35	MDS give me the ability and freedom to move around.	1	2	3	4	5	6	7
36	MDS are not suitable because of the limited coverage of mobile technology.	1	2	3	4	5	6	7
37	I would certainly use MDS if my phone had a longer battery life	1	2	3	4	5	6	7
38	MDS provides the freedom to access information from anywhere when I am visiting family, or different places or locations.	1	2	3	4	5	6	7
39	It is difficult to register and set up my phone to use MDS.	1	2	3	4	5	6	7
40	My personal relationship with my parents and friends improved because of MDS.	1	2	3	4	5	6	7
41	MDS (email, checking weather) are suitable for accessing individual information.	1	2	3	4	5	6	7
42	It is easy for me to remember how to go operate my mobile phone for MDS	1	2	3	4	5	6	7
43	I will stop using MDS if I experience unfavorable situations.	1	2	3	4	5	6	7
44	The resolution of my mobile phone is suitable for MDS.	1	2	3	4	5	6	7
45	MDS make me feel empowered.	1	2	3	4	5	6	7
46	MDS such as MMS and SMS and online chats are not suitable in situations involving 3 or more people.	1	2	3	4	5	6	7
47	I feel left out as I do not use MDS	1	2	3	4	5	6	7
48	Using MDS makes me feel more prestigious	1	2	3	4	5	6	7
49	MDS are cumbersome to use because of the small keyboards.	1	2	3	4	5	6	7
50	The use of MDS when moving around gives me a sense of personal safety (For instance, if you are lost while travelling you can SMS someone or use services such as look4it, hence giving you a sense of personal safety).	1	2	3	4	5	6	7
51	Overall, I have had a POSITIVE experience with MDS.	1	2	3	4	5	6	7
52	I have no problems with the screen (interface) of my mobile phone to perform MDS	1	2	3	4	5	6	7

Please circle the appropriate option.		Strongly Agee	Agree	Somewhat Agree	Not Applicable/ Neutral	Somewhat Disagree	Disagree	Strongly Disagree
53	MDS are not reliable.	1	2	3	4	5	6	7
54	I will certainly use MDS if I could download at a higher speed.	1	2	3	4	5	6	7
55	I will certainly use MDS if the services were more reliable.	1	2	3	4	5	6	7
56	The battery life of my mobile phone is suitable for MDS.	1	2	3	4	5	6	7
57	I will certainly use MDS if the coverage of mobile technology (network) gets better	1	2	3	4	5	6	7
58	I use MDS to fill time when I am waiting for someone.	1	2	3	4	5	6	7
59	Using MDS made me closer to some people.	1	2	3	4	5	6	7
60	I enjoyed using MDS in the past and this influenced my decision to keep up using it	1	2	3	4	5	6	7

Section C

If you are NOT using ANY of these services below, please TICK the reason why?	Lack of awareness	No need for these services	Small phone Screen	Difficult to register and set up	Costly	Lack of Trust	Lack of personal safety	User has been disappointed	Additional stress	Services not reliable	Slow connection	Device not WAP enabled	Lack of interest in the services	Privacy invasion	Feature not Available
SMS															
Downloading ring tones and logos															
Downloading Content: information such as weather, sport and/or news															
MMS(Multimedia messages)															
Cell phone banking															
Top Up (Recrediting through sms)															
Accessing Email															
Web browsing															
Mobile Video															
Playing Online Games															
Online chats such as msn messenger, Mxit															
Please specify Any Other reason for not using mobile data services															

Section D: What would PREVENT you from using mobile data services?

Please rate the three most important factors listed below in order of importance from **1 TO 3** with **1** being the **most important**:

Factor	*Ranking*
Nothing	
Spamming	
Receiving illegal and harmful content	
Increased costs of services	
Billing errors	
Not knowing what I'm paying for	
Leaking of my personal information.	
Complexity of operating the handset to perform transactions	
The services do not fulfill my needs.	
Unreliability of mobile commerce technology.	
Lack of coverage of the network in certain regions	

Other (please state):

.....

Section E: What would MAKE you use mobile data services more often? Please rate the three most important factors listed below in order of importance from **1 TO 3** with 1 being the **most important**:

Factor	*Ranking*
A wider range of services	
A new mobile handset supporting mobile commerce services	
Reliability of the services	
It is trendy and improves my image	
Lower price of the services	
Increased awareness of the availability of services	
The reliability and dependability of mobile technology.	
No internet availability at home or at work	
Higher income	
Nothing	
Increased awareness of security measures provided.	

Other (please state):

.....

F: Please TICK your gender? □ **Female** □ **Male**

G: Please TICK your age category?

<20	*21-25*	*26-30*	*31-35*	*36-40*	*41-45*	*46-50*	*51-55*	*56-60*	*60+*

H: Please TICK the most accurate category of your MONTHLY NET income (income after tax deductions)?

<R5000	*R5001-10000*	*R10001-15000*	*R15001-20000*	*R20001-25000*	*R25000+*

I: Please TICK your personal computer literacy level?

- □ Very Good
- □ Good
- □ Adequate
- □ Not very good
- □ Not good at all

J: Please TICK your occupation?

- ☐ Student
- ☐ Sales Person
- ☐ Academic
- ☐ Entrepreneur
- ☐ Analyst
- ☐ Programmer
- ☐ Software Engineer
- ☐ Manager
- ☐ Other, Please Specify.....

K: If you would like to receive a copy of the research results, please provide me with your e-mail address: (Email addresses will be stored separately from the rest of the data collected).

.....

L: Please use the space below for ANY additional comments on use and adoption of mobile data services in South Africa.

.....

.....

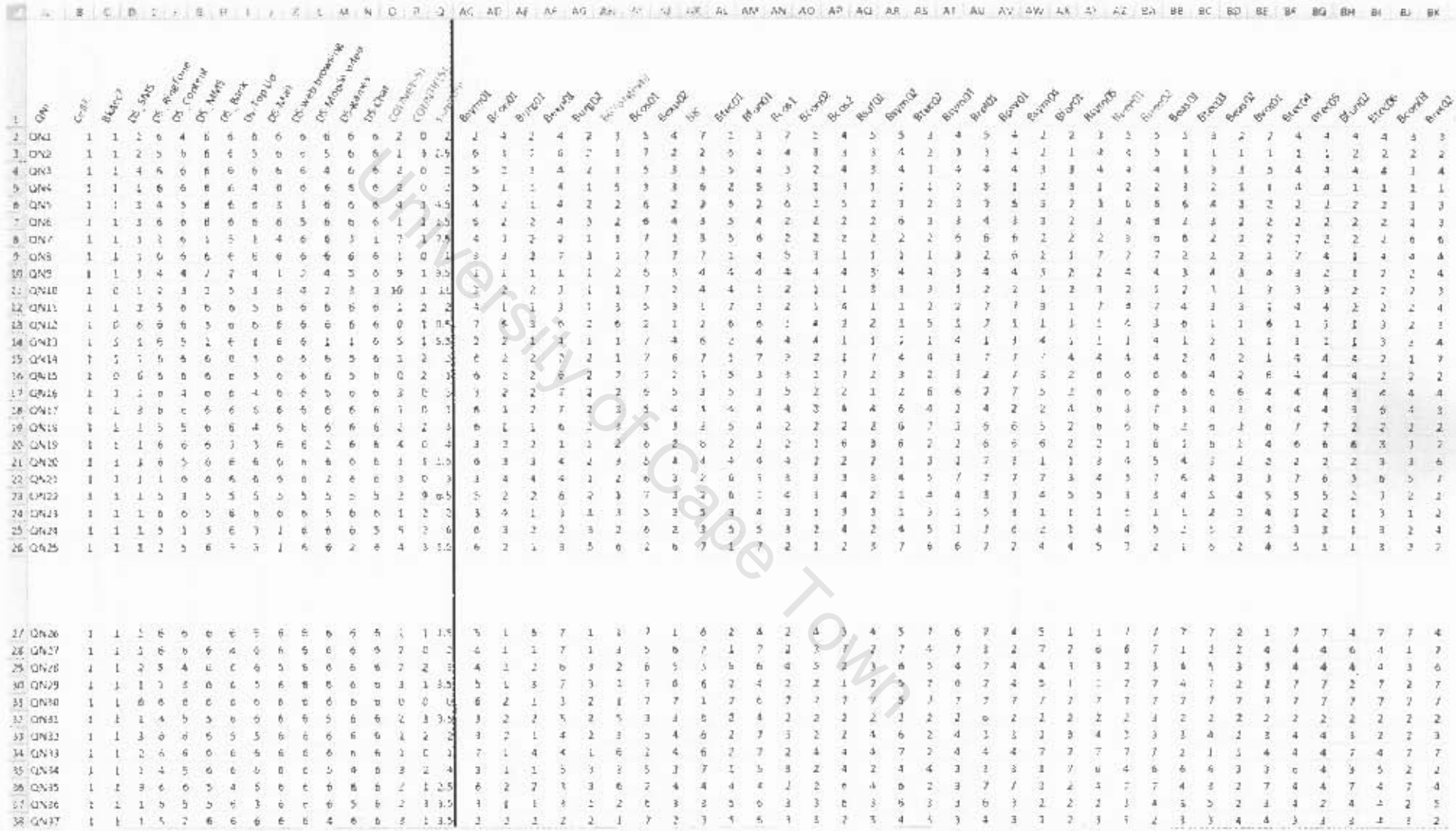
.....

.....

.....

Thank you very much for your time and assistance

2C A snapshot of part of the original quantitative spreadsheet



2D Semi structured Interviews

Understanding Use and Adoption of Mobile Data Services in 2 African Countries

Classification information:		**Survey number:**	
Sales people		**Country**	
Students		**Date and Time:**	
Lecturers		**Duration:**	
Entrepreneurs			
Other:			

A: Introduction and Welcome:

Interviewee will be thanked for agreeing to the interview. The purpose and importance of the research will be briefly outlined.

The researcher's commitment to anonymity and confidentiality of the interviewee will be restated, providing verbal assurances that nothing would be attributed to the interviewee or the organization. The way the interview will be conducted will be restated, as well as the themes to be covered and the amount of time available.

The interviewee will be provided with the opportunity to state any concerns or request additional information where clarification is required.

B: The interviewer will advise the interviewee that they has the right to:	
1.	Decline to respond to any of the questions;
2.	May request a copy of the research results;
3.	Will be forwarded minutes of the interview for verification.

C: Confirm Information:		**Permission granted**
1.	Specific area of interest in mobile commerce related to job function	For using quotations (Refer to item B:3)

D: General Themes:	
1.	How does the interviewee see the current and future success of mobile data services in SA/Mauritius?
2.	Which mobile data services are you using?
3.	Why do you use each of them?
4.	What are the advantages of using mobile data services?
5.	What are the disadvantages?
6.	Why are you not using the other services in the list?
7.	What are the major factors influencing the use of mobile data services?

8.	What are the major inhibitors of mobile data services in Mau/SA?
9.	Which factors do they perceive as being the most important?
10	Which factors do they think is a major inhibitor (discourage people from using the services)?
11	Do mobile data services make them more efficient? HOW?
12	Has mobile data services changed their lifestyles? HOW
13	Did the nature of their work have an influence their decision to perform mobile data services?
14	Did you have any bad experiences with any of the services you using? If yes, did it impact your use pattern?
15	How do you see the cost of the Mobile data services?

E: Potential probing questions:	
1.	Do they use mobile data services more when they travelling, visiting and wandering?
2.	Do they use mobile data services only in urgent situations?
3.	Does use of mobile data services give them a sense of self worth?
4.	Do they perceive mobile data services as a status symbol?
5.	Did their financial status influence their decision to use any of the mobile data services?
6.	Would they still use mobile data services if they had a bad experience?
7.	Do they intend on using/trying out new mobile data services?
8.	Do they intend using mobile data services more in the future?

F: Conclusion:	
1.	Brief summary of what was discussed.
2.	Thank the interviewee for their time.

2E A model of a transcribed interview

Classification information:		**Survey number:**	S8
Sales people		**Country**	South Africa
Students		**Date and Time:**	8th June
Lecturers	*	**Duration:**	27 minutes
Entrepreneurs			
Other:			

Which of the mobile data services are you currently using?

SMS, not as much, I get a lot of incoming SMS, but I send very few. I have downloaded ringtones once or twice, but I do not use it that often. I read content (NEWS And WEATHER) using GPRS but then I mostly use Vodafone live and Mweb. And Mweb has a mobile site as well so it is more like web browsing for news, weather sports. I do not use MMS. I use cell phone baking very often. The use of cell phone banking depends on the circumstances, so if you expecting money, you will check more often than normal, also if you have spent using credit cards, you may check your balance quite often and stuff more. I use contract, so no top up. I have also experimented with using used the cell phone as a modem, I thought it would be cheaper than dial up but it ended up being much more expensive.

Email, I use the Vodacom email service but have hardly ever used it even though I subscribed. As for Mweb, they allow you to access your normal dial up email account through cell phone, but it was not working. They pointed it out that I could access your email, when I tried to do it, it did not work.

So are you going to try using Mweb again?

It is probably a new service, 24.com, they offering, it is not yet mature, so maybe keep checking until maybe later its better. I won't stop using it, because I can still check my world online account through Internet or dial up link, so there is other options ,its not the only option, I am not too fussed up if its not there.

Why do you use cell phone banking and the other services you have mentioned?

A cell phone is more convenient when I catch the train to go to work, I cannot bring my laptop and start connecting. So I can just check my balance, transfer money into accounts while am travelling. I can do all of that in the train.

So its very convenient, even at home, when am sitting on the couch and watching TV, instead of going to the pc, and login in, to go to websites, I rather just use cell phones, I can transfer money, do transactions.

I hardly ever use my pc for Internet banking these days, only for certain transactions/payments where I want the person to receive confirmation of payment, I am not sure if I can do it on cell phone. But for normal payment, like telephone bills, I will use cell phones.

So you are quite an extensive user of MDS, are there any limitations that may you have experienced?

You cannot send details of confirmation; actually number of services can be less as compared to what you can do on Internet. While you reading news on the phone screen, you have to scroll down and it

could lead to finger/eyes injury. Other disadvantages include not being to navigate properly, for instance on Mweb. If you are reading a story, you have to go from one page to another sequentially. The browsing takes a lot of time, however, Vodacom and standard bank are better. They currently have cricket world cup website and that's quite nice.

The browsing capabilities of some websites are not mature enough.

What are the advantages of MDS?

BIG improvement for cell phone banking, it is straightforward to use. It is actually easier than the Internet, no dial up, you can go straight in there.

And some disadvantages which you can think of?

It is sort of restricted, for instance Vodacom only has their menu, that's all you see.

Also, I was having trouble using my cell phone as a modem to access Mweb site, so they sent me a message and said I can do it directly from my cell phone. This is when I knew they have a WAP compatible site. Apart from that, how do I know who else has a WAP website. Maybe we should have a facility on yahoo and Google to search for all the WAP websites. But they do not have that as yet, I have not come across it.

Looking at the broader picture, how do you see the status of Mobile data services in South Africa?

There has been a lot of maturity, a lot of new functionality and applications are coming through. For Vodacom, for eg, previously, to check my balance, I had to dial up some sort of number, now I can use GPRS to do it. There is maturity in terms of providing services on a WAP platform, and there is some improvements and I can anticipate further improvements.

In terms of sports news, I could download a story on the rugby match, it took 5 seconds. In the future, maybe, one can download a whole match. They could have packages to download the whole match...

Downloading of ringtones is deducted from airtime. I also buy prepaid electricity; I go to this website which allows me to purchase electricity. I can send a sms and I get a prepaid, electronic pin on my cell phone. With prepaid electricity what happens is you register with this website, they take your credit card details.. Each time you want to purchase electricity, you send a sms with your name, password, amount of electricity you want and they automatically they send you a back a repeat of the amount and the number you add to your electricity meter. They deduct from your credit card each time. What they could do is be innovative and use prepaid airtime, instead of using credit card...they could deduct from airtime and on contract it could appear in bill.

Talking about these MDS, do you think your peers influenced your decision to use MDS?

Occasionally we might talk...like I heard from a colleague that you can use our cell phone as a modem, that's how I heard. Now I am also doing it. So people talk and you get to know about some services.

What would encourage you to use MDS more?

Maturity, when navigation system becomes in order and becomes more useful, and if you have 3G phone you can have more options, for instance video and TV.

Do you think the services available are marketed well?

Vodacom I doing a good job, they are advertising well, it raises awareness and highlights misconceptions. For MTN, it is not so highly visible in comparison, Banks I do not think they doing much, there are few adverts for instance FNB. However, they seem to be targeting internet banking users rather and not cell phone banking.

Do you think income is a factor which influenced your decision to use MDS?

I think it is definitely. MDS work well on GPRS and 3G, WHICH ARE LATEST MODEL cell phones. The people having older cell phones are probably only using SMS and voice calls. Income does a part. Some low income users may be using Internet on their phones but at this stage a lot of people still have cell phones which are not GPRS enabled. However, eventually when both 3G and GPRS phones will become the norm, lower income earners will be using it.

Did your occupation influence your decision to use MDS?

I think there is a curiosity factor, as a IS person. I used modem as curiosity but it was costly so I stopped. Business people may have advanced cell phones or PDAs, so they may be aware of the different services available.

Do you think the volume of communication is a factor of MDS?

I think for communication purposes SMS is the most commonly used but I do not use mxit or messenger, it does not appeal to me. Even SMS, I do not use that often.

Email has a facility, where you can SMS from your pc. So I would probably do that, because you have more space. I will only use SMS when I have to type a few words.

According to you, what is the main inhibitor of MDS?

Poor Connectivity, while you doing transaction, the connection cuts off. Sometimes when I am in train, I experience it, the connection drops at certain stations. There is an issue of security as sometimes when you press back button you can easily go to what you were doing previously. There should be the log out button. Sometimes several areas do not have 3g access, or you may be on the border, if you get a 3G data card , how reliable is it going to be if you on the border.

And did MDS change your lifestyle in any particular way?

Yes definitely, you do not have to pay any bills, Earlier you had to drive to pay for services, now you can just do it on cell phone, so it's a big change. It saves time but there is still less time available as before.

In urgent situations would you use MDS?

Yeah for instance electricity, sometimes if you forget to buy electricity, and there is no electricity, the cell phone is a good alternative to use to get electricity. Because you cannot use your laptop/pc as there is no power. If shops closed, or it is a long drive away, you can just use cell phones.

Do you think MDS is a status symbol?

To a certain extent yes, one may attach status symbol for instance, you can brag about what you can do to your spouse or other people.

When you new services are being introduced, on what basis do you try new services?

When you get new cell phone, you want to experiment and see what is available and you discover new services. Other times, you may just have to wait for advertising, where you may just see something interesting.

Do you use the services when you need it or is it mostly when you are bored?

For me its most of the transactions are needs rated, I need to bank, I need to transfer, I need to pay something. Sometimes ringtones is for fun, but that's not often. Looking at news/weather, maybe related to the need to know what is happening and a bit of fun. Sports news is a leisure activity. I only use offline games, do not use online at all.

I would like to download music more, that's again I need to explore further. I have not found a site which has the music I like that I can download. I don't think you can download full mps music, maybe just ringtones. Also I take pictures especially with kids and then download it to pc, and sending them to relative, this is a famous leisure purpose.

Do you have any security fears with regards to MDS?

BLUETOOTH for instance, I do not think its secure enough, especially in the train and stuff they may access my personal information. Also spamming, is a hindrance, you get lots of SMSes coming in which you do not want. Sometimes you get constant notifications. Some of them are useful and good for instance when you get SMSes for transactions you doing, so that is secure. For instance if you have your card with you and you get a SMS about withdrawal, you know something is wrong somewhere. Others can be frustrating and not useful.

Appendix 3

3A Difference of means test: Gender

	Mean Group 1	Mean Group 2	t-value	df	p	Valid N Group 1	Valid N Group 2	Std.Dev. Group 1	Std.Dev. Group 2	F-ratio Variances	p Variances
SA Gender vs. Mau Gender	0.396	0.452	-1.148	409	0.252	212	199	0.490	0.499	1.036	0.801

3B Chi Square: Age

	Age			
Actual	**20<Age<25**	**25<Age<40**	**Age >40**	**Total**
South Africa	130	61	21	212
Mauritius	106	67	26	199
Total	236	128	47	411
Expected				
Actual	20<x<25	25<x<40	>40	Total
South Africa	121.7	66.0	24.2	212
Mauritius	114.3	62.0	22.8	199
Total	236	128	47	411
Variance				
Actual	20<x<25	25<x<40	>40	Total
South Africa	0.56	0.38	0.43	1.38
Mauritius	0.60	0.41	0.46	1.47
Total	1.16	0.79	0.90	2.845497474
Degrees of Freedom	2.00		Chi Square	0.2410505

3C Chi Square: Computer Literacy

	Computer Literacy			
Actual	**Very computer literate**	**Computer Literate**	**Adequate to Not computer literate at all**	**Total**
South Africa	130	53	29	212
Mauritius	60	86	53	199
Total	190	139	82	411
Expected				
Actual	**Very computer literate**	**Computer Literate**	**Adequate to Not computer literate at all**	**Total**
male	98.0	71.7	42.3	212
female	92.0	67.3	39.7	199
Total	190	139	82	411

Variance				
Actual	**Very computer literate**	**Computer Literate**	**Adequate to Not computer literate at all**	**Total**
male	10.45	4.88	4.18	19.50
female	11.13	5.19	4.45	20.78
Total	21.57	10.07	8.63	40.27750043
Degrees of Freedom	2.00		Chi Square	0.0000000

Appendix 4

4A Alternative way of determining the use function

Based on the variety and frequency of use, the respondents were divided on whether they were a high, a medium or a low user of mobile data services. A high user was defined as someone who used a high variety of services at least once daily. A medium user would be someone using a good variety of services on a weekly basis while a low user would be using very few services on a monthly basis. It should be noted that this is a rather subjective measure but to make the assumption less biased, the researcher used a cumulative frequency chart of 'variety of use' to determine the cut off points of a high, medium and low user.

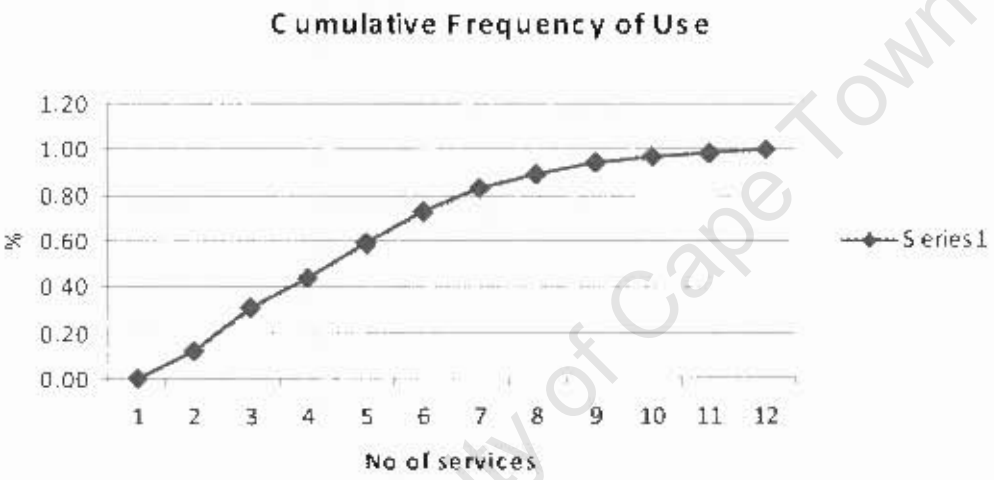


Figure 40: Cumulative Frequency Chart

The graph shows that a high user would be someone using 6 or more services while a medium user would be someone using more than 2 but less than 7 services. A low user uses less than 3 services. However, as mentioned above, a high user is one who not only uses a high variety of services but also uses them quite frequently; therefore frequency of use should also be included in the calculations. However, finding objective cutoff points for frequency proved to be harder than variety as the services followed different patterns of use as shown by the frequency of use chart. Therefore, the researcher used a subjective measurement for frequency based on the frequency of use chart. A user using a particular service either more than once daily or daily would be a high user. A user using a service 2-6 times weekly would be termed a medium user while a low user would only use certain services either 1-6 times monthly or less than 1 monthly.

Summary: Profile of a high/medium/low user

A high user uses 7 or more services either more than once daily or daily.

A medium user uses a minimum of 3 and a maximum of 6 services 2-6 times weekly

A low user uses less than 3 services less either 1-6 times monthly or less than once monthly.
The next section focuses on the demographical profile of the 3 categories of users

Demographical profile of a high user, medium user and low user

Using the above definition, there were 66 high users, 164 medium users and 178 low users and 3 non users. Table 1 below shows their demographical profile.

Characteristics	High user	%	Medium user	%	Low User	%
Gender						
Male	36	15%	104	44%	94	41%
Female	30	17%	60	35%	84	48%
Occupation						
Student	39	9%	76	18%	69	17%
Non Student	27	7%	88	21%	109	27%
Age Group						
20	12	3%	21	5%	14	3%
21-25	36	9%	77	19%	76	18%
26-30	9	2%	30	7%	30	7%
31-35	6	1%	12	3%	10	2%
36-40	1	0%	12	3%	18	4%
41-45	1	0%	7	2%	13	3%
46-50	1	0%	3	1%	6	1%
51-55	0	0%	2	0%	11	3%
56-60	0	0%	0	0%	0	0%
60+	0	0%	0	0%	0	0%
Income						
<5000	36	9%	75	18%	63	15%
5001-10000	14	3%	26	6%	34	8%
10001-15000	6	1%	26	6%	19	5%
15001-20000	4	1%	21	5%	28	7%
20001-25000	4	1%	6	1%	13	3%
25000+	2	0%	10	2%	20	5%
Computer Literacy						
Very Good	37	9%	77	19%	76	18%
Good	20	5%	60	15%	56	14%
Adequate	8	2%	26	6%	38	9%
Not Very good	1	0%	1	0%	3	1%
Not good at all	0	0%	0	0%	5	1%

The results above show that most of the high users are younger than 25 years old. There are more students as compared to working people and although most of them have very good computer literacy levels, their income range is below the 10000 mark. The gender distribution of the high users is almost

equal. The males dominate the medium user category. The average age group falls in the 26-30 range while the average income bracket lies in the 5000 to 10000 range. Finally, there average computer literacy level of the medium users is good. In contrast to the medium users' category, the low category users are mostly working females. The average age range lies in between the 26-30 group while their income range falls in the 10000-15000 category. The average computer literacy level of this level is good.

High users are mostly young people who are still studying. These results support the conclusions made by Joubert (2005) and Gilham (2004) where they state that high users of mobile commerce are young people. A distinct observation made is that the high users are mostly people earning below the 5000 range. Despite the low earnings, these people are keen users of MDS hence this shows that income may not be a factor influencing use of mobile data services. The medium users earn more than high users whilst the low users are the highest income earners of the 3 categories.

Appendix 5

5A1 Detailed Reliability of the Mauritian Sample

	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
6	MDS are highly priced.	Cost	Context	6,10,12	0.257083	0.406776
10	MDS are fair value for money	Cost	Context	6,10,12	0.257083	0.000000
12	I will certainly use MDS if I start earning more.	Cost	Context	6,10,12	0.257083	0.402257
1	People using mobile data services (MDS) are more prestigious than those who do not.	Symbolism	Context	1,14,16,19,21	0.751383	0.693889
14	The use of MDS is a status symbol.	Symbolism	Context	1,14,16,19,21	0.751383	0.713878
16	MDS makes me trendy.	Symbolism	Context	1,14,16,19,21	0.751383	0.699054
19	MDS are fashionable.	Symbolism	Context	1,14,16,19,21	0.751383	0.717921
21	People in my organisation who use MDS have a high profile	Symbolism	Context	1,14,16,19,21	0.751383	0.711437
22	I use MDS as most of my friends/colleagues use it.	Peers	Context	22,23	0.660000	
23	My peers influenced my decision to use MDS.	Peers	Context	22,23	0.660000	
43	I will stop using MDS if I experience unfavorable situations.	Technology adoption	Final Adoption Outcome	43,51,60	0.425342	0.638853
51	Overall, I have had a POSITIVE experience with MDS.	Technology adoption	Final Adoption Outcome	43,51,60	0.425342	0.171017
60	I enjoyed using MDS in the past and this influenced my decision to keep up using it	Technology adoption	Final Adoption Outcome	43,51,60	0.425342	0.107878
4	I had the opportunity to use MDS on a trial basis.	Prior Exposure	Individual Characteristics	4,7	0.42	

	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
7	I had adequate opportunities to try out the different MDS.	Prior exposure	Individual Characteristics	4,7	0.42	
2	MDS are convenient when I am visiting family, or different places or cities	Convenience	Mobility	2,11,32	0.620581	0.609780
11	MDS are convenient when one is going from one place to the other using public or private transport.	Convenience	Mobility	2,11,32	0.620581	0.388733
13	Using MDS is safe when I am visiting family, or different places and cities (for instance using cell phone banking is more secure than internet banking).	Safety and Visting	Mobility	13,50	0.31	
32	MDS are convenient when one is walking around, shopping or waiting for someone.	Convenience	Mobility	2,11,32	0.620581	0.553990
34	MDS provides the freedom to access information from anywhere when one is going from one place to the other using public or private transport.	Freedom to access information	Mobility	34,35,38	0.644675	0.635451
35	MDS give me the ability and freedom to move around.	Freedom to access information	Mobility	34,35,38	0.644675	0.531682
38	MDS provides the freedom to access information from anywhere when I am visiting family, or different places or locations.	Freedom to access information	Mobility	34,35,38	0.644675	0.464637

	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
50	The use of MDS when moving around gives me a sense of personal safety (For instance, if you are lost while travelling you can SMS someone or use services such as look4it, hence giving you a sense of personal safety).	Safety	Mobility	13,50	0.31	
3	MDS are ideal for urgent situations.	Urgency	Task Characteristics	3,5	0.474699	0.437635
5	MDS are suitable for situations where immediate feedback/response is necessary.	Urgency	Task Characteristics	3,5	0.474699	0.383222
20	MDS are appropriate for formal communication or transactions (banking, emailing clients...)	Formality	Task Characteristics	20	0.474699	0.390449
27	MDS such as online chats are suitable for situations involving high volume communication (where there is a lot of information to convey).	Volume	Task Characteristics	20,27,41,46	0.474699	0.410460
41	MDS (email, checking weather) are suitable for accessing individual information.	Volume	Task Characteristics	20,27,41,46	0.474699	0.416330
46	MDS such as MMS and SMS and online chats are not suitable in situations involving 3 or more people.	Volume	Task Characteristics	20,27,41,46	0.474699	0.525205
8	MDS are difficult to use because of the small screens.	Current phone [illegible]	Technology Characteristics	8,49,15,25,28,31,51,44,56,29	0.1	correlation

	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
15	The graphical features of my phone are suitable for MDS	Current phone features	Technology Characteristics	8,49,15,25,28,31,51,44,56,29	0.826752	0.794385
24	It is easy for me to use my phone for MDS to do what I want.	Ease of Use	Technology Characteristics	24,26,42,39	0.612306	0.542987
25	The features provided by my phone allow me to use MDS and mobile commerce.	Current phone features	Technology Characteristics	8,49,15,25,28,31,51,44,56,29	0.826752	0.792240
26	Overall, I believe using MDS is easy.	Ease of Use	Technology Characteristics	24,26,42,39	0.612306	0.470615
28	I use MDS because my phone is WAP enabled/GPRS enabled.	Current phone features	Technology Characteristics	8,49,15,25,28,31,51,44,56,29	0.826752	0.807993
29	The speed I can download content is suitable for MDS.	Current phone features	Technology Characteristics	8,49,15,25,28,31,51,44,56,29	0.826752	0.837086
31	The interface of my phone is well suited for MDS	Current phone features	Technology Characteristics	8,49,15,25,28,31,51,44,56,29	0.826752	0.786128
36	MDS are not suitable because of the limited coverage of mobile technology.	Network Capability	Technology Characteristics	36,53	0.3	
37	I would certainly use MDS if my phone had a longer battery life.	Enhanced phone features	Technology Characteristics	37,54,55,57	0.755161	0.775357
39	It is difficult to register and set up my phone to use MDS.	Ease of Use	Technology Characteristics	24,26,42,39	0.612306	0.620850
42	It is easy for me to remember how to go operate my mobile phone for MDS.	Ease of Use	Technology Characteristics	24,26,42,39	0.612306	0.528654

	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
44	The resolution of my mobile phone is suitable for MDS.	Current phone features	Technology Characteristics	8,49,15,25,28,31,51,44,56,29	0.826752	0.801650
49	MDS are cumbersome to use because of the small keyboards.	Current phone features	Technology Characteristics	8,49,15 25,28,31,51,44,56,29	0 1	correlation
52	I have no problems with the screen (interface) of my mobile phone to perform MDS.	Current phone features	Technology Characteristics	15,25,28,29,31,52,44 56	0.826752	0.805045
53	MDS are not reliable.	Network Capability	Technology Characteristics	36,53	0.3	
54	I will certainly use MDS if I could download at a higher speed.	Enhanced phone features	Technology Characteristics	37,54,55,57	0.755161	0 662393
55	I will certainly use MDS if the services were more reliable.	Enhanced phone features	Technology Characteristics	37,54,55,57	0.755161	0.657148
56	The battery life of my mobile phone is suitable for MDS.	Current phone features	Technology Characteristics	8,49,15,25,28,31,51,44,56,29	0 826752	0 826080
57	I will certainly use MDS if the coverage of mobile technology (network) gets better.	Enhanced phone features	Technology Characteristics	37,54,55,57		0 692512
9	I use MDS when I am bored.	Functional	User Outcomes	9,30,58	0.453845	0.459341
17	I have reduced contact with some people because they do NOT use or are not able to access certain mobile services which I use myself.	Relationship quality	User Outcomes	17,33,40,47,59	0.71931	0.697871
18	I feel professional when using MDS.	psychological	User Outcomes	18,45,48	0.788658	0 781091

	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
30	Using MDS allows me to be more efficient when I am waiting in the traffic or on my way home from work.	Functional	User Outcomes	9,30,58	0.453845	0.344055
33	Using MDS changed my relationship with many people.	Relationship quality	User Outcomes	17,33,40,47,59	0.71931	0.611431
40	My personal relationship with my parents and friends improved because of MDS.	Relationship quality	User Outcomes	17,33,40,47,59	0.71931	0.677247
45	MDS make me feel empowered.	psychological	User Outcomes	18,45,48	0.788658	0.682914
47	I feel left out as I do not use MDS.	Relationship quality	User Outcomes	17,33,40,47,59	0.71931	0.693676
48	Using MDS makes me feel more prestigious.	psychological	User Outcomes	18,45,48	0.788658	0.673573
58	I use MDS to fill time when I am waiting for someone.	Functional	User Outcomes	9,30,58	0.453845	0.259092
59	Using MDS made me closer to some people.	Relationship quality	User Outcomes	17,33,40,47,59	0.71931	0.672164

5A2: Detailed Reliability of the South African sample

No	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
1	People using mobile data services (MDS) are more prestigious than those who do not.	Symbolism	Context	1,14,16, 19,21	0.779350	0.751740
14	The use of MDS is a status symbol.	Symbolism	Context	1,14,16,19,21	0.779350	0.745576
16	MDS makes me trendy.	Symbolism	Context	1,14,16,19,21	0.779350	0.703651
19	MDS are fashionable.	Symbolism	Context	1,14,16,19,21	0.779350	0.730437

No	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
21	People in my organisation who use MDS have a high profile.	Symbolism	Context	1,14,16,19,21	0.779350	0.758027
22	I use MDS as most of my friends/colleagues use it.	Peers	Context	22,23	0.55	
23	My peers influenced my decision to use MDS	Peers	Context	22,23	0.55	
43	I will stop using MDS if I experience unfavourable situations.	Technology adoption	Final Adoption outcome	43,51,60	0.26694	0.6459938
51	Overall, I have had a POSITIVE experience with MDS.	Technology adoption	Final Adoption outcome	43,51,60	0.26694	0
60	I enjoyed using MDS in the past and this influenced my decision to keep up using it.	Technology adoption	Final Adoption outcome	43,51,60	0.26694	0
4	I had the opportunity to use MDS on a trial basis.	Prior Exposure	Individual Characteristics	4,7	0.59	
6	MDS are highly priced.		Individual Characteristics	6,10,12	0.46	0.33
7	I had adequate opportunities to try out the different MDS.	Prior exposure	Individual Characteristics	4,7	0.59	
10	MDS are fair value for money		Individual Characteristics	6,10,12	0.46	0.000000

No	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
12	I will certainly use MDS if I start earning more.	[illegible]	Individual Characteristics	6,10,12	0.46	0 690000
2	MDS are convenient when I am visiting family, or different places or cities.	Convenience	Mobility	2,11,32	0.63	0.431597
11	MDS are convenient when one is going from one place to the other using public or private transport.	Convenience	Mobility	2,11,32	0.63	0.589959
13	Using MDS is safe when I am visiting family, or different places and cities (for instance using cell phone banking is more secure than internet banking).	Safety	Mobility	13,50	0.38	
34	MDS provides the freedom to access information from anywhere when one is going from one place to the other using public or private transport.	Freedom to access information	Mobility	34,35,38	0 681689	0.568721
35	MDS give me the ability and freedom to move around.	Freedom to access information	Mobility	34,35,38	0.681689	0 567797
38	MDS provides the freedom to access information from anywhere when I am visiting family, or different places or locations	Freedom to access information	Mobility	34,35,38	0.681689	0.621619
32	MDS are convenient when one is walking around, shopping or waiting for someone	Convenience	Mobility	2,11.32	0.63	0.580145

No	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
50	The use of MDS when moving around gives me a sense of personal safety (For instance if you are lost while traveling you can SMS someone or use services such as look4it, hence giving you a sense of personal safety).	Safety	Mobility	13,50	0.38	0.290000
3	MDS are ideal for urgent situations.	Urgency	Task Characteristics	3,5,20,27,41,46	0.554187	0.494372
5	MDS are suitable for situations where immediate feedback/response is necessary.	Urgency	Task Characteristics	3,5,20,27,41,46	0.554187	0.480949
20	MDS are appropriate for formal communication or transactions (banking, emailing clients...)	Formality	Task Characteristics	3,5,20,27,41,46	0.554187	0.479715
27	MDS such as online chats are suitable for situations involving high volume communication (where there is a lot of information to convey).	Volume	Task Characteristics	3,5,20,27,41,46	0.554187	0.476181
41	MDS (email, checking weather) are suitable for accessing individual information.	Volume	Task Characteristics	3,5,20,27,41,46	0.554187	0.508210
46	MDS such as MMS and SMS and online chats are not suitable in situations involving 3 or more people.	Volume	Task Characteristics	3,5,20,27,41,46	0.554187	0.598514

No	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
8	MDS are difficult to use because of the small screens.	Hardware Constraint	Technology Characteristics	8, 15,25,28,31,52,44,56,29,49	0.8	0.77884
15	The graphical features of my phone are suitable for MDS	Current phone features	Technology Characteristics	15,25,28,31,52,44,56,29	0.8	0 768460
24	It is easy for me to use my phone for MDS to do what I want	Ease of Use	Technology Characteristics	24 26 42.39	0 620000	0.576554
25	The features provided by my phone allow me to use MDS and mobile commerce.	Current phone features	Technology Characteristics	15,25,28,31,52,44,56	0.8	0.757682
26	Overall, I believe using MDS is easy.	Ease of Use	Technology Characteristics	24,26, 42.39	0.62	0 540081
28	I use MDS because my phone is WAP enabled/GPRS enabled.	Current phone features	Technology Characteristics	15,25,28,29,31,52,44,56	0.8	0 788571
29	The speed I can download content is suitable for MDS.	Current phone features	Technology Characteristics	15,25,28,29,31,52 44,56	0.8	0.779998

No	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
31	The interface of my phone is well suited for MDS.	Current phone features	Technology Characteristics	15,25,28,31,52,44,56,29	0.8	0.737837
36	MDS are not suitable because of the limited coverage of mobile technology	Network Capability	Technology Characteristics	36,53	0.2	
39	It is difficult to register and set up my phone to use MDS.	Ease of Use	Technology Characteristics	24,26, 42,39	0.62	0.585646
42	It is easy for me to remember how to go operate my mobile phone for MDS	Ease of Use	Technology Characteristics	8,24,26,49,42,39	0.62	0.522172
44	The resolution of my mobile phone is suitable for MDS.	Current phone features	Technology Characteristics	15,25,28,29,31,52,44,56	0.8	0.747143
49	MDS are cumbersome to use because of the small keyboards.	Hardware Constraint	Technology Characteristics	8,49	0.8	0.78995
52	I have no problems with the screen (interface) of my mobile phone to perform MDS.	Current phone features	Technology Characteristics	15,25,28,31,52,44,56,29	0.8	0.797308

No	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
53	MDS are not reliable.	Network Capability	Technology Characteristics	36,53	0.2	
56	The battery life of my mobile phone is suitable for MDS.	Current phone features	Technology Characteristics	15,25,28,31,52,44,56,29	0.8	0.809046
37	I would certainly use MDS if my phone had a longer battery life.	Enhanced phone features	Technology Characteristics	37,54,55,57	0.8	0.831707
54	I will certainly use MDS if I could download at a higher speed.	Enhanced phone features	Technology Characteristics	37,54,55,57	0.8	0.708912
55	I will certainly use MDS if the services were more reliable.	Enhanced phone features	Technology Characteristics	37,54,55,57	0.8	0.720484
57	I will certainly use MDS if the coverage of mobile technology (network) gets better.	Enhanced phone features	Technology Characteristics	37,54,55,57	0.8	0.731945
18	I feel professional when using MDS.	Psychological	User Outcome	18,45,48	0.788022	0.698214
45	MDS make me feel empowered.	psychological	User Outcome	18,45,48	0.788022	0.719298

No	Full Question	Construct	Factor	Related Questions	Alpha of group code/Correlation	Alpha if deleted/correlation
48	Using MDS makes me feel more prestigious.	psychological	User Outcome	18,45,48	0.788022	0.719632
17	I have reduced contact with some people because they do NOT use or are not able to access certain mobile services which I use myself.	Relationship quality	User Outcome	17,33,40,47,59	0.797243	0.767558
33	Using MDS changed my relationship with many people	Relationship quality	User Outcome	17,33,40,47,59	0.797243	0.731678
40	My personal relationship with my parents and friends improved because of MDS.	Relationship quality	User Outcome	17,33,40,47,59	0.797243	0.710694
47	I feel left out as I do not use MDS.	Relationship quality	User Outcome	17,33,40,47,59	0.797243	0.837932
59	Using MDS made me closer to some people.	Relationship quality	User Outcome	17,33,40,47,59	0.797243	0.724190
30	Using MDS allows me to be more efficient when I am waiting in the traffic or on my way home from work.	Functional	User Outcome	9,30,58	0.64	0.686803
9	I use MDS when I am bored.	Functional	User Outcome	9,30,58	0.64	0.583376
58	I use MDS to fill time when I am waiting for someone	Functional	User Outcome	9,58,30	0.64	0.294116

5B1 Correlation Matrix of the combined Dataset

The table below depicts the correlation between the test items with 2 related constructs as highlighted in green. The yellow highlights illustrate the correlation between some of the test items associated with other test items as discussed in the validity testing. For instance, the convenience test item is correlated to urgency. (Bcon02 to Burg01 as highlighted in yellow)

Correlations (combineddataset2807.sta)
Marked correlations are significant at p < .05000
N=411 (Casewise deletion of missing data)

Variable	Burg01	Besp01	Burg02	Besp02	Btec01	Bcon02	Beas01	Brel01	Speed1	Speed2	Beas01	Beas02	Bcon03	Brel02	Bin01	Bin02	Speed3	Beas03	Brel03	Beas04	Brel04	Btec06	Beas02	Bfun03	Brel05
Burg01	1.00	0.05	0.33	0.09	0.13	0.29	0.10	0.08	0.04	0.05	0.17	0.11	0.25	0.16	0.20	0.20	-0.04	-0.01	0.16	0.14	0.07	0.06	0.17	0.09	0.14	0.12
Besp01	0.05	1.00	0.15	0.54	-0.08	0.09	0.09	0.02	0.14	0.10	0.06	0.06	0.11	0.06	0.05	0.05	-0.09	0.01	0.03	0.10	0.10	-0.00	0.03	-0.02	0.02	0.17
Burg02	0.33	0.15	1.00	0.18	0.02	0.35	0.31	0.03	0.09	-0.01	0.08	0.14	0.08	0.13	0.26	0.20	0.02	-0.03	0.11	0.12	0.06	0.18	0.21	0.17	0.15	0.25
Besp02	0.09	0.54	0.18	1.00	-0.02	0.12	0.21	0.11	0.18	0.12	0.09	0.24	0.11	0.15	0.12	0.12	0.00	0.11	0.14	0.20	0.15	0.06	0.13	0.07	0.11	0.18
Btec01	0.13	-0.08	0.02	-0.02	1.00	0.02	0.04	0.03	0.04	-0.04	0.10	0.16	0.11	0.06	0.13	0.04	0.11	0.18	0.04	0.18	-0.01	0.23	0.04	0.13	-0.04	0.02
Bcon02	0.29	0.09	0.35	0.12	0.02	1.00	0.28	0.11	0.16	0.12	0.30	0.19	0.36	0.27	0.28	0.27	-0.02	0.03	0.20	0.14	0.10	0.05	0.27	0.06	0.20	0.27
Beas01	0.10	0.06	0.31	0.21	0.04	0.28	1.00	0.15	0.19	0.08	0.14	0.15	0.22	0.24	0.18	0.17	-0.04	0.13	0.21	0.11	0.23	0.10	0.33	0.09	0.13	0.36
Brel01	0.08	0.08	0.03	0.11	0.03	0.11	0.15	1.00	0.38	0.36	0.15	0.10	0.12	0.41	0.02	0.17	-0.02	0.11	0.37	0.03	0.29	-0.06	0.22	0.00	0.19	0.38
Speed1	0.04	0.14	0.09	0.18	0.04	0.16	0.19	0.38	1.00	0.71	0.20	0.23	0.25	0.41	0.17	0.25	-0.10	0.11	0.35	0.13	0.31	-0.04	0.15	0.01	0.34	0.41
Speed2	0.05	0.10	-0.01	0.12	-0.04	0.12	0.08	0.36	0.71	1.00	0.20	0.09	0.17	0.32	0.09	0.19	-0.07	0.16	0.29	0.06	0.35	-0.09	0.09	-0.05	0.23	0.32
Beas01	0.17	0.06	0.08	0.09	0.10	0.30	0.14	0.15	0.20	0.20	1.00	0.41	0.36	0.16	0.27	0.21	0.05	0.11	0.16	0.15	0.04	0.02	0.18	0.04	0.23	0.25
Beas02	0.11	0.06	0.14	0.24	0.16	0.19	0.15	0.10	0.23	0.09	0.41	1.00	0.27	0.14	0.35	0.24	0.05	0.23	0.07	0.29	-0.02	0.06	0.14	0.11	0.22	0.16
Bcon03	0.25	0.11	0.08	0.11	0.11	0.36	0.22	0.12	0.25	0.17	0.36	0.27	1.00	0.29	0.32	0.29	0.05	0.01	0.24	0.21	0.10	0.01	0.30	0.05	0.37	0.24
Brel02	0.16	0.06	0.13	0.15	0.06	0.27	0.24	0.41	0.41	0.32	0.16	0.14	0.29	1.00	0.22	0.26	-0.06	0.05	0.56	0.06	0.27	0.03	0.24	-0.00	0.29	0.60
Bin01	0.20	0.05	0.25	0.12	0.13	0.28	0.19	0.02	0.17	0.09	0.27	0.35	0.33	0.22	1.00	0.38	0.01	0.05	0.15	0.26	-0.00	0.09	0.18	0.12	0.20	0.28
Bin02	0.20	0.05	0.20	0.12	0.04	0.27	0.17	0.17	0.26	0.19	0.21	0.24	0.29	0.26	0.38	1.00	-0.10	0.01	0.27	0.22	0.17	0.03	0.32	0.04	0.23	0.28
Speed3	-0.04	-0.09	0.02	0.00	0.11	-0.02	-0.04	-0.02	-0.10	-0.07	0.05	0.05	0.05	-0.06	0.01	-0.10	1.00	0.22	0.03	0.10	-0.09	0.11	0.02	0.25	0.06	-0.09
Beas03	-0.01	0.03	-0.03	0.11	0.18	0.03	-0.13	-0.11	-0.15	-0.16	0.11	0.23	0.01	-0.05	0.06	0.01	0.22	1.00	-0.16	0.28	-0.25	0.22	-0.05	0.27	-0.03	-0.02
Brel03	0.16	0.03	0.11	0.14	0.04	0.20	0.21	0.37	0.35	0.29	0.16	0.07	0.24	0.56	0.15	0.27	0.03	-0.16	1.00	0.12	0.31	-0.05	0.27	-0.04	0.29	0.60
Beas04	0.14	0.10	0.12	0.20	0.18	0.14	0.11	0.03	0.13	0.06	0.15	0.23	0.21	0.06	0.26	0.22	0.10	0.28	0.12	1.00	0.02	0.06	0.17	0.09	0.20	0.14
Brel04	0.07	0.10	0.06	0.15	-0.01	0.10	0.23	0.29	0.31	0.35	0.04	-0.02	0.10	0.27	-0.00	0.17	-0.09	-0.25	0.31	0.02	1.00	-0.09	0.30	-0.15	0.11	0.25
Btec06	0.06	-0.00	0.18	0.06	0.23	0.05	0.10	0.06	-0.04	-0.09	0.02	0.06	0.01	0.03	0.09	0.03	0.11	0.22	-0.05	0.06	-0.09	1.00	-0.03	0.29	-0.02	0.13
Beas02	0.17	0.03	0.21	0.13	0.04	0.27	0.33	0.22	0.15	0.09	0.41	0.14	0.30	0.24	0.18	0.17	0.02	-0.05	0.27	0.17	0.30	-0.03	1.00	0.06	0.20	0.25
Speed4	0.09	-0.02	0.17	0.07	0.18	0.06	0.09	0.00	0.01	-0.05	0.04	0.11	0.05	-0.00	0.12	0.04	0.25	0.27	-0.04	0.09	-0.15	0.29	0.06	1.00	-0.01	-0.03
Bfun03	0.14	0.02	0.15	0.11	-0.04	0.20	0.13	0.19	0.34	0.23	0.23	0.22	0.37	0.29	0.20	0.23	0.06	-0.03	0.29	0.20	0.11	-0.02	0.20	-0.01	1.00	0.33
Brel05	0.12	0.17	0.25	0.18	0.02	0.27	0.26	0.38	0.41	0.32	0.25	0.16	0.24	0.60	0.28	0.28	-0.09	-0.02	0.60	0.14	0.25	0.13	0.25	-0.00	0.33	1.00

5B2 Correlation Matrix of the South African sample: Grouped Factors and Use

Variable	Use	AvExposure	AvNewCost	AvSymbolism	Avpeers	AvConveneince	AvInfo	AvSafety	AvUrgency	AvFormality
	Correlations (saresults29.07.sta)									
	Marked correlations are significant at p < .05000									
	N=212 (Casewise deletion of missing data)									
Use	1.00	-0.25	-0.10	-0.17	-0.27	-0.19	-0.28	-0.02	-0.12	-0.08
AvExposure	-0.25	1.00	0.03	0.24	0.17	0.10	0.03	0.10	0.16	-0.04
AvNewCost	-0.10	0.03	1.00	0.10	0.24	0.07	-0.07	0.04	-0.08	-0.07
AvSymbolism	-0.17	0.24	0.10	1.00	0.35	0.27	0.17	0.27	0.21	0.29
Avpeers	0.27	0.17	0.24	0.35	1.00	0.17	0.25	0.16	0.04	0.08
AvConveneince	-0.19	0.10	0.07	0.27	0.17	1.00	0.43	0.38	0.33	0.33
AvInfo	-0.28	0.03	-0.07	0.17	0.25	0.43	1.00	0.25	0.29	0.37
AvSafety	-0.02	0.10	0.04	0.27	0.16	0.38	0.25	1.00	0.31	0.25
AvUrgency	-0.12	0.16	-0.08	0.21	0.04	0.33	0.29	0.31	1.00	0.31
AvFormality	-0.08	-0.04	-0.07	0.29	0.08	0.33	0.37	0.25	0.31	1.00
AvVolume	-0.33	0.14	-0.08	0.10	0.16	0.24	0.41	0.31	0.27	0.27
AvCPhonefeatures	-0.38	0.15	0.01	0.04	0.19	0.20	0.28	0.03	0.14	0.08
AvEaseofuse	-0.36	0.17	0.03	-0.03	0.14	0.25	0.31	0.03	0.01	-0.00
AvNetworkcapability	-0.03	0.03	0.06	-0.01	0.02	0.02	0.09	0.15	0.12	0.04
AvIPhonefeatures	-0.36	0.13	0.10	0.31	0.19	0.29	0.29	0.26	0.17	0.29
AvFunctional	-0.40	0.23	0.18	0.31	0.36	0.39	0.32	0.23	0.20	0.16
AvPsychological	-0.23	0.22	0.14	0.42	0.38	0.30	0.29	0.27	0.19	0.28
AvRelational	-0.24	0.13	0.13	0.46	0.54	0.29	0.30	0.38	0.21	0.19
NewAvTech	-0.40	0.21	0.13	0.24	0.41	0.51	0.49	0.40	0.27	0.25
Gender	-0.13	0.14	-0.02	-0.13	0.06	-0.10	0.00	-0.12	-0.09	-0.11
Age	-0.37	0.11	0.06	0.17	0.29	0.02	0.15	0.09	0.03	-0.01
Income	-0.26	0.07	0.11	0.20	0.24	-0.03	0.03	0.17	-0.06	0.01
Cliteracy	-0.20	0.21	-0.00	-0.06	0.02	0.09	0.12	-0.04	0.04	-0.12
Occupation	0.21	-0.09	-0.06	-0.14	-0.19	0.07	0.02	-0.07	0.08	0.06

5B2 Correlation Matrix of the South African sample: Grouped Factors and Use

Variable	Correlations (saresults29 07.sta) Marked correlations are significant at p < .05000 N=212 (Casewise deletion of missing data) AvVolume	AvCPhonefeatures	AvEaseofuse	AvNetworkcapability	AvIPhonefeatures	AvFunctional	AvPsychological
Use	-0.33	-0.38	-0.36	-0.03	-0.36	-0.40	-0.23
AvExposure	0.14	0.15	0.17	0.03	0.13	0.23	0.22
AvNewCost	-0.08	0.01	0.03	0.06	0.10	0.18	0.14
AvSymbolism	0.10	0.04	-0.03	-0.01	0.31	0.31	0.72
Avpeers	0.16	0.19	0.14	0.02	0.19	0.36	0.38
AvConvenience	0.24	0.20	0.25	0.02	0.29	0.39	0.30
Avinfo	0.41	0.28	0.31	0.09	0.29	0.32	0.29
AvSafety	0.31	0.03	0.03	0.15	0.26	0.23	0.27
AvUrgency	0.27	0.14	0.01	0.12	0.17	0.20	0.19
AvFormality	0.27	0.08	-0.00	0.04	0.29	0.16	0.28
AvVolume	1.00	0.32	0.16	0.13	0.26	0.31	0.13
AvCPhonefeatures	0.32	1.00	0.58	0.23	0.00	0.26	0.03
AvEaseofuse	0.16	0.58	1.00	0.19	-0.02	0.29	0.02
AvNetworkcapability	0.13	0.23	0.19	1.00	-0.21	-0.01	-0.03
AvIPhonefeatures	0.26	0.00	-0.02	-0.21	1.00	0.42	0.35
AvFunctional	0.31	0.26	0.29	-0.01	0.42	1.00	0.32
AvPsychological	0.13	0.03	0.02	-0.03	0.35	0.32	1.00
AvRelational	0.26	0.10	0.03	-0.04	0.36	0.41	0.58
NewAvTech	0.36	0.44	0.52	0.18	0.30	0.57	0.33
Gender	-0.06	0.01	0.15	-0.03	-0.07	-0.02	0.00
Age	0.16	0.18	0.12	0.05	0.26	0.42	0.10
Income	0.13	0.01	-0.03	-0.02	0.21	0.30	0.07
Cliteracy	0.08	0.22	0.36	0.09	-0.06	0.15	-0.05
Occupation	-0.11	-0.03	0.05	-0.01	-0.08	-0.23	-0.04

Variable	Correlations (saresults29 07.sta) Marked correlations are significant at p < .05000 N=212 (Casewise deletion of missing data) AvRelational	NewAvTech	Gender	Age	Income	Cliteracy	Occupation
Use	-0.24	-0.40	-0.13	0.37	-0.26	-0.20	0.21
AvExposure	0.13	0.21	0.14	0.11	0.07	0.21	-0.09
AvCost	0.30	0.28	-0.05	0.22	0.33	0.03	-0.23
AvSymbolism	0.46	0.24	-0.13	0.17	0.20	-0.06	-0.14
Avpeers	0.54	0.41	0.06	0.29	0.24	0.02	-0.19
Av context	0.61	0.44	-0.04	0.32	0.34	-0.00	-0.25
AvConvenience	0.29	0.51	-0.10	0.02	-0.03	0.09	0.07
Avinfo	0.30	0.49	0.00	0.15	0.03	0.12	0.02
AvSafety	0.38	0.40	-0.12	0.09	0.17	-0.04	-0.07
Av Modality	0.43	0.61	-0.10	0.12	0.08	0.06	-0.00
AvUrgency	0.21	0.27	-0.09	0.03	-0.06	0.04	0.08
AvFormality	0.19	0.25	-0.11	-0.01	0.01	-0.12	0.06
AvVolume	0.26	0.36	-0.06	0.16	0.13	0.08	-0.11
AvTask	0.29	0.39	-0.12	0.07	0.03	-0.03	0.03
AvCPhonefeatures	0.10	0.44	0.01	0.18	0.01	0.22	-0.03
AvEaseofuse	0.03	0.52	0.15	0.12	-0.03	0.36	0.05
AvNetworkcapability	-0.04	0.18	-0.03	0.05	-0.02	0.09	-0.01
AvIPhonefeatures	0.36	0.30	-0.07	0.26	0.21	-0.06	0.08
AvTech	0.21	0.61	0.02	0.28	0.08	0.25	-0.04
AvFunctional	0.41	0.57	-0.02	0.42	0.30	0.15	-0.23
AvPsychological	0.58	0.33	0.00	0.10	0.07	-0.05	-0.04
AvRelational	1.00	0.46	0.01	0.22	0.18	-0.01	-0.17
NewAvTech	0.46	1.00	0.04	0.30	0.15	0.23	-0.08
Gender	0.01	0.04	1.00	-0.01	-0.19	0.32	0.06
Age	0.22	0.30	-0.01	1.00	0.68	0.10	-0.61
Income	0.18	0.15	-0.19	0.68	1.00	-0.07	-0.69
Cliteracy	-0.01	0.23	0.32	0.10	-0.07	1.00	0.03
Occupation	-0.17	-0.08	0.06	-0.61	-0.69	0.03	1.00

5B3 Correlation matrix of Mauritian sample: Grouped factors and Use

Correlations (mauritianresults3107.sta)
Marked correlations are significant at p < .05000
N=198 (Casewise deletion of missing data)

Variable	Use	AvExposure	AvNew Cost	AvSymbolism	Avpeers	Avconvenience	AvInfo	AvSafety	AvUrgency	AvFormality	Av Volume
Use	1.00	-0.31	-0.05	-0.22	-0.23	-0.16	-0.15	-0.15	-0.13	-0.15	-0.1
AvExposure	-0.31	1.00	0.11	0.23	0.17	0.15	0.17	0.22	0.14	0.14	0.0
AvNew Cost	-0.05	0.11	1.00	0.12	0.10	0.10	0.12	0.21	-0.04	0.09	-0.1
AvSymbolism	-0.22	0.23	0.12	1.00	0.46	0.29	0.35	0.43	0.18	0.27	0.2
Avpeers	-0.23	0.17	0.10	0.46	1.00	0.23	0.26	0.19	0.08	0.07	0.0
Avconvenience	-0.16	0.15	0.10	0.29	0.23	1.00	0.55	0.44	0.51	0.24	0.2
AvInfo	-0.15	0.17	0.12	0.35	0.26	0.55	1.00	0.48	0.36	0.31	0.3
AvSafety	-0.15	0.22	0.21	0.43	0.19	0.44	0.48	1.00	0.29	0.32	0.2
AvUrgency	-0.13	0.14	-0.04	0.18	0.08	0.51	0.36	0.29	1.00	0.28	0.1
AvFormality	-0.15	0.14	0.09	0.27	0.07	0.24	0.31	0.32	0.28	1.00	0.2
Av Volume	-0.10	0.03	-0.11	0.21	0.03	0.26	0.30	0.22	0.19	0.20	1.0
AvCurrentPF	-0.29	0.35	0.14	0.30	0.25	0.26	0.38	0.34	0.26	0.23	0.3
AvEaseofuse	-0.18	0.22	0.07	0.16	0.17	0.46	0.44	0.30	0.37	0.20	0.3
Avnetworkcapability	0.01	-0.02	0.07	-0.15	-0.17	0.04	-0.04	-0.06	0.08	-0.06	0.0
AvEnhancedPF	-0.18	0.15	0.01	0.27	0.29	0.34	0.37	0.19	0.18	0.21	0.1
AvFunctional	-0.26	0.20	0.08	0.37	0.35	0.47	0.46	0.31	0.30	0.29	0.2
AvPsychological	-0.25	0.23	0.23	0.70	0.55	0.34	0.38	0.47	0.08	0.22	0.1
AvRelational	-0.13	0.20	0.18	0.47	0.52	0.35	0.36	0.43	0.15	0.12	0.0
NewAvTechAcop	-0.18	0.24	0.08	0.28	0.29	0.51	0.50	0.45	0.41	0.22	0.3
Gender	0.07	-0.06	-0.01	0.06	0.07	-0.04	-0.21	-0.10	0.03	-0.08	-0.0
Age	-0.13	-0.00	0.10	0.11	0.09	0.06	0.13	0.01	-0.02	0.13	0.1
Income	-0.14	-0.08	0.00	0.14	0.04	0.11	0.03	-0.01	-0.01	0.09	0.1
Cliteracy	0.01	0.06	-0.03	-0.11	-0.11	-0.09	-0.00	-0.08	0.04	-0.03	0.0
Occupation	0.14	-0.01	-0.06	-0.15	-0.08	-0.08	-0.15	-0.03	-0.03	-0.10	-0.2

5B3 Correlation matrix of Mauritian sample: Grouped factors and Use

Variable	Correlations (mauritianresults3107.sta) Marked correlations are significant at p < .05000 N=198 (Casewise deletion of missing data) AvCurrent PF	AvFaseofuse	Avnetworkcapability	vEnhancedPF	AvFunctional	AvPsychological	AvRelational	NewAvTechAdop
Use	-0.29	-0.18	0.01	-0.18	-0.26	-0.25	-0.13	-0.18
AvExposure	0.35	0.22	-0.02	0.15	0.20	0.23	0.20	0.24
AvNew Cost	0.14	0.07	0.07	0.01	0.08	0.23	0.18	0.08
AvSymbolism	0.30	0.16	-0.15	0.27	0.37	0.70	0.47	0.28
Avpeers	0.25	0.17	-0.17	0.29	0.35	0.55	0.52	0.29
Avconvenience	0.26	0.46	0.04	0.34	0.47	0.34	0.35	0.51
Avinfo	0.38	0.44	-0.04	0.37	0.46	0.38	0.36	0.50
AvSafety	0.34	0.30	-0.06	0.19	0.31	0.47	0.43	0.45
AvUrgency	0.26	0.37	0.08	0.16	0.30	0.08	0.15	0.41
AvFormality	0.23	0.20	-0.06	0.21	0.29	0.22	0.12	0.22
Av Volume	0.30	0.33	0.08	0.13	0.25	0.10	0.06	0.31
AvCurrentPF	1.00	0.48	0.06	0.24	0.31	0.29	0.28	0.50
AvFaseofuse	0.48	1.00	0.22	0.18	0.27	0.22	0.21	0.52
Avnetworkcapability	0.06	0.22	1.00	0.16	-0.12	-0.18	-0.08	0.03
AvEnhancedPF	0.24	0.18	-0.16	1.00	0.44	0.29	0.23	0.36
AvFunctional	0.31	0.27	-0.12	0.44	1.00	0.36	0.46	0.44
AvPsychological	0.29	0.22	-0.18	0.29	0.36	1.00	0.62	0.38
AvRelational	0.28	0.21	-0.08	0.23	0.46	0.62	1.00	0.46
NewAvTechAdop	0.50	0.52	0.03	0.36	0.44	0.38	0.46	1.00
Gender	-0.06	-0.01	0.01	-0.09	-0.11	-0.04	-0.01	-0.01
Age	0.13	0.14	-0.09	0.08	0.28	0.07	0.06	0.05
Income	0.01	0.03	-0.07	0.10	0.24	0.04	0.05	0.00
Cliteracy	0.01	0.15	0.08	-0.06	-0.02	-0.05	-0.11	0.01
Occupation	-0.17	-0.09	0.10	-0.02	-0.23	-0.09	0.15	-0.03

5B3 Correlation matrix of Mauritian sample: Grouped factors and Use

Variable	Correlations (mauritianresults3107.sta) Marked correlations are significant at p < .05000 N=198 (Casewise deletion of missing data) Gender	Age	Income	Cliteracy	Occupation
Use	0.07	-0.13	-0.14	0.01	0.14
AvExposure	-0.06	-0.00	-0.08	0.05	-0.01
AvNew Cost	-0.01	0.10	0.00	-0.03	-0.06
AvSymbolism	-0.06	0.11	0.14	-0.11	-0.15
Avpeers	0.07	0.09	0.04	-0.11	-0.08
Avconvenience	-0.04	0.06	0.11	-0.09	-0.08
Avinfo	-0.21	0.13	0.03	-0.00	-0.15
AvSafety	-0.10	0.01	-0.01	-0.08	-0.03
AvUrgency	0.03	-0.02	-0.01	0.04	-0.03
AvFormality	-0.08	0.13	0.09	-0.03	-0.10
Av Volume	-0.08	0.19	0.12	0.07	-0.23
AvCurrentPF	-0.06	0.13	0.01	0.01	-0.17
AvLaseofuse	-0.01	0.14	0.03	0.15	-0.09
Avnetworkcapability	0.01	-0.09	-0.07	0.08	0.10
AvEnhancedPF	-0.09	0.08	0.10	-0.06	-0.02
AvFunctional	-0.11	0.28	0.24	-0.02	-0.23
AvPsychological	-0.04	0.07	0.04	-0.05	-0.09
AvRelational	-0.01	0.06	0.05	-0.11	-0.15
NewAvTechAdop	-0.01	0.05	0.00	0.01	-0.03
Gender	1.00	-0.31	-0.21	-0.05	0.00
Age	-0.31	1.00	0.53	0.32	-0.51
Income	-0.21	0.53	1.00	-0.09	-0.60
Cliteracy	-0.05	0.32	-0.09	1.00	-0.04
Occupation	0.00	-0.51	-0.60	-0.04	1.00

5C1 Factor analysis of the Mauritian sample

Question code	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Comments
Bcon01	0.66						All the convenience test items load together.
Bcon02	0.61						
Bcon03	0.33						
Burg01	0.71						The 2 urgency test items also load together on the same factor
Burg02	0.37						
Binf01	0.38						2 of the 3 freedom to access information test items load together.
Binf03	0.30						
Bvol02	0.36						Some odd loadings on factor 1.
Beas01	0.36						
Badp02	0.31						
Bsym01		0.69					2 of the context constructs (peers and symbolism) load on factor 2. All the symbolism and peers constructs' load cleanly on this factor. The psychological test items also load on factor 2. Finally, one relational test item loaded on factor 2 as well.
Bsym02		0.49					
Bsym03		0.61					
Bsym04		0.49					
Bsym05		0.69					
Bpsy01		0.76					
Bpsy02		0.65					
Bpsy03		0.69					
Bpee01		0.55					
Bpee02		0.50					
Brel04		0.53					
Btec02			0.72				8 out of the 10 technology test items load on factor 3.
Btec03			0.77				
Btec04			0.58				
Btec05			0.58				
Btec06			0.79				
Btec07			0.68				
Btec09			0.64				
Btec10			0.46				
Beas01			0.37				2 out of the 4 ease of use test items load together
Beas04			0.34				
Bfut01				0.48			All the enhanced phone features test items load together
Bfut02				0.76			
Bfut03				0.77			
Bfut04				0.74			
Badp01					0.78		Odd Loadings
B46'					0.66		

Question code	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Comments
Btec01						0.35	2 current phone features test items and one of the ease of use test items which did not load earlier load on factor 6.
Btec08						0.41	
Beas03						0.65	
Bnet01						0.60	The 2 network capability test items load together.
Bnet02						0.71	

Question Code	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Comments
Bfun01	0.61							Only 1 of the 3 functional test items loaded on factor 7.
Bpee01 Bpee02	0.52 0.52							The 2 peer test items load again
Brel01 Brel02	0.48 0.30							The 1st 2 relational test items load on factor 7 as well
Bexp01 Bexp02		0.72 0.61						The 2 exposure factors load together
Burg02 Bsaf01 Bsym02 Btec08			0.36 0.62 0.59 0.32					
Bcos01 Bcos02 Bcos03				-0.20 0.29 0.50				
Bcon02 Bfor01					0.30 0.67			
Bfun02 Bfut01					0.57 0.41			
Beas02 Bvol01 Binf01						0.51 0.60 0.57		
Bcos01							0.66	2 of the 3 cost items load together
Bcos02							0.67	

	Factor 14	Factor 15						Comments
Brel01 Brel02 Brel03 Brel05	0.31 0.63 0.67 0.52							4 of the 5 relational tests items load together
Bfun03	0.52							
Bcon03 Badp03	0.44 0.54							Odd Loadings
Binf02 Binf03		0.53 0.37						2 of the 3 freedom to access information test items load again
Beas04 Bsaf02 Badp02		0.63 0.60 0.45						Odd loading

5C2 Factor analysis of the South African sample

Question code	Fac1	Fac2	Fac3	Fac4	Fact5	Fac6	Fac7	Fac8	Comments
Bsym01 Bsym02 Bsym03 Bsym04 Bsym05 Bpsy01 Bpsy02 Bpsy03	0.549 0.645 0.743 0.739 0.636 0.733 0.624 0.718								The symbolism and psychological factors load together.
Btec02 Btec03 Btec04 Btec05 Btec06 Btec07 Btec09 Btec10 Beas01 Beas02 Beas03		0.721 0.412 0.441 0.817 0.812 0.464 0.453 0.599 0.396 0.761							Most of the technology factors in and 3 of the ease of use factors load together on factor 2.
Bcon01 Bcon02 Bcon03			0.553 0.672 0.541						The 3 convenience factors load on factor 3
Bfut01 Bfut02 Bfut04 Bfun03				0.308 0.826 0.816 0.669					The enhanced phone features factors

Question	Fac1	Fac2	Fac3	Fac4	Fact5	Fac6	Fac7	Fac8	Commen
									load together
Brel01 Brel02 Brel03 Brel04 Brel05 Bpee01 Bpee02					0.666 0.773 0.770 0.252 0.764 0.545 0.478				Relational and peers test items load together on factor 4.
Bexp01 Bexp02						0.818 0.810			The 2 exposure factors load together on factor 5
Bcos01 Bcos02							0.820 0.800		2 out of the 3 cost factors load on factor 6
Beas03 Beas04								0.775 0.502	2 out of the 4 ease of use factors load together

Question Code	Fac9	Fac10	Fac11	Fac12	Fac13	Fac14	Fac15	Comments
Burg0 2 Bsaf01 Btec04 Bnet01 Btec08 Bnet02	0.384 0.369 0.304 0.121 0.629 0.601							
Bfun01 Btec04 Bfun02 Bfun03			0.724 0.346 0.032 0.580					2 functional factors load on factor 11.
Bsaf01 Bsaf02				0.491 0.776				The 2 safety factors load together
Binf01 Binf02 Binf03					0.660 0.632 0.676			All the 3 freedom to access information factors load on factor 13
Bvol02					0.576			

Question	Fac9	Fac10	Fac11	Fac12	Fac13	Fac14	Fac15	Comments
Badp02 Badp03					0.414 0.310			
Badp01					0.580			
Bcon01 Burg01 Burg02						0.347 0.735 0.413		The 2 urgency factors load together with one of the convenienc e factor.
Btec01 Btec08							0.815 0.463	2 of the technology test items load together. These 2 test items did not load earlier on factor 2.

Summary

Both the Mauritius and South African sampled show good reliability and validity of constructs. The South African sample however shows more consistent groupings with the constructs and reliable Cronbach Alpha values.

5C3 Factor analysis of the Combined Dataset

Factor Loadings (Varimax normalized) (combineddataset2907.sta)
Extraction: Principal components
(Marked loadings are >.500000)

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Factor 15
Bsym01	0.643406	-0.021842	0.104475	-0.012141	0.120469	-0.009384	0.009318	0.005290	0.147171	0.201930	0.190017	-0.045844	-0.047690	0.063542	0.124603
Bcon01	0.299077	-0.059524	0.613457	-0.012561	0.143182	0.066239	-0.026047	0.102711	0.107181	0.117543	0.032090	-0.024364	0.796339	0.007727	-0.255400
Burg01	0.071475	0.184060	0.767690	-0.058296	0.029798	0.015394	0.108853	0.002122	0.068944	-0.007781	0.342709	-0.084282	0.057123	0.028135	0.046609
Bexp01	0.177660	0.073478	0.077297	-0.065014	0.075737	0.006442	0.040044	0.805584	0.047727	-0.027696	-0.036285	-0.065797	-0.071919	0.021973	0.017113
Burg02	0.066361	0.002007	0.511180	-0.143258	0.066421	0.013492	0.236549	0.277234	-0.104777	-0.019231	0.250897	0.157892	0.054896	-0.035541	0.112274
BB1(original)	0.020520	0.012484	0.050305	0.962585	0.019647	0.041840	0.007399	0.072971	0.031327	-0.009613	0.066009	0.103942	0.025573	0.015935	0.025463
Bcos01	0.020520	0.012484	0.050305	0.962585	-0.019647	0.041840	-0.007399	-0.077971	-0.031327	0.009519	-0.066009	-0.103942	-0.025573	-0.015935	-0.025463
Bexp02	0.112926	0.183979	0.019041	0.045817	0.002061	0.069102	0.069132	0.784073	-0.060155	0.076424	0.110526	0.079662	0.135632	0.024681	-0.034357
Btec01	0.072910	0.396971	0.070707	0.161157	-0.071575	0.014255	0.364725	-0.105401	0.390131	-0.248074	0.098119	-0.072925	0.377506	0.033871	-0.043184
Bfun01	0.048540	0.137097	0.033193	0.084477	0.069883	0.066748	-0.100425	0.044810	-0.018045	0.756074	-0.020783	0.014524	0.018560	0.109279	0.074309
Bcos02	0.147400	-0.027373	0.032150	0.896210	0.059305	0.025401	0.001691	0.212931	0.101576	0.044416	0.202766	0.158766	0.049603	0.194592	0.098236
Bcon02	0.342637	-0.017553	0.696088	0.027793	0.096780	0.194000	-0.063718	0.123938	0.194046	0.069253	0.100613	0.147467	0.225222	0.044227	0.063430
Bcos03	0.289553	-0.145875	0.024733	-0.127260	0.244685	0.133848	0.022977	0.025690	0.298243	0.176699	0.418714	0.159009	0.054076	0.039597	0.139525
Bsaf01	0.219175	0.012645	0.166728	0.100795	-0.018521	0.097764	0.053155	0.120795	-0.312375	-0.030131	0.535351	0.399967	0.038185	-0.024547	-0.000615
Bsym02	0.635022	0.039069	0.047646	-0.008215	0.043366	-0.024336	-0.066170	0.054330	-0.061000	0.132766	0.258379	0.138566	-0.101131	-0.129597	-0.175137
Btec02	0.107542	0.746644	0.062777	-0.002606	0.007849	0.063162	0.061222	-0.006768	-0.030246	0.120206	-0.049527	-0.013743	-0.030229	-0.012518	-0.067273
Bsym03	0.706095	0.175780	0.044916	0.060005	0.072972	0.227238	-0.033603	0.138343	0.135900	0.003921	-0.049535	0.013475	0.335754	-0.015944	-0.007555
Brel01	0.207812	0.062358	0.119797	-0.006222	-0.050735	0.564572	0.007813	0.014071	-0.128843	0.142990	0.080518	0.047047	0.315166	0.269420	0.002979
Bpsy01	0.712431	0.015544	0.030022	0.012978	0.073711	0.257860	-0.067307	-0.020400	0.052742	-0.004151	0.071265	-0.009174	0.157316	0.156445	0.038049
Bsym04	0.675814	0.076654	0.163706	0.012010	0.027226	0.172795	0.019112	0.083920	0.117137	-0.221003	-0.099743	0.124163	0.001179	-0.089365	0.046909
Bhor01	0.297126	0.061237	0.332169	0.049724	0.176931	0.005751	0.027470	0.049983	0.114044	-0.229245	-0.005399	0.959457	0.223731	-0.000468	0.077885
Bsym05	0.659127	-0.002738	0.006940	0.032740	0.102692	0.023813	-0.061430	0.004485	0.029046	-0.019818	-0.010094	0.201018	0.064966	0.791190	-0.002030
Bpee01	0.717028	0.150580	0.015296	0.051407	0.052994	0.369032	0.006829	0.047444	0.049729	0.194657	0.011970	0.066371	0.076966	0.675372	0.054347
Bpee02	0.702000	0.147287	0.013904	0.070095	-0.000042	0.334469	0.076811	0.034690	0.337433	0.127659	-0.013575	-0.013904	0.014590	0.619881	0.047257
Beas01	0.046443	0.446036	0.199057	-0.148187	-0.004361	0.098167	0.043042	0.051359	0.315860	0.157729	0.002009	0.045168	0.329643	0.254510	-0.059574
Btec03	-0.044605	0.766744	-0.037266	-0.018021	-0.123060	0.024085	-0.076231	0.021702	0.004940	0.066199	-0.027474	0.064164	0.190045	0.160862	-0.029877
Beas02	-0.009155	0.266807	0.078158	0.049794	0.009749	-0.009427	0.101937	0.123007	0.332004	0.172053	-0.015800	0.147371	0.493205	0.181512	-0.068248
Bvol01	0.110642	0.108455	0.060622	-0.004023	0.101237	0.174241	0.116796	-0.032945	0.070722	0.051630	0.109548	0.597752	0.124661	0.082998	-0.009133
Btec04	0.072283	0.502528	-0.029291	0.005304	0.226046	-0.040258	0.089526	0.151721	0.059182	0.035667	-0.057860	0.170446	0.237342	0.032297	0.247775
Btec05	-0.130523	0.550791	-0.012897	0.037712	-0.030847	0.057581	0.029607	0.179242	0.086092	0.114089	0.200328	0.149100	0.210165	0.098843	0.297064
Bfun02	0.199872	0.093028	0.271107	0.070096	0.244272	0.335821	-0.072896	0.170999	0.150646	-0.000182	0.044718	0.362288	0.276129	-0.397752	0.207777
Btec06	0.043048	0.608375	0.150127	0.054869	0.019647	0.110388	-0.027234	0.119202	0.112193	-0.078974	-0.047950	-0.016612	0.079140	0.075606	0.019157
Bcon03	0.207702	0.166290	0.338624	0.040021	0.149716	0.267998	-0.056840	-0.039325	0.401320	0.064534	-0.023179	0.104894	0.244811	-0.087473	0.039004
Brel02	0.212135	0.029375	0.105487	0.070486	0.074871	0.759634	0.006052	0.040649	0.104546	-0.019484	0.003928	0.164307	0.034439	0.068454	0.028357
Binf01	0.098897	0.097929	0.190711	-0.049587	0.030937	0.112417	0.009746	-0.000755	0.189093	-0.039601	-0.012872	0.310956	0.562272	-0.054470	-0.037001
Binf02	0.141403	0.027390	0.101474	-0.081056	0.254182	0.198313	0.006510	-0.005871	-0.077791	-0.136931	0.168690	-0.011622	0.533633	0.150907	0.141147
Bret01	-0.041585	0.059739	-0.341036	0.135747	-0.277604	0.112454	0.360471	-0.116031	-0.020730	0.191715	-0.018024	-0.220639	0.132462	-0.377278	0.125639
Bfut01	0.154144	0.377205	0.331340	-0.016348	0.498670	0.137318	0.000171	0.086100	0.002357	0.027815	0.127578	0.048306	0.047022	0.163031	0.103354
Binf03	0.091830	0.179774	0.139549	0.027874	0.144618	0.073529	-0.001096	-0.115626	-0.135785	0.014669	0.138322	0.108559	0.613973	0.071747	0.120149
Beas03	0.111387	-0.028305	-0.113813	0.030036	-0.390221	-0.059018	0.496125	0.214041	0.383553	0.035578	-0.229852	0.190370	0.299344	-0.105727	-0.028490
Brel03	0.233711	0.092695	0.056592	0.032310	0.070400	0.718634	-0.035672	-0.020769	-0.075763	0.012916	0.193647	0.027039	0.094362	0.012711	0.134175
Bvol02	0.096751	0.221419	0.156657	-0.051365	0.391930	0.057901	-0.060235	0.038282	-0.127517	0.043346	0.345752	0.125152	0.585216	-0.263514	-0.159304
Beas04	0.052425	0.206440	0.224064	0.074710	0.016451	0.000794	0.128148	0.152510	0.171042	0.114446	0.027015	-0.214019	0.566945	-0.008096	0.007178
Badp01	0.299456	0.074539	0.043629	0.119367	0.146791	-0.074178	-0.501853	-0.000900	0.223576	0.040354	0.285335	0.240358	-0.055016	-0.133466	0.755166
Btec07	0.059207	0.766696	-0.014572	0.006814	0.047550	0.003648	0.087333	0.029236	-0.054602	-0.018188	0.079564	0.010581	0.178251	-0.086604	-0.114059
Bpsy02	0.322041	0.136170	0.011574	0.074630	0.178926	0.208108	-0.006575	0.090871	0.032026	-0.090099	0.066482	0.053411	0.282556	0.107385	0.066280
Bvol03	-0.063714	-0.032756	0.124760	-0.115714	0.018341	0.010790	0.440765	-0.032515	-0.150017	0.098741	-0.088548	0.464606	-0.001539	0.014767	0.021230
Brel04	0.757911	0.006179	0.045804	0.008803	0.015745	0.270242	-0.125742	0.052414	-0.171115	-0.155240	0.437976	0.151286	0.032132	0.265443	0.072332
Bpsy03	0.574736	-0.000218	0.060921	0.029637	0.128874	0.233197	-0.281337	0.132151	-0.051715	-0.039505	0.711106	-0.069242	0.115879	0.162905	0.078077
Btec08	-0.104821	0.670904	0.064938	0.033794	-0.027126	0.017830	0.662948	0.013269	0.079719	-0.051178	0.106444	0.167971	-0.251972	0.217706	-0.024934
Bsaf02	0.149679	0.058831	0.185450	0.049241	0.098725	0.266096	-0.025465	0.021349	0.041127	0.009415	0.590813	-0.004732	0.787213	0.095862	-0.041054
Badp02	-0.001391	0.325830	0.700935	-0.041206	0.126275	0.129059	0.157579	0.001770	0.172536	0.211964	0.345165	-0.083903	0.450021	0.124479	-0.126893
Btec09	-0.207969	0.533590	0.000511	-0.049206	0.118837	-0.015406	0.134892	0.015110	0.464166	0.027866	0.100621	0.006412	0.010169	-0.000604	0.040627
Bret02	0.300256	0.077194	0.120303	0.047032	-0.007448	-0.033723	0.672553	0.003432	0.110601	0.045201	0.110624	-0.009085	0.032753	-0.071972	0.053692
Bfut02	0.096508	0.017665	0.081875	-0.017298	0.797973	0.049134	-0.027829	0.035716	-0.026881	0.127148	0.011595	0.006017	0.180647	-0.014910	-0.074852
Bfut03	0.065979	-0.067244	0.002175	-0.045767	0.817394	0.049181	-0.108075	-0.003305	0.029209	0.111667	0.045314	0.022048	0.106672	-0.029720	-0.033174
Btec10	0.001719	0.364590	0.015137	0.013654	0.229873	0.033350	0.083190	0.074168	0.014512	-0.189158	0.170900	0.030127	0.098927	0.054111	-0.005751
Bfut04	0.151525	0.060805	0.101339	0.077305	0.721962	0.143423	-0.084405	0.047073	0.116009	-0.033511	0.034715	0.120088	0.004213	0.075432	0.030781
Bfun03	0.106922	0.120726	0.111229	0.070664	0.336072	0.333910	0.003884	-0.047385	0.372204	0.505736	0.078344	0.022224	0.197712	-0.007231	-0.004829
Brel05	0.221900	0.011952	0.082833	-0.030392	0.192236	0.671349	0.277128	0.179634	0.127970	0.095332	0.077921	0.142554	0.109104	0.280904	0.150047
Badp03	0.116053	0.193322	0.205739	0.046799	0.225807	0.388389	0.125262	0.559638	0.159627	0.200373	0.162004	-0.000765	0.718888	0.138851	0.146984
Expl.Var	4.713071	4.266778	2.417327	2.405429	2.019034	3.291727	2.117649	1.752767	1.597219	1.722840	1.681822	1.735380	3.325752	1.596701	1.753162
Prp.Totl	0.077263	0.069963	0.039628	0.039761	0.049482	0.053963	0.034716	0.029581	0.026184	0.028243	0.030848	0.028457	0.054521	0.027610	0.020544

5C4 Factor analysis of the Mauritian sample

Factor Loadings (Varimax normalized) (mauritiansample3107.sta)
Extraction: Principal components
(Marked loadings are >.700000)

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Factor 15
Bsym01	0.067	0.686	0.024	0.067	0.007	0.005	0.007	0.105	0.265	0.100	0.112	-0.183	-0.140	-0.008	-0.021
Bcon01	0.657	0.080	-0.121	0.151	-0.105	0.043	0.083	0.354	0.335	-0.315	-0.085	0.195	-0.002	0.095	0.231
Burg01	0.715	0.021	0.241	0.075	0.009	0.048	0.018	-0.069	0.334	0.022	0.157	-0.197	-0.004	0.123	0.015
Bexp01	0.108	0.158	0.261	0.003	0.054	0.064	0.044	0.715	-0.060	0.043	0.075	-0.108	0.034	-0.067	-0.008
Burg02	0.366	0.008	0.007	0.144	0.015	0.197	0.076	0.165	0.359	-0.113	0.237	0.060	-0.183	-0.002	0.313
Bcos01	0.133	-0.076	0.013	-0.043	0.108	0.205	0.041	-0.188	0.057	-0.700	-0.050	-0.084	0.050	0.101	-0.083
Bexp02	-0.145	0.043	0.288	0.010	-0.024	0.013	0.057	0.610	0.153	0.068	0.334	0.158	0.107	0.304	0.248
Bsec01	0.017	-0.013	0.199	-0.061	-0.002	0.348	0.153	0.516	0.354	0.759	-0.071	-0.058	0.141	-0.070	0.120
Bfun01	-0.061	-0.054	0.035	0.069	0.027	-0.138	0.608	0.170	0.781	0.337	0.136	0.130	-0.214	0.088	-0.037
Bcos1	0.006	0.242	0.071	0.038	0.071	0.030	-0.033	0.735	0.096	0.788	0.118	0.071	0.474	0.015	0.139
Bcon02	0.611	0.060	0.032	0.068	0.066	0.092	0.173	0.072	0.153	0.396	0.303	0.143	0.174	0.170	0.085
Bcos2	0.081	0.360	-0.082	0.182	0.183	-0.042	0.086	-0.043	0.098	0.495	0.224	0.179	-0.025	0.116	0.000
Bsaf01	0.074	0.176	0.118	-0.031	0.094	-0.045	-0.035	-0.058	0.613	0.047	0.237	0.113	0.233	0.101	0.185
Bsym02	0.069	0.494	0.084	0.004	0.045	-0.173	0.077	-0.015	0.589	-0.026	-0.078	0.098	0.028	0.080	-0.084
Bsec02	-0.008	0.119	0.723	0.077	0.054	0.138	0.154	0.042	0.190	-0.144	-0.030	-0.006	-0.088	0.040	0.127
Bsym03	0.013	0.614	0.251	0.095	0.144	0.081	0.143	0.066	-0.225	-0.147	0.085	0.147	-0.068	0.253	-0.027
Brel01	-0.023	0.210	0.177	0.058	0.059	-0.118	0.454	-0.214	-0.092	-0.042	0.075	-0.134	0.019	0.309	0.128
Bpsy01	-0.029	0.759	0.025	0.074	0.105	0.347	0.368	-0.067	-0.350	-0.313	0.068	0.089	-0.017	0.702	0.219
Bsym04	0.300	0.494	0.132	0.104	0.028	0.162	0.136	0.306	0.244	-0.314	0.257	0.136	-0.128	0.082	-0.022
Blar01	0.086	0.158	0.140	0.251	-0.095	0.053	0.024	0.024	0.122	0.388	0.275	0.045	-0.020	-0.021	0.124
Bsym05	0.376	0.686	0.340	0.057	0.206	-0.081	0.039	0.047	0.094	0.155	0.177	0.205	0.032	-0.106	0.027
Bspee01	0.145	0.346	0.172	0.739	0.003	-0.034	0.519	0.077	0.074	0.085	-0.084	0.028	0.163	0.392	0.072
Bspee02	0.132	0.532	0.209	0.375	0.081	-0.110	0.517	0.015	0.151	-0.024	-0.123	0.065	0.087	0.138	-0.161
Beas01	0.353	0.145	0.382	-0.352	0.388	0.125	0.172	0.022	0.132	0.287	0.059	0.209	-0.165	0.138	0.277
Bsec03	-0.071	0.024	0.765	-0.133	-0.316	-0.126	0.155	0.082	0.012	-0.023	0.059	0.202	-0.034	0.335	-0.161
Beas02	0.145	0.395	0.251	0.384	0.068	0.284	0.172	0.047	0.110	0.073	0.177	0.510	0.167	-0.310	0.326
Bvol01	0.047	0.163	0.169	0.141	-0.758	0.001	0.387	-0.021	0.150	0.115	0.122	0.601	-0.103	0.041	0.013
Bsec04	-0.219	0.223	0.582	0.172	-0.301	-0.387	0.213	0.215	0.105	0.052	0.224	0.229	-0.085	0.073	0.132
Bsec05	0.342	0.313	0.576	0.095	-0.029	-0.116	0.384	0.140	0.035	0.041	0.187	0.098	0.177	0.043	-0.331
Bfun02	0.255	0.153	0.178	0.257	0.087	-0.044	0.074	0.006	0.042	0.107	0.574	0.246	0.131	0.766	0.062
Bsec06	0.147	0.057	0.791	0.012	0.050	0.035	0.062	0.033	-0.074	0.045	0.180	-0.019	0.117	0.145	0.338
Bcon03	0.332	0.201	0.150	0.155	0.175	0.176	-0.008	-0.008	0.102	0.082	0.422	0.161	0.078	0.443	0.013
Brel02	0.138	0.796	0.047	0.064	0.022	0.070	0.300	-0.037	-0.028	-0.169	0.077	0.134	0.160	0.027	-0.008
Binf01	0.384	0.081	0.153	0.125	0.171	0.027	0.104	-0.015	0.155	-0.115	0.344	0.566	0.027	0.170	0.106
Binf02	0.257	0.194	0.049	0.292	-0.027	0.036	0.172	0.100	0.031	0.042	0.213	-0.003	0.165	0.126	0.531
Bneti01	0.107	-0.156	-0.081	-0.263	0.064	0.208	0.103	0.030	-0.003	-0.250	0.311	-0.001	-0.032	0.160	-0.050
Bfut01	0.024	0.212	0.047	0.482	0.107	0.007	0.273	0.156	-0.132	0.810	0.437	-0.231	-0.129	-0.003	0.147
Binf03	0.304	0.097	0.222	0.125	0.015	-0.121	0.071	-0.088	0.107	-0.130	0.264	0.173	0.296	0.054	0.366
Beas03	0.128	0.082	-0.065	-0.023	-0.193	0.032	0.083	0.105	-0.716	-0.054	-0.110	0.255	0.131	-0.071	0.185
Brel03	0.028	0.228	0.106	-0.071	0.109	-0.051	0.022	0.074	-0.338	0.933	0.113	0.137	-0.032	0.070	0.126
Bvol02	0.357	0.045	0.247	0.143	-0.038	-0.111	0.288	0.080	0.113	-0.382	0.023	0.289	0.304	0.072	0.336
Beas04	0.177	0.359	0.336	0.087	0.104	0.206	-0.030	0.053	0.323	-0.140	-0.010	0.107	-0.085	0.024	0.675
Bedp01	-0.075	0.349	0.037	0.147	0.779	-0.368	0.052	0.078	0.225	0.057	0.081	0.063	0.008	0.079	0.015
Bsec07	0.387	0.075	0.675	0.394	-0.208	0.363	-0.131	0.047	0.181	-0.183	-0.052	-0.016	0.113	0.329	0.218
Bpsy02	0.094	0.559	0.153	0.045	0.012	-0.118	-0.044	0.030	0.044	0.044	0.085	0.086	0.118	0.307	0.182
Bvol03	0.121	-0.381	-0.062	-0.064	0.305	0.112	0.007	-0.007	0.049	0.008	0.198	0.231	-0.223	0.024	-0.125
Brel04	0.278	0.535	0.138	-0.132	0.108	0.190	0.254	-0.071	0.054	0.025	-0.058	-0.146	0.162	0.281	0.253
Bpsy03	0.018	0.593	0.074	0.095	-0.043	0.167	0.078	0.175	0.025	0.045	0.013	-0.008	0.206	0.235	0.122
Bsec08	0.125	0.152	0.038	-0.033	-0.487	0.412	0.059	0.134	0.225	0.020	0.047	-0.082	0.122	0.004	0.860
Bsaf02	0.114	0.287	0.160	0.040	-0.017	-0.051	0.063	-0.001	0.124	0.118	0.154	-0.002	0.044	0.323	0.503
Bedp02	0.309	0.024	0.439	0.179	0.096	0.115	-0.063	-0.063	0.067	0.228	0.018	0.145	-0.361	0.239	0.453
Bsec09	0.075	0.049	0.837	0.249	0.075	0.238	0.124	-0.393	0.056	0.296	0.056	-0.004	-0.073	0.083	0.334
Brel12	0.045	-0.061	0.113	0.078	-0.131	0.787	0.047	-0.123	0.008	0.367	0.016	0.001	0.058	0.013	-0.313
Bfut02	0.134	0.081	0.154	0.783	0.678	0.613	0.014	-0.022	-0.080	-0.019	-0.011	0.150	0.007	-0.033	0.172
Bfut03	0.028	0.081	0.038	0.772	0.158	-0.119	-0.081	0.022	0.054	0.087	0.125	0.009	-0.113	0.066	0.338
Bsec10	0.139	0.012	0.438	0.338	0.227	-0.076	-0.168	0.004	0.032	0.299	-0.158	0.029	0.131	0.063	0.168
Bfut04	0.032	0.084	0.078	0.742	0.013	0.510	0.082	-0.009	0.038	0.017	0.891	0.304	0.115	0.160	-0.016
Bfun03	0.153	0.140	0.058	0.428	0.098	0.005	0.122	0.072	0.118	0.100	0.032	0.147	-0.005	0.522	-0.019
Brel05	0.242	0.246	0.042	0.264	0.002	0.045	0.161	0.031	0.222	-0.003	-0.129	0.116	0.078	0.510	0.169
Bedp03	0.248	0.181	0.151	0.345	0.169	0.088	0.078	0.360	0.158	0.177	-0.049	0.381	-0.021	0.540	0.231
Expl.Var	2.803	5.278	4.917	3.180	1.894	2.264	1.910	1.676	1.749	1.432	2.257	2.342	1.002	2.943	2.546
Prp.Totl	0.047	0.088	0.082	0.053	0.031	0.038	0.032	0.028	0.029	0.023	0.034	0.034	0.029	0.049	0.042

5C5 Factor analysis of the South African sample

Factor Loadings (Varimax normalized) (saresults20 07 sta)
Extraction: Principal components
(Marked loadings are > .500000)

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9	Factor 10	Factor 11	Factor 12	Factor 13	Factor 14	Factor 15
Bsym01	0.540	-0.146	-0.153	0.088	0.036	0.109	0.001	-0.319	0.040	0.369	0.074	0.095	0.344	0.187	0.179
Bcon01	0.149	0.068	0.553	0.202	0.032	0.134	0.049	-0.085	-0.109	0.071	0.140	0.716	-0.136	0.347	0.146
Burg01	0.122	0.235	0.159	0.026	0.085	0.013	-0.007	-0.095	0.008	0.106	0.006	0.196	0.071	0.735	0.093
Bexp01	0.707	0.017	0.050	0.110	0.038	0.818	-0.082	0.072	-0.074	0.029	-0.011	-0.125	0.055	-0.053	-0.010
Burg02	0.071	-0.067	0.100	-0.037	0.115	0.314	-0.070	-0.057	0.784	-0.171	0.194	0.156	0.082	0.413	-0.120
Bcos01	0.015	0.009	-0.074	0.046	0.021	-0.077	0.820	0.046	-0.176	0.027	0.104	0.118	0.050	0.058	0.110
Bexp02	0.095	0.170	0.259	0.025	0.003	0.810	0.091	0.017	0.044	0.106	0.047	0.091	-0.121	0.074	0.008
Btec01	-0.009	0.067	0.073	-0.133	0.099	0.007	0.168	0.114	0.016	-0.071	0.000	0.132	-0.040	0.085	0.815
Bfun01	-0.080	0.168	0.046	0.141	0.174	0.083	0.104	0.134	-0.032	0.724	0.007	-0.017	-0.006	0.025	-0.081
Bcos1	0.095	-0.052	0.144	0.026	0.126	0.083	0.800	0.018	0.107	0.103	0.119	0.063	0.182	0.031	0.012
Bcon02	0.047	-0.037	0.077	0.173	0.187	0.132	0.076	0.068	-0.017	-0.034	0.134	0.146	0.094	0.775	-0.186
Bcos2	0.058	-0.160	0.106	0.247	0.207	0.145	-0.077	0.030	0.204	0.172	0.450	0.030	0.180	0.066	0.153
Bsaf01	0.184	-0.024	0.279	0.290	0.152	0.176	0.090	-0.236	0.368	-0.156	0.491	0.064	-0.047	-0.257	-0.040
Bsym02	0.647	0.040	-0.060	0.156	-0.088	0.015	-0.081	-0.042	-0.027	0.125	0.321	0.138	0.072	0.076	0.030
Btec02	0.059	0.721	0.060	0.021	0.011	-0.013	-0.001	-0.141	0.058	0.119	-0.115	-0.068	-0.706	0.068	0.033
Bsym03	0.743	0.199	0.039	0.048	0.216	0.040	0.112	0.011	-0.038	0.132	0.082	-0.027	0.010	0.078	0.037
Brel01	0.765	-0.079	0.072	-0.048	0.668	0.120	0.024	-0.055	-0.049	0.100	0.097	0.020	-0.167	-0.041	-0.039
Bpsy01	0.733	0.012	0.166	0.063	0.273	0.029	0.051	-0.073	-0.001	0.036	0.029	0.137	0.059	0.000	-0.146
Bsym04	0.730	0.041	0.214	-0.068	0.112	0.042	0.025	0.081	-0.001	-0.004	0.024	-0.055	-0.044	0.090	0.021
Bfor01	0.267	0.093	0.167	0.280	0.079	-0.062	-0.030	-0.234	0.077	-0.724	0.006	0.407	-0.107	0.266	0.135
Bsym05	0.058	0.001	0.157	0.085	0.226	0.066	-0.085	-0.154	0.052	-0.057	-0.176	0.141	0.103	0.001	0.106
Bpee01	0.236	0.711	0.140	-0.015	0.545	0.147	0.243	-0.293	0.088	0.199	-0.103	0.101	0.026	-0.795	0.083
Bpee02	0.249	0.105	0.064	-0.104	0.478	0.099	0.709	0.315	0.032	0.136	-0.155	0.153	-0.009	-0.360	-0.025
Beas01	0.018	0.500	0.393	-0.064	0.125	0.022	-0.125	-0.005	-0.029	0.164	0.040	0.245	0.041	-0.152	0.093
Btec03	-0.068	0.761	0.101	0.186	0.065	0.048	0.020	-0.028	-0.076	-0.004	-0.123	0.159	0.046	-0.107	0.013
Beas02	-0.107	0.790	0.174	0.024	0.027	0.201	0.037	0.258	0.035	0.235	0.096	0.300	-0.066	0.110	0.115
Bvol01	-0.035	0.126	0.020	0.001	0.346	0.110	-0.094	-0.283	0.200	0.123	0.171	0.180	0.163	0.753	0.229
Btec04	-0.033	0.412	-0.061	0.251	0.065	0.150	0.107	0.724	0.334	0.346	0.092	0.214	0.028	0.251	-0.172
Btec05	0.037	0.441	-0.052	0.246	0.119	0.163	0.047	0.236	0.167	0.728	0.249	0.245	0.249	0.113	-0.026
Bfun02	0.150	0.066	0.274	0.259	0.785	0.233	0.117	0.051	-0.097	0.332	0.259	0.733	0.254	0.152	0.074
Btec06	0.362	0.317	0.062	-0.048	0.062	0.380	0.038	0.173	-0.039	0.037	-0.019	0.027	0.093	0.128	-0.033
Bcon03	0.214	0.733	0.541	0.162	0.041	-0.080	-0.065	-0.721	-0.029	0.118	0.146	0.232	0.068	-0.120	0.753
Brel02	0.138	0.042	0.066	0.097	0.773	-0.070	0.022	0.029	0.027	-0.071	0.127	0.002	0.105	0.141	0.049
Binf01	0.033	0.116	0.203	0.004	0.136	0.060	-0.069	0.101	0.170	-0.084	-0.038	0.033	0.067	0.081	0.169
Binf02	0.154	-0.007	0.049	0.139	0.223	-0.111	0.112	0.034	-0.022	-0.029	0.075	0.832	0.093	0.072	0.011
Bnet01	0.030	0.087	-0.029	0.261	-0.097	-0.043	0.705	0.095	0.121	0.064	0.253	0.287	-0.448	-0.080	0.034
Bfut01	0.199	-0.204	0.309	0.309	0.182	0.026	0.147	-0.115	0.252	0.175	0.086	0.168	0.403	0.324	0.030
Binf03	0.042	0.133	0.389	0.111	0.065	0.126	0.022	-0.008	0.114	0.213	0.110	0.676	0.057	0.087	-0.092
Beas03	-0.113	0.058	0.027	-0.108	-0.107	0.057	0.012	0.775	0.039	0.064	-0.062	0.025	-0.124	-0.046	0.088
Brel03	0.252	0.330	0.029	0.105	0.773	-0.071	0.099	-0.073	-0.001	0.025	0.117	0.104	0.260	0.102	0.042
Bvol02	0.050	0.227	0.035	0.145	0.022	0.227	-0.068	-0.079	-0.093	0.052	0.223	0.570	-0.047	0.004	0.071
Beas04	0.052	0.294	0.380	-0.015	0.059	0.124	0.159	0.102	0.017	0.165	0.048	0.371	-0.054	-0.072	0.109
Badp01	0.100	0.011	0.025	0.051	-0.139	-0.161	0.228	-0.156	-0.271	-0.027	0.110	0.073	0.080	0.113	-0.110
Btec07	0.043	0.812	-0.194	0.333	-0.010	0.003	-0.027	0.059	0.087	-0.005	0.078	0.128	0.344	0.034	0.014
Bpsy02	0.524	0.063	0.072	0.397	0.244	0.102	0.180	0.132	-0.007	0.266	-0.046	0.298	0.254	0.002	0.008
Bvol03	-0.118	0.034	-0.063	0.084	0.078	-0.072	-0.053	-0.075	0.666	0.113	0.013	0.076	0.076	-0.088	-0.065
Brel04	0.347	-0.160	0.161	0.011	0.252	0.155	0.368	-0.250	-0.124	-0.177	0.246	0.154	0.228	-0.113	-0.034
Bpsy03	0.718	-0.171	-0.132	0.110	0.240	0.107	-0.021	0.003	-0.111	-0.011	0.121	0.173	0.117	-0.063	0.094
Btec08	0.069	0.068	-0.226	-0.015	0.034	0.051	-0.105	0.107	0.075	-0.059	0.015	0.009	-0.337	0.010	0.483
Bsaf02	0.085	-0.052	0.154	0.023	0.178	-0.064	-0.001	0.053	-0.027	0.033	0.775	0.153	0.024	0.095	-0.037
Badp02	0.043	0.266	0.791	0.054	0.230	0.142	0.017	0.349	0.168	0.232	0.387	0.414	-0.047	0.124	0.013
Btec09	-0.002	0.464	0.175	-0.075	-0.036	0.032	-0.026	0.267	0.191	0.029	0.043	0.007	0.330	-0.103	0.157
Bnet02	0.046	0.068	-0.005	-0.153	-0.031	0.049	0.294	0.117	0.601	-0.132	0.074	0.046	-0.306	0.177	-0.012
Bfut02	0.107	-0.061	0.060	0.626	0.078	0.078	0.025	0.089	0.021	0.130	0.018	0.157	0.007	0.074	-0.140
Bfut03	0.056	-0.158	0.014	0.816	0.086	0.085	-0.033	-0.009	0.019	0.148	0.079	0.104	0.041	-0.095	-0.011
Btec10	-0.015	0.453	-0.129	0.304	0.147	-0.022	-0.373	0.065	-0.113	-0.420	0.239	0.047	-0.228	0.040	0.021
Bfut04	0.219	0.067	0.188	0.880	0.154	0.046	0.122	-0.055	-0.013	0.049	0.041	0.048	0.302	0.035	0.002
Bfun03	0.059	0.121	0.097	0.266	0.789	0.086	0.037	-0.055	0.013	0.800	0.196	0.265	-0.031	0.079	-0.009
Brel05	0.721	0.078	0.110	0.167	0.764	0.016	-0.059	0.070	0.066	0.129	0.057	0.075	0.025	0.016	0.040
Badp03	0.131	0.230	0.381	0.130	0.412	0.116	0.164	0.173	0.029	0.150	0.087	0.512	-0.047	0.002	0.150
Expl.Var	4.710	4.465	2.256	2.911	4.104	2.045	1.909	1.961	2.121	2.334	2.111	3.351	1.704	1.733	1.403
Prp.Totl	0.079	0.074	0.038	0.049	0.066	0.034	0.032	0.033	0.035	0.039	0.035	0.056	0.028	0.029	0.023

Appendix 6

6A Validation of the Sarker and Wells (2003) model using individual mobile data services

This section focuses on the factors influencing the level of use of each of the mobile data services proposed in this study. Here the Sarker and Wells (203) model is validated using each of the data service being investigated rather than looking at the different mobile data services as a whole. The aim is to outline individual differences and similarities amongst the different mobile data services in the 2 countries.

SMS

Using the combined sample, age, peers, freedom to access information, volume of communication, enhanced phone features and functional outcome exert significant influence on the extent of use of SMS.

Age, volume, functionality influence the extent of use in both Mauritius and South Africa while peers and freedom to access information only shows significant influence on the use of SMS in South Africa. On the other hand, ease of use shows to impact the level of use of SMS in Mauritius only.

Ring tones

Overall, the use of ring tones is influenced by the level of exposure, income, current phone features, enhanced phone features and both the functional and psychological outcomes. Enhanced phone features and functional outcome influence the use of ring tones in both countries. In Mauritius, exposure, current and enhanced phone features in addition to psychological and relational outcomes influence the level of use of whilst in South Africa only cost shows a significant influence of the level of use.

Content

The extent of use of content services is influenced by the level of exposure, gender, convenience, ease of use, enhanced phone features and all the 3 user outcomes (functional, psychological and relational).

Exposure influences use of the service in both countries. In Mauritius, the level of use of content services is influenced by gender, income and symbolism while in South Africa, there is strong support for convenience, freedom to access information, ease of use, enhanced phone features, volume, functional and relational outcomes influencing use of content services.

MMS

The level of use of MMS is influenced by exposure, age, cost, peers, freedom to access information, current and enhanced phone features and functional outcome. Comparing the extent of use in the 2 countries shows that only exposure and current phone features influence the level of use of MMS in Mauritius. On the other hand, the level of use of MMS is influenced by peers, convenience, volume, current and enhanced phone features, the functional and relational user outcomes in South Africa.

Top Up

Only exposure and peers show significant impact on the level of use of top up on the overall sample. In South Africa, none of the variables showed strong evidence of influencing the level of use top up while in Mauritius, exposure, current phone features and functionality show strong support to influence the extent of use.

Cell Phone Banking

Only gender shows strong support of influencing the level of use of cell phone banking overall. Whilst, peers, gender and relational outcome shows a significant influence on the extent of use of cell phone banking in South Africa, exposure, formality and volume shows significant support of impacting use in Mauritius.

Email

The 3 user outcomes, current phone features, computer literacy, and exposure show strong association on the extent of use of email. In South Africa, gender, occupation, freedom to access information, volume, ease of use and functional outcome show significant evidence of influence on the level of use. None of the variables is statistically significant in Mauritius.

Web Browsing

Exposure, gender, age, peers, volume, current phone features, and functional and relational outcomes show strong impact on the level of use of web browsing.

In Mauritius, use of web browsing is only impacted by occupation, exposure and current phone features while in South Africa the level of use of mobile data services is influenced by gender, age, exposure, freedom to access information,, volume, ease of use, enhanced phone features and functional outcomes.

Mobile Video

Exposure, symbolism, volume and current phone features show significant evidence of influencing level of use of mobile data services. Exposure affects the usage of mobile video in both countries. Peers, volume, current and enhanced phone features also show strong statistical evidence of impacting the extent on use of mobile video besides exposure.

Games

Peers, network capability, and psychological outcomes influence use of mobile data services on the whole.

In Mauritius, the level of use of online games is determined by the network capability and psychological outcomes while in South Africa, only occupation and enhanced phone features impact its use.

Chats

Finally, the use of chat services seem to be influenced by a number of factors which include exposure, gender, age, cost, peers, volume, phones features II and functional outcomes. However, on comparing the use on this service in the 2 countries, only occupation and current phone features show significant impact its use. In South Africa, on the other hand, the extent

of use of online chats is influenced by age, cost, peers, freedom to access information, volume, current and enhanced phone features and the functional and relational outcomes.