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MARKETING DIVISION – SCHOOL OF ECONOMICS AND BUSINESS SCIENCES

The impact of Wi-Fi as a complementary service on customers' likelihood to return and purchase intentions in South African townships

By

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A Masters Dissertation submitted in fulfilment of the requirements of the degree of Master of Commerce in the faculty of Commerce, Law and Management

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August, 2016

ABSTRACT

Online activity through the Internet and mobile phones has dramatically increased over the last five years in South Africa (Nyirenda-Jere & Tesfaye , 2015). Lower costs for Internet and mobile phones are the main reasons for more and more people being connected (Price Waterhouse Cooper South Africa, 2012). But discrepancies exist, namely between the people who are connected and those who are not. This discrepancy is referred to as the digital divide and contributing factors towards it include income, education, age and other factors which were discussed in this paper (Nievhaves, Gorbacheva & Plattfaut, 2012). Free Wi-Fi is one of the solutions to bridge the digital divide to a certain extent and it is also a very valuable tool to marketers and business owners.

This research study was aimed at understanding the impact of free Wi-Fi on consumers' purchase intentions and likelihood to return in townships in South Africa. People in townships are an important group to analyse, because of the millions of inhabitants. Infrastructure in terms of the Internet is not as good as the infrastructure standards in suburbs or in the city. The purpose of the study was to find out the impact of free Wi-Fi on the likelihood of customers to return and their likelihood to purchase something at a location where free Wi-Fi is offered.

For the purpose of this research a quantitative approach was used to investigate the impact of free Wi-Fi and factors leading to return and intention to conduct purchases. Non-probability sampling was used in the form of convenience sampling. A self-administered questionnaire was developed to investigate behaviour. Four hundred questionnaires were distributed to people living in Soweto.

The analysis indicated that the four access variables, namely - material, mental, usage and skills access - have an influence on the intention to use free Wi-Fi which, in turn, has an influence on the likelihood to return or purchase something. Implications for marketers and businesses is: the marketers have to consider the digital divide when marketing to consumers in South Africa and that offering free Wi-Fi at a commercial place has positive implications for both customers and businesses.

Keywords: Wi-Fi, digital divide, Internet, purchase intentions, likelihood to return

DECLARATION

I, the undersigned, _____, hereby declare that this research paper is my own, unaided work. This dissertation is being submitted in partial fulfilment of the requirements for the degree of Masters in Marketing at the University of the Witwatersrand, Johannesburg. This dissertation has not been submitted before for any degree or examination in this or any other university.

I further declare that:

I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong. I have followed the required conventions in referencing the thoughts and ideas of others. I understand that the University of the Witwatersrand may take disciplinary action against me if there is belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

SIGNED AT _____ON_____

_____

Signature

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Chapter 1 Background/ Overview of the study

1.1 Introduction

Online activity through the Internet and mobile phones has dramatically increased over the last five years in South Africa (Nyirenda-Jere & Tesfaye , 2015). This is due to the fact that mobile phones and Internet are becoming cheaper and easier to access for everyone. According to the South African entertainment and media outlook report by Price Waterhouse Coopers (PWC, 2012, p.29):

"Internet access is a key driver of entertainment and media advertising and content spending in most segments. In South Africa the Internet is currently accessed principally through mobile devices. Mobile access spending accounted for 71% of total access spending in 2011, compared to 30% in 2007. This is due to smartphones becoming more popular, the wireless infrastructure being available to more people than the broadband infrastructure and the relatively high broadband prices limiting wired broadband penetration."

In order for society and the economy to benefit from the growth of the Internet in South Africa, investments in data infrastructure and spending by the government is required. The economy can benefit through new job creation and new businesses leading to a growth in the Gross Domestic Product (GDP) and society can benefit through the creation of new jobs, consumer education and empowerment of consumers. According to Internet World Stats survey conducted by PWC (2012) there are 21.1 million internet users in South Africa, but only about 3% engage in e-commerce, which is about 1.5 million people. Most of the Internet users connect through a mobile device. The internet is perceived as the quiet engine of the South African economy (Goldstuck, 2012).

For the purpose of this research the concept of the digital divide played a major role. The digital divide can be defined as follows: "The digital divide refers to unequal patterns of material access to, usage capabilities of, benefits from computer-based information- and communication technologies that are caused by certain stratification processes that produce classes of winners and losers of the information society, and participation in institutions governing ICTs and

society" (Fuchs & Horak, 2008, p.101). The Information Communication Technology (ICT) sector is expanding quickly and new technologies are brought out on a frequent basis facilitating the people in their private and in their business life. The problem is that only a part of the population benefits from these new technologies and that a great part of the population is left out. "The disparity in access to Information and Communication Technologies (ICTS) which may result from differences in class, race, age, culture, geography or other factors can effectively deprive certain citizens to participate in the global economy"(Mphidi, 2010, p.1).

The importance of Wi-Fi can be observed in our daily lives. Consumers require an Internet connection to check their emails, connect with friends or read the news online. In South Africa mobile data and having one's own broadband connection is still very expensive. That is why the majority of South Africans use free Wi-Fi services at coffee shops, hotels and other public places. Previous research has found that Wi-Fi service in the hospitality sector is a critical factor to improve satisfaction and encourages return intentions and positive recommendations (Lee & Tussyadiah, 2010).

Most mobile devices are Wi-Fi enabled and the number of public hotspots is increasing. In countries like the USA, Wi-Fi has become the predominant access technology for mobile devices. Previous research conducted in the USA by Taylor, Stuart, Young and Andy (2012) has shown that the most important Wi-Fi features include:

- Speed of network;
- Low cost to use;
- Unlimited data usage; and
- High level of security

There are different models to offering Wi-Fi. Some companies offer free Wi-Fi whereby consumers have to accept general advertising or personalized marketing. Others offer Wi-Fi charging a small fee or monthly subscription (Taylor, et al., 2012).

In South Africa Project Isizwe is a non-profit organization that provides free Internet access through Wi-Fi hotspots to residents in South Africa. Currently the focus is in Pretoria, where about 500 hotspots exist and two million people have access through the project. Project Isizwe

is subsidized by the city of Tshwane and their cost for 1GB of data amounts to only 15cents per GB compared to mobile data, whereby competitors charge R2 per GB. The founder of Project Isizwe foresees a trend from mobile Internet to Wi-Fi. Benefits from this free Wi-Fi project include educational and health care benefits, but it also helps people in finding employment. In order to cover the whole of Pretoria with free Wi-Fi, one would need 7000 hotspots and the monetary investment would amount to billions of Rand (McLeod, 2015).

Many other free Wi-Fi projects exist in South Africa. For example Telkom is offering free Wi-Fi, but only to its existing customers. In Johannesburg there is also a current project, which is funded by the City of Johannesburg and a tender was given to Internet Solutions to implement the infrastructure for free Wi-Fi in the city. Another Wi-Fi company worth mentioning is Always On which has more than 1500 Hotspots around South Africa and users get a complementary access of 100 MB per day (McLeod, 2015).

Mental or motivational access refers to a lack of elementary digital experience. Through that lack of digital experience, people are also less motivated to utilize it. The lack of material access refers to the situation whereby a person does not possess a computer, or other technologies including network connections to the Internet. The third access, which is lacking according to the digital divide, is skills access. Skills access, is also called information access, can be explained as the skills needed to search, select and process information using computer and network resources. Lastly, the lack of usage access signifies the lack of meaningful usage opportunities. Usage skills are also referred to as strategic skills including the capacities to use the Internet sources as a means for specific goals and also for improving oneself (Fuchs & Horak, 2008).

1.2 Statement of the Research Problem

The digital divide has strong negative implications for the poor and uneducated, which in turn means less opportunity for them in the economy and society. Furthermore, fewer opportunities exist for those consumers on the lower end of the digital divide in terms of education, training, entertainment, shopping and communication (Herselman & Britton, 2002). “The existence of the digital divide is also attributed to high levels of poverty, lack of communications

infrastructure, and high costs of connectivity" (Singh, 2004, p.6). Mobile penetration is high in South Africa, more than half of the population is connected to the Internet through their mobile phones, but the digital divide is still fully present and solutions have to be found to overcome the gap and create greater equality (Thakur & Singh, 2013). This study aimed to describe whether shops and restaurants in townships which currently offer Wi-Fi as a complementary service have high and repeat purchase levels. The study also investigated whether offering Wi-Fi as a complementary service can help in bridging the digital divide.

Furthermore this study also investigated the influence of the four access variables of the digital divide, i.e. mental access, material access, skills access and usage access on the intention to use Wi-Fi. Therefore this study tried to answer the following question: "Does free Wi-Fi as a complementary service have an influence on purchase intentions and the likelihood of return?"

1.3 Research Gap & Justification of the study

A research gap exists, because previous studies (Herselman & Britton, 2002; Mphidi, 2010; Nievhaves, et al., 2012; Osunkunle & Oludolapo, 2010; Singh, 2004; van Dijk & Hacker, 2003; Fuchs & Horak, 2008) focused on the technological aspects of the digital divide in terms of infrastructure and its effects on the economy and society. Previous research is limited concerning the digital divide in the township market. Furthermore, research about Wi-Fi as a complementary service and its impact on purchase intentions and the likelihood of return is also limited.

Moreover a research gap exists because previous research is limited in terms of investigating the concept of free Wi-Fi and its impact on the digital divide. Limited research also exists in the township market, when it comes to Wi-Fi. Most of previous research done on the digital divide in South Africa is linked to e-governance (Thakur & Singh, 2013). Research investigating the link between the digital divide and consumer purchase intentions is also limited. Investigations on viewing the digital divide from a marketing perspective are limited as well. Finally, limited information is available about consumers in Soweto.

This research adds new knowledge to the literature and give recommendations to policy makers, companies and consumers. It would also add new knowledge about the different access factors and the usage of free Wi-Fi of people in South Africa, but also new knowledge on how businesses can utilise new technologies, innovations and the Internet to influence the consumer behaviour and create a positive impact in South Africa.

1.4 Purpose of the Study

The purpose of this study was to understand the relationship between access to free Wi-Fi and its implications on purchase behaviour and the likelihood to return of customers. The purpose is to find out whether free Wi-Fi has a positive influence on customers' behaviour. Following theoretical and empirical objectives are aimed to understand previously stated relationships.

1.4.1 Research objectives

The research objectives were in terms of theoretical and empirical objectives and are highlighted in the following.

1.4.1.1 Theoretical objectives

The theoretical objectives of this research were:

- To view past literature on The Digital Divide;
- To view past literature on free Wi-Fi;
- To view past literature on Access to the Internet;
- To view past literature on Purchase Intentions; and
- To view past literature on the Likelihood of Return

1.4.1.2 Empirical objectives

The empirical objectives of the study were:

- To investigate the relationship between mental access and intention to use Wi-Fi;
- To investigate the relationship between material access and intention to use Wi-Fi;
- To investigate the relationship between skills access and intention to use Wi-Fi;
- To investigate the relationship between usage access and intention to use Wi-Fi;

- To investigate the influence of intention to use Wi-Fi on purchase intentions; and
- To investigate the influence of intention to use Wi-Fi on the likelihood of return

1.5 Research questions

- How prevalent is the digital divide in Soweto?
- Do the four access variables have an impact on intentions to use Wi-Fi?
- What are the intentions of people living in Soweto to use free Wi-Fi?
- What is the impact of free Wi-Fi as a complementary service in terms of purchase intentions?
- What is the impact of free Wi-Fi as a complementary service in terms of a consumer's likelihood to return to a store?

1.6 Significance and Contribution of the Study

From an academic perspective, this study contributed to the fields of business, namely marketing, e-business and information technology.

This research results in many contributions. Firstly, theoretical contributions are, that the study will add to existing literature in a number of fields. These fields include consumer behaviour and customer intentions, the digital divide and free Wi-Fi. It provides academics with a better understanding of the digital divide in South Africa and what the impact of free Wi-Fi is on purchase intentions and the likelihood of return of customers to purchase at a given shop.

In terms of practical contribution, this study provides marketers and owners of shops and restaurants with a better understanding of how people in townships access the Internet and technology. Furthermore the study investigates Wi-Fi as a complementary service and gives recommendations to marketers and shop owners on how they can utilize offering free Wi-Fi to their customers. This, in turn, can influence the customers' behaviour in terms of inducing purchase intentions and increasing the likelihood of return.

In addition, by getting a better understanding of the digital divide and free Wi-Fi as a complementary service, more shop owners could offer free Wi-Fi to their customers and

therefore reach a competitive advantage. If more shops and restaurants offer free Wi-Fi more people who do not have, or cannot afford Internet access, will get connected and the digital divide can decrease (Middleton & Chambers, 2009) .

From a marketing perspective the digital divide is significant, because it is vital for marketers to understand the different groups they are marketing to. Marketers have to keep the digital divide in mind, when they market, because a certain portion of their target market may not respond to certain marketing activities, as they are unable to. For example an advert posted on YouTube, might not be viewed by people staying in a township, because of limited data, but on the other hand, people working in an office might watch it on YouTube. Therefore marketers need to consider the aspects of the digital divide in order to market efficiently and create purchase intentions with the consumers (Harris & Zegeye, 2003).

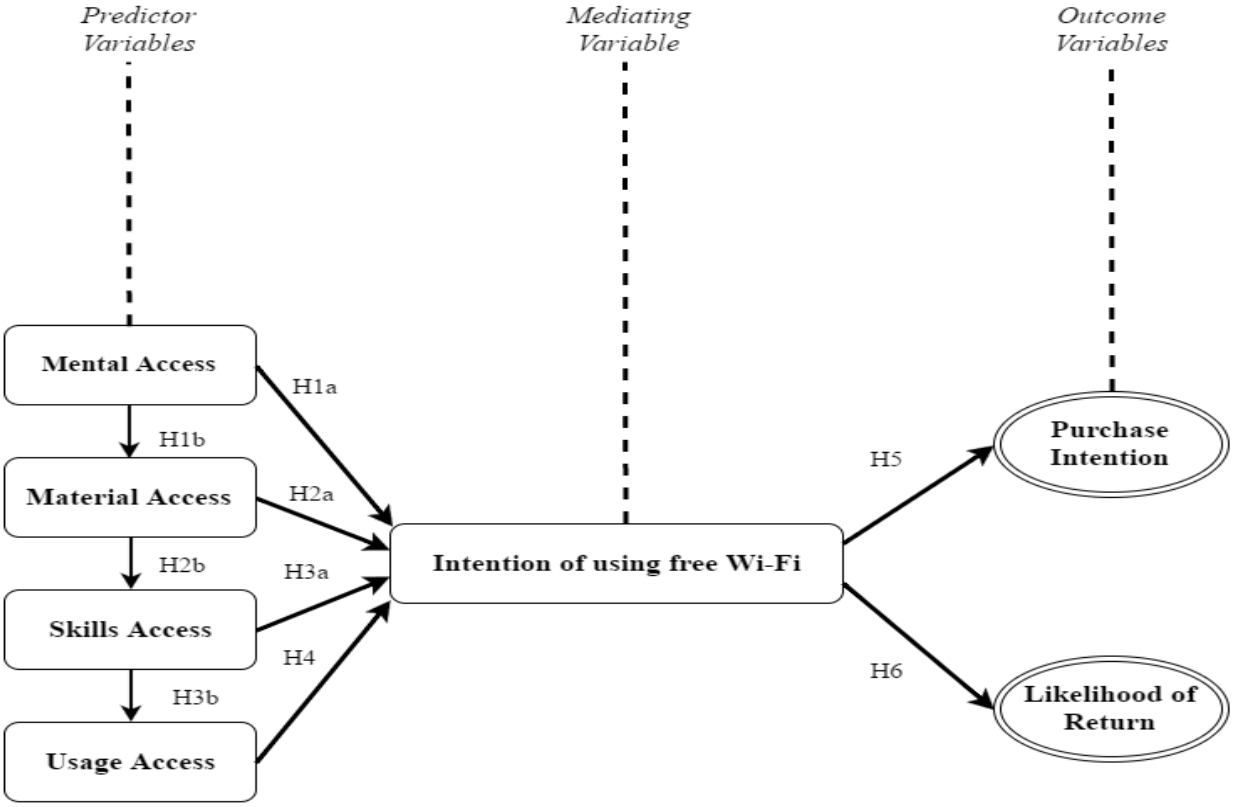
1.7 Conceptual research model/framework

The following Figure 1.1 illustrates the conceptual model which was drawn up at the beginning of the study. It depicts the predictor, mediating and outcome variables. Based on the conceptual model the hypotheses of the study are derived.

1.7.1 Proposed theoretical model for the study

The theoretical model for the study consists of the predictor variables, which are the four main variables for access to technology. Followed by the mediating variable, which is the intention to use Wi-Fi and lastly the outcome variables, namely purchase intention and the likelihood to return to a shop.

Figure 1.1 Conceptual Model used for study



The predictor variables are mental access, material access, skills access & usage access. They are expected to have a positive influence on the mediating variable, which is the intention to use Wi-Fi. The intention to use free Wi-Fi positively influences the outcome variables: purchase intention and the likelihood to return. The variables will be discussed in more detail under section 1.8 and in Chapter 2.

1.7.2 Hypotheses statements

Hypothesis (H1a): Mental access has a positive influence on intention to use Wi-Fi

Hypothesis (H2b): Mental access has a positive influence on material access

Hypothesis (H2a): Material access has a positive influence on intention to use Wi-Fi

Hypothesis (H2b): Material access has a positive influence on skills access

Hypothesis (H3a): Skills access has a positive influence on intention to use Wi-Fi
Hypothesis (H3b): Skills access has a positive influence on usage access
Hypothesis (H4): Usage access has a positive influence on intention to use Wi-Fi
Hypothesis (H5): Intention of using Wi-Fi has a positive influence on purchase intentions
Hypothesis (H6): Intention of using Wi-Fi has a positive influence on the likelihood of return

1.8 Literature review

The following paragraphs will cover the main empirical literature influencing the study. Firstly the digital divide is highlighted, followed by a discussion of the access factors, Internet & Wi-Fi in general, adoption of innovations, consumer purchase intentions and the customers' likelihood to return. Finally a brief discussion of the South African background and context is provided.

1.8.1 Digital Divide

The issue of the digital divide came up because of the development of the Internet and new technology developments in general. It describes a situation whereby a certain portion of the population has information and another portion does not have it. Furthermore the people on the upside of the digital divide have access to computers and information sources, telephone, internet services and other technology related devices. The people on the downside of the divide do not have access or the knowledge to use these things. Four basic kinds of barriers to access have been discussed in previous literature, namely (van Dijk & Hacker, 2003):

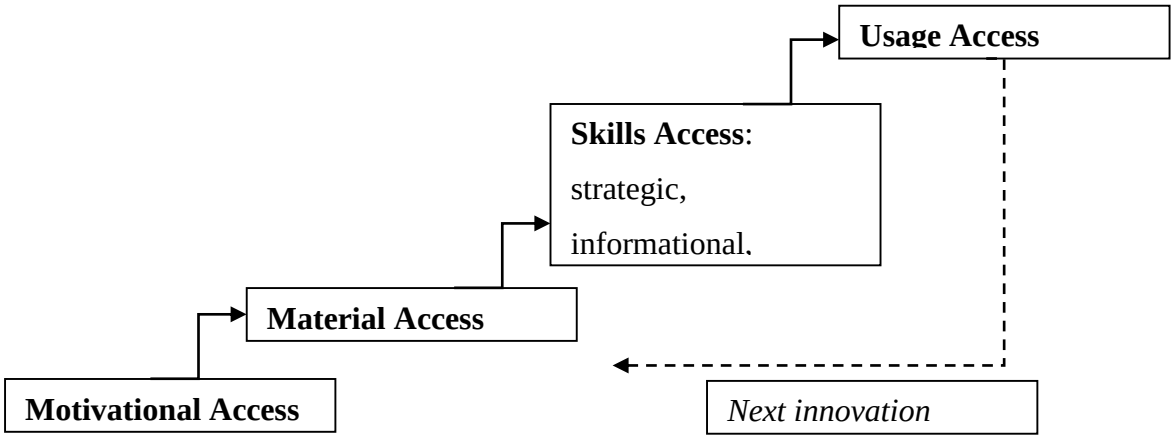
- Mental or motivational access;
- Material access;
- Skills access; and
- Usage access

Mental or motivational access refers to a lack of elementary digital experience (Norris, 2001). Through that lack of digital experience, people are also less motivated to utilize it. The lack of material access refers to the situation whereby a person does not possess a computer or other technologies including network connections to the Internet. The third access, which is lacked

by people in the digital divide is the one of skills access. Skills access also called information access can be explained as the skills needed to search, select and process information in computer and network resources. Lastly, the lack of usage access signifies the lack of meaningful usage opportunities. Usage skills are also referred to as strategic skills including the capacities to use the Internet sources as means for specific goals and also for improving oneself (Fuchs & Horak, 2008).

Van Dijk and Hacker (2003), summarizes four main barriers to access. Firstly, lack of elementary digital experience. This is defined as a lack of interest, computer anxiety or unattractiveness of using new technology. This was referred to earlier on as mental access. Secondly, material access refers to non-possession of the required hardware including computers, and other devices and having a network connection. Lack of digital skills is the third main barrier, which is referred to as skills access. Lack of skills is caused by lack of education and support. Lack of significant usage opportunities, usage access, is the last main barrier. Further on, the article summarizes that income, education, occupation, age, gender, ethnicity and geographic location are the most important variables determining the digital divide. The following model explains the different access factors, which are prevalent in the digital divide (van Dijk & Hacker, 2003).

Figure 1.2 Digital Divide Model

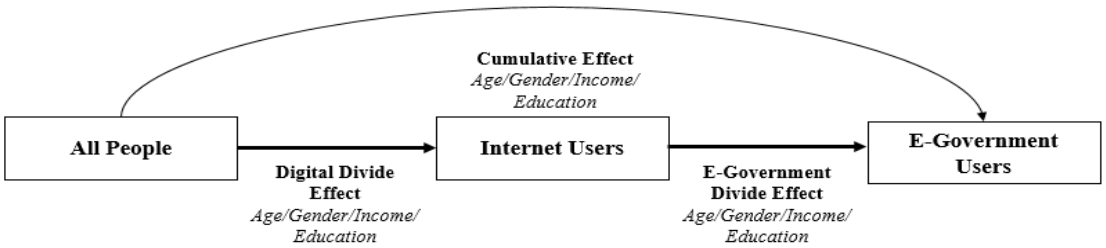


Source: van Dijk, 2006. p.22

Fuchs and Horak (2008) investigated the phenomenon of the digital divide in South Africa and Ghana and found out that the digital divide is not only concerned with access to the Internet, but also with its usage and its benefits. The article cites Manuel Castells for a definition of the digital divide with "Inequality of access to the Internet" and access to the Internet "a requisite for overcoming inequality in a society in which dominant functions and social groups are increasingly organized around the Internet" (Castells, 2002, p.248). Further on the article splits the digital divide into three dimensions, namely social divide, global divide and democratic divide. The global divide refers to differences of Internet access between developed and industrialized societies. Secondly, the social divide can be explained as a gap between people having a lot of information and those being information poor in each country. Finally Fuchs and Horak (2008) argue that there is a three-class structure in the network society: the information elite, which is on top, the participating majority and the disconnected and excluded at the bottom (Fuchs & Horak, 2008).

Primarily the digital divide can be best witnessed between First World countries and developing Third World countries. In Third World countries factors like bad infrastructure, high costs of technology or connectivity, educational issues or other socio-economic issues exist. Other variables contributing to the digital divide include geographic variables (urban vs rural), gender & life course, family & education and income, occupation and work (Singh, 2004).
A few models exist, that explain the digital divide. One is depicted below.

Figure 1.3 Impact of socio-demographic variables on E-government use among users



Source: Nievhaves et al., 2012

The above model was used in the study investigating the impact of socio-demographic variables on e-government use among Internet users. As seen above the research framework is divided into three different research constructs. Firstly, the authors studied the cumulative effect, investigating the effect of the digital divide variables on e-Government adoption on the whole population. Secondly the influence of digital divide variables on Internet adoption in general was investigated and lastly the influence on e-government adoption was investigated. The findings of this research were that age has a positive influence, and gender, income and education have a significant impact as well (Nievhaves, et al., 2012).

One previous research conducted by Akhter (2003) investigated the relationship of the digital divide and purchase intentions. It emphasized the importance of demographic psychology, examining the influence of gender, age, education and income on the likelihood to purchase over the Internet. It was found that gender, education and income have a positive influence in terms of the likelihood to purchase something on the Internet and age has a negative influence (Akhter, 2003).

1.8.2 Access

Following sections cover the four main access factors, playing a major role in the digital divide.

1.8.2.1 Motivational Access

Motivational access refers to a person's motivation to use new technologies, including computers or mobile devices and to connect to the Internet. People who lack motivation are not only considered as "Have-nots", but also as "Want-nots" (Chamber & Middleton , 2010). In developed countries in Europe the lack of motivational access has decreased, but fears and dislikes have not disappeared. Reasons for not wanting to use new technologies include:

- No need or significant usage opportunities;
- No time or liking;
- Rejection of the medium;
- Lack of money; and
- Lack of skills (van Dijk, 2008)

The factors explaining motivational access can be explained by social and cultural factors. A primary explanation is that "the Internet does not have appeal for low-income and low-educated people" (Katz & Rice, 2002, p.93).

1.8.2.2 Material and Physical Access

Physical access refers to a person's situation, whether he or she has a computer, mobile device or a connection to the Internet. Material access is a broader term and refers to the expenses for PCs, hardware, software and related services. These costs are decreasing from year to year, because new and better technologies are brought to the market on a frequent basis. (van Dijk, 2008) Factors influencing material and physical access include the following:

- Availability and cost of digital technology;
- The level of literacy and education in a country;
- Language skills (most of the Internet is in English);
- Democracy in a country (freedom to express);
- Policies in place strengthening the information society and access in general; and
- Culture which is attracted to new technologies (van Dijk, 2008)

1.8.2.3 Skills Access

If a person possesses the motivational and physical access to technology, the third access factor skills has to be considered. According to Steayaert (2002) and van Dijk (2003) skills access is referred to as digital skills. The digital skills concept consists of three types of skills:

1. Operational Skills: The ability to work with software and hardware.
2. Information Skills: Search, select and process information on computers and the Internet.
3. Strategic Skills: Capacity to use computers and the Internet to pursue a goal or to improve oneself (Stayaert, 2000)

1.8.2.4 Usage Access

Usage access is the last stage and ultimate aim of the process. It can be measured in four ways:

1. Usage time.
2. Usage applications, number and diversity.
3. Broadband or narrowband use.
4. More or less active or creative use (van Dijk, 2008).

1.8.3 Internet /Wi-Fi /ICT

To understand the following concepts of Wi-Fi and mobile data one needs to understand what the Internet is. "The Internet is a worldwide public network that connects private networks" (Napier, et al., 2006). A network is a group of two or more computers or other devices which are linked by cables, telephone lines or other wired or wireless media. Usually a so-called server is included in a network, which gives users the possibility to access shared resources including files, programs, printers and connections to other networks. The World Wide Web (WWW) is not the Internet, it is a subset of the Internet, which is based on hypertext (Napier, et al., 2006).

"Wi-Fi is a wireless networking technology that allows computers and other devices to communicate over a wireless signal. It describes network components that are based on one of the 802.11 standards developed by the IEEE and adopted by the Wi-Fi Alliance" (Reiter, 2014, p.3). Wi-Fi is the standard way computers connect to wireless networks. Nearly all modern computers have built-in Wi-Fi chips that allows users to find and connect to wireless routers. Most mobile devices, video game systems, and other standalone devices also support Wi-Fi, enabling them to connect to wireless networks as well. When a device establishes a Wi-Fi connection with a router, it can communicate with the router and other devices on the network. However, the router must be connected to the Internet (via a DSL or cable modem) in order to provide Internet access to connected devices. Therefore, it is possible to have a Wi-Fi connection, but no Internet access (Miklos, 2014).

Middleton and Chambers (2009) investigated whether Wi-Fi can be the new leveller to decrease the gap of the digital divide. The purpose of this study was to examine the relationship

between demographic and situational variables and small and medium-sized business owners' intentions to adopt and use free Wi-Fi technology. The findings were, that gender, age, education and experience were not related to the intention to adopt Wi-Fi technology. Ethnicity was found to have a significant influence on the intent to adopt. This fact is important when considering the market in South Africa, which is multicultural and people from different ethnicities live together. Finally, the study by Middleton & Chambers (2009) suggested that high speed Wi-Fi has the potential to reduce or eliminate the digital divide.

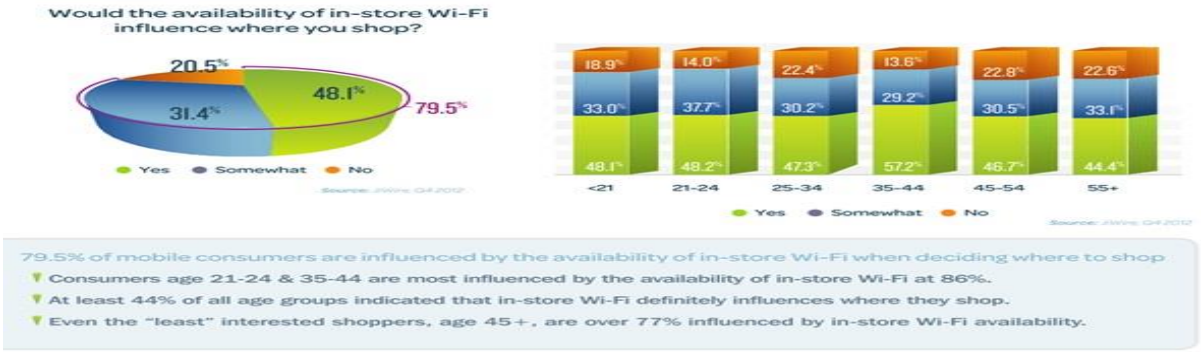
Offering free Wi-Fi can be used to create a competitive advantage. Technology in general adds value and Wi-Fi is one of those technologies. Wi-Fi can be used as a tool by food outlets to attract customers to their shops. Previous research has proved this by showing, that Wi-Fi has a relatively low maintenance cost, food outlets are able to implement a Wi-Fi service to their customers. "Wi-Fi in food outlets is a new combination of business model that provides extra convenience for those who want to go online while having a meal"(Nor Iadah et al, 2011, p.356). Nor Iadah et al. (2011) conclude that technology can be used in an innovative way to attract more customers and also retain them.

Nowadays, Wi-Fi access can be found at almost every coffee shop. Businessmen and students for example sit in coffee shops with their tablets, mobile devices and laptops and use Wi-Fi while having a coffee. Gupta (2004) found that Wi-Fi in a coffee shop is almost a necessity. Customers expect internet access anytime and anywhere. Furthermore free Wi-Fi offered at a coffee shop increases the value of it as a community gathering place (Gupta, 2004).

Not only does Wi-Fi in shops, restaurants and coffee shops have to be looked at, but also public Wi-Fi offered by the government and municipalities. Cities including New York, Chicago, Philadelphia and San Francisco are some of the cities in the USA which are covered by free public Wi-Fi. Similar developments can be seen in South Africa. Project Isizwe is the most prominent endeavour, which covers a large part of Pretoria with free Wi-Fi. The city of Johannesburg is also currently in the process of covering the city with free public Wi-Fi. Covering parts in South Africa, where people do not have access or cannot afford Internet access, could help in bridging the digital divide (Jassem, 2010).

Figure 1.4 shows that 79.5 % of shoppers are influenced by in-store Wi-Fi in terms of where they are shopping. Figure 1.4 further emphasizes the previous paragraphs and signals the importance of having Wi-Fi for customers. The benefits to businesses includes: pushing advertisements and promotions for free to connected users and provides customer analytics. The latter is a key benefit to marketers and can assist in understanding the current customers better and therefore pushing personalized adverts to their mobile devices. It is a strong tool, which marketers need to utilize (Chai, 2012).

Figure 1.4 Availability of in-store Wi-Fi influence on shopping location

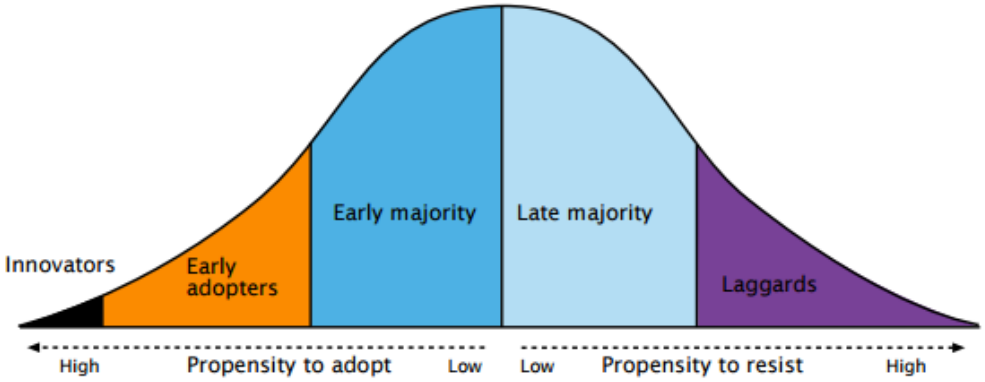


Source: Chai, 2013

1.8.4 Technology/ Adoption of Innovation

Everett Rogers was one of the first to bring up a diffusion theory in 2003. The adopters consist of five different categories namely innovator, early adopter, early majority, late majority and laggards. This concept is based on a normal distribution which shows adoption over time (Rogers, 2003). Figure 1.5 illustrates the normal distribution of innovation diffusion over time.

Figure 1.5 Normal distribution of innovation diffusion



Source: Robinson, 2009

The five types of adopters of innovation are summarised:

- Innovators: Are very knowledgeable, resourceful and are not afraid to take risks.
- Early adopters: Are considered as opinion leaders with a responsible attitude.
- Early majority: Are relatively cautious and deliberate.
- Late majority: Have limited resources and want to avoid risks.
- Laggards: Are very traditional in their thinking and use past experiences as a reference point (Wang, 2009).

A famous model for consumer adoption regarding innovation and technology is the TAM model. The conceptual Technology Acceptance Model (TAM) was first introduced by Fred Davis in 1985. It states that the *system features and capabilities (stimulus)* had a direct influence on the *user's motivation to use the system (organism)* which in the end results in the *actual system use (response).* In 1986 he proposed the first TAM model. It also states that a user's motivation to use a new information system is determined by three factors, namely: *Perceived ease of use, perceived usefulness* and *attitude towards using a new system*. He believed that the attitude of a user was the most important variable and perceived usefulness and perceived ease of use influenced the attitudes (Chuttur, 2009).

1.8.5 Consumer Purchase Intentions

In general, an intention to shop is the willingness to buy something. Applied to an online environment, it is the willingness to make a purchase in an online store and also the likelihood of a return to the same shop, which can result in loyalty. According to the study "Consumer online shopping attitudes and behaviour" the intention to shop online is influenced by the attitude towards online shopping and consumer satisfaction. The intention has a positive influence to the decision making process and finally to online (Li & Zhang, 2002).

Another study conducted by Van der Heijden *et al*. (2003) investigates online purchase intentions from a technology and trust perspective. Similar to the previous paragraph, the suggested model states that online purchase intentions are a result of, or positively influenced by, the attitude towards online purchasing. The attitude is negatively influenced by perceived risk and positively influenced by trust in an online store, perceived ease of use and perceived usefulness. According to the study's results the contribution from the trust perspective seems to be more relevant than the technology perspective (Van der Heijden, et al., 2003).

1.8.6 Customers' Likelihood of Return

Customers' likelihood to return to a vendor or a shop, can also be referred to as customer retention. Customer retention is an activity that an organization undertakes in order to keep their existing clients and to create loyal customers. It is vital to businesses because getting new clients is more expensive. It is related to the products and services offered, but also the reputation a business has in the market place. The key differentiation is often the delivery of a high consistent standard of customer service (Jiang & Rosenbloom, 2005).

Restaurants often offer a free Wi-Fi service to their customers. Previous studies have found that:

- Wi-Fi access has become important in restaurants;
- Technology savvy customers prefer restaurants with Wi-Fi service;
- Customers prefer free Wi-Fi over paid models; and

- Wi-Fi service availability, quality, price, perceived risk and perceived value are predictors of likelihood of a customer returning to the restaurant

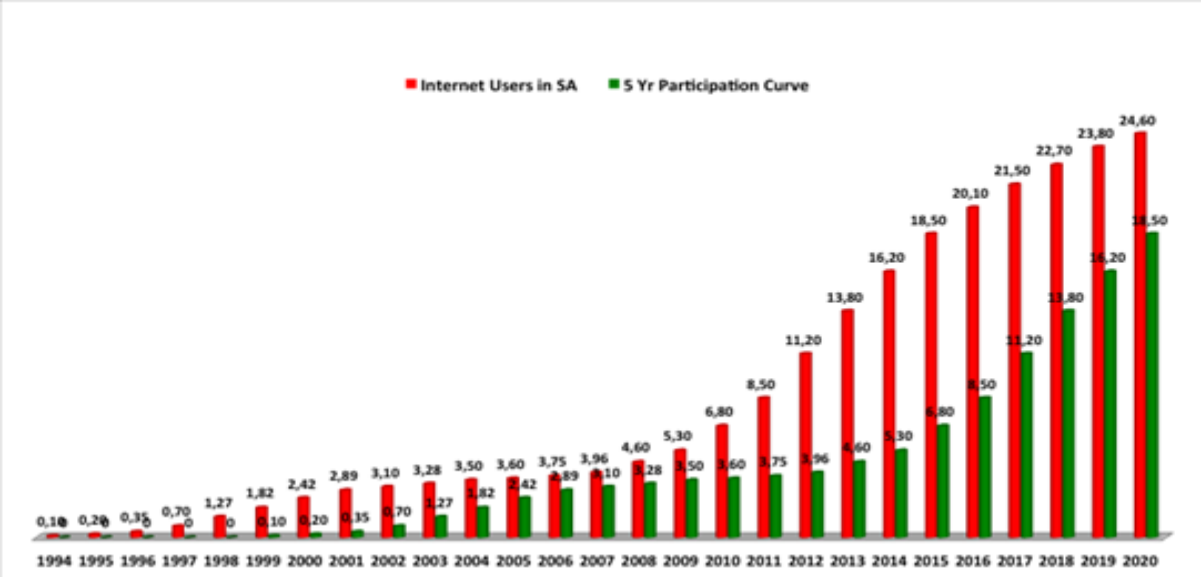
Therefore one can conclude that Wi-Fi service at a restaurant is positively correlated to a customer's intention to return (Cobanoglu, et al., 2012).

1.8.7 South African Context/Background

In the whole continent of Africa only 7 % of the population are online. Mobile phone usage on the other hand, is spread widely, covering about 72% of the whole population, but only 18 % of those constitute smartphone usage (Goldstuck, 2012). "Technology can enable critical information to reach marginalized communities at a rate and scale never before possible and where appropriate, organizations should be encouraged to integrate technology-driven approaches into their programs to maximize their impact" (Treisman, 2014, p.3).

Figure 1.6 illustrates the Internet user growth in South Africa. According to this graph there are about 18.5 million Internet users in South Africa at the moment (2015). By 2020 24.6 million users are expected. It is difficult to find reliable statistics regarding Internet use in South Africa, since every study has different numbers. For the purpose of this study, the statistics by World Wide Worx are used. The following graph also illustrates how many people are participating in the digital world. Digital participation includes Internet users who have been online for at least five years. The presumption is that after five years people are experienced enough to conduct online purchases or write their own blogs etc. After five years they become people which use the Internet on a frequent, daily basis for different purposes. (Goldstuck, 2012). In 2015 6.8 million people are expected to participate.

Figure 1.6 Internet User Base vs Digital Participation Curve



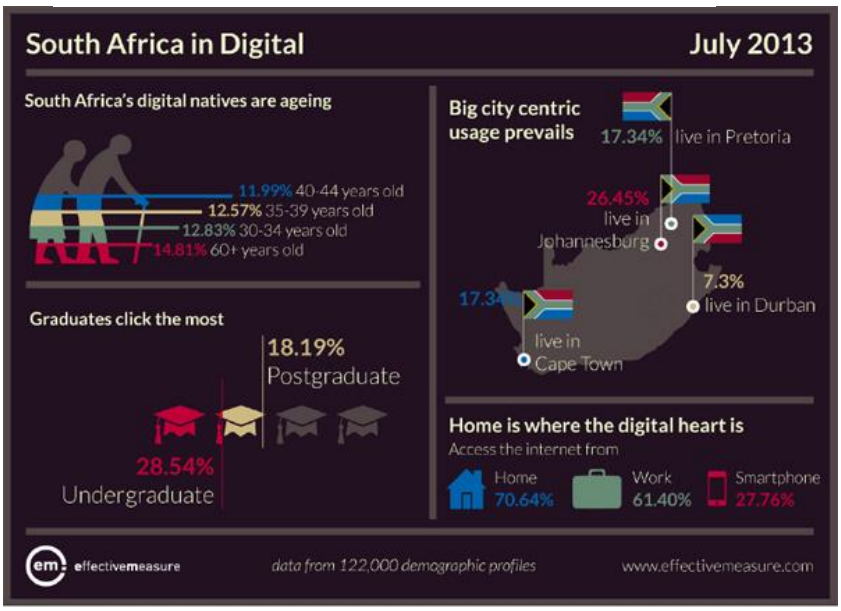
Source: World Wide Worx, 2012

For the purpose of this research, one also has to have a look at the digital divide in South Africa. The previous illustration already shows that there is a gap, because only 18.5 million people use the internet and only 6.8 million people fall under the digital participation sector.

South Africa has a history of political and social conflicts which has strongly affected certain sectors of the economy to date. One of those issues is the digital divide in South Africa. There have been several undertakings by the government, including offering free Wi-Fi, but the presence of the digital divide is still very strong (Oludolapo, 2010). Other attempts of local and national government aimed to influence access gaps, by providing material access in public libraries and also in townships. Private companies including Huawei and Microsoft have also tried to address the issue of the digital divide. Other crucial developments include mobile phones, telecentres, digital villages and e-governance (Oludolapo, 2010).

The digital divide in South Africa is strongly prevalent, when looking at geographic variables. People in urban areas, are more likely to be engaged with the Internet, than people staying in rural areas (Bouzalmat, 2011). The following Figure 1.7 illustrates, where people are connecting from in South Africa.

Figure 1.7 South Africa in Digital



Source: Effective measure, 2013

A study conducted by UNICEF (2012) on the use of mobile devices of young South Africans found the following:

- South Africa has the highest use of mobile technology and mobile social networking on the continent. On the other hand, owning a computer and a fixed Internet line is still lagging;
- 72 % of South Africans between the age of 15-24 own a cell phone;
- South Africa leads in Africa when it comes to social networking, microblogging and content creation;
- The digital divide is present in South Africa, in terms of ICT ownership, access and use; divided by race, socioeconomics and geography; and
- The South African government and the private sector promote ICT development and monitoring safety online.

On the African continent, South Africa leads in terms of mobile usage and Internet activities, but still lags far behind compared to European, Asian and North American countries (UNICEF, 2012).

1.9 Research design and methodology

"A research design is the plan according to which we obtain research participants (subjects) and collect information from them. In it we describe what we are going to do with the participants with a view to reaching conclusions about the research problem (research hypothesis or research question) " (Welman & Kruger, 1999, p. 77). The design of a research refers to the involved processes and plans for executing a research and includes methods of data collection and the analysis thereof (Creswell, 2009).

"Quantitative marketing research addresses research objectives through empirical assessments that involve numerical measurement and analytical approaches" (Zikmund & Babin, 2013, p. 99). Instead of using numerical responses, qualitative research rather employs open-ended questions. It is very researcher-dependent, meaning that the person conducting the research has to draw conclusions from relatively unstructured responses.

For the purpose of this research a quantitative approach was used to measure and to obtain the necessary data for interpretation, analysis and discussion. The population are certain, distinct markets, namely townships in Gauteng South Africa. The sample used in this study are people living in Soweto.

1.9.1 Research Design

A research design is a laid out plan which outlines the methods used to get research participants and how information or data is collected from them. It explains what happens in the research and the goal is to reach conclusions about the research questions and the research problem (Creswell & Clark, 2010).

1.9.2 Methodology

For the purpose of this research paper a quantitative and not a qualitative research approach was used. The advantages of quantitative research are: It is easier to analyse, it is cheaper, more convenient, less time consuming, more objective and provides more privacy to the subjects, compared to the qualitative approach. "Quantitative research is a process that is systematic and

objective in its ways of using numerical data from only a selected subgroup of a population to generalise the findings to the population that is being studied" (Maree & Pietersen, 2007, p. 145).

1.9.3 Population

The population of this study were consumers in townships, South Africa. Because there are too many consumers living in townships in South Africa a sampling frame was chosen. The sampling frame consists of people staying in Soweto, Gauteng. The universe of the sample consists of people in townships in South Africa. The reason for choosing this sector is that people in the townships are often excluded from the digital participation (downside of the digital divide). South Africa has a population of 54 956 900 people according to the 2015 midyear estimates of STATSSA. It is difficult to determine how many people live in townships in South Africa, but according to the South African treasury report 25 % of the population stays in townships, which would amount to approximately 13 750 000 people (Pernegger & Godehart, 2007) . Therefore the population of the study is 13 750 000 people. According to the Census (2011) 1 271 628 people stay in Soweto, which constitutes the sampling frame of this study.

1.9.4 Sample Size

The size of the sample was 400 and a non-probability sampling method was used. The sample size of 400 was determined using a previous study called "Determining sample size for research activities", which states, using a formula, that a population with more than one million people requires a minimum sample of 384 (Krejcie & Morgan, 1970). The sample size of 400 was chosen to minimize errors. Non-probability sampling was used; therefore the probability of a given element cannot be specified compared to probability sampling. The big benefit of non-probability sampling is that it is more convenient to conduct and less time and money consuming. For the purpose of this study the method of convenience sampling is used (Zikmund & Babin, 2010).

1.9.5 Measurement Instrument

The measurement instrument which was used for this research was a questionnaire using a Likert scale of five-point. Five-point Likert scales were adapted from previous research and were used to measure the mediating variables and the outcome variables. The questionnaire was self-administered meaning the participants answer the questions on their own. "Questionnaires are doubtless one of the primary sources of obtaining data in any research endeavor. However, the critical point is that when designing a questionnaire, the researcher should ensure that it is valid, reliable and unambiguous" (Zohrabi, 2013, p.254). It is very important to construct the questionnaire carefully and they should be trial-tested to ensure questions are easily understood and not biased (Creswell & Clark, 2010).

It is also important to note, that part of the research and questionnaire distribution took place in Soweto, meaning that the questionnaire has also to be designed in the most common languages spoken in Soweto, namely Sotho and Zulu (Census, 2011).

1.9.6 Data Collection

Data can be collected using either obtrusive methods or unobtrusive methods. In this case an obtrusive method was used, because respondents have to be disturbed in order to gather the data, by filling out questionnaires. Primary or secondary data can be used. In this case it was primary data from the questionnaires, because in contrast to secondary data is has the advantage that it applies to the population of interest, to the time period and appears in the correct units of measurement (Zikmund & Babin, 2013). Secondary data was also used, in the form of past literature conducted on this topic.

The data collection was through questionnaires which were self-administered. Questionnaires distributed to the people in Soweto (Orlando) were printed out and handed out directly to them. The distribution of the questionnaires was primarily done in areas where free Wi-Fi is offered.

1.9.7 Data Analysis

Data analysis can be defined as: "The application of computation, summarizing, and reasoning to understand the gathered information" (Zikmund & Babin, 2013, p. 64). Analysis is used to

determine patterns or summarizing details from the research. In terms of this research, the data gathered through questionnaires was analyzed with the software and IBM SPSS 23.

Firstly, the data was coded in an Excel spreadsheet and data cleansing was performed. Secondly, the data was analyzed using IBM SPSS 23 in order to draw conclusions on descriptive statistics. Inferential statistics are used to make conclusions if there is an inference about a population from a sample. It includes testing of model fit, reliability, validity and the testing of hypothesis. Also it includes testing whether an independent variable has an effect on the outcome variables (Zikmund & Babin, 2013).

Finally, data analysis was done using Structural Equation Modelling (SEM) with the software IBM AMOS to test whether variables have a significant influence. In order to check the research model fit for Confirmatory Factor Analysis and Path Model, the chi-square value, comparative fit index, goodness of fit index, incremental fit index, normed fit index, Tucker-Lewis index and random measure of standard error approximation were used.

1.9.8 Reliability and Validity

Validity refers to the degree to which a questionnaire measures what it is supposed to measure. The concept of validity has four main components, namely:

- ***Content validity:*** Assesses whether the questionnaire measures the concepts which are directly related to the constructs being measured (Struwig & Stead, 2001).
- ***Face validity:*** "It assesses whether the questionnaire test what it should test (Krommenhoek & Galpin, 2014).
- ***Criterion related validity:*** Assessment of effectiveness of used test regarding what is to be predicted. Includes concurrent and predictive validity (Struwig & Stead, 2001).
- ***Construct validity:*** How test measures theoretical construct (Krommenhoek & Galpin, 2014).

In this study convergent validity was measured using Item-to-total correlation, factor loadings and Average Variance Extracted values. On the other hand discriminant validity will be

measured using Average Variance Extracted Value versus Shared Variance and Inter-construct Correlation Matrix.

Reliability refers to consistency of a test. For example: whether respondents of a study give the same answers under different circumstances. The most prominent and most used measures for reliability and consistency of questionnaires are the Cronbach's Alpha and the Kuder-Richardson coefficient (Krommenhoek & Galpin, 2014). The researcher will make use of Item-total correlation values, Cronbach's coefficient alpha (α), Composite Reliability (CR) and Average Variance Extracted (AVE) to check the measurement reliability.

1.9.9 Limitations of the Study

"The limitations of the study are those characteristics of design or methodology that impacted or influenced the application or interpretation of the results of your study. They are the constraints on generalizability and utility of findings that are the result of the ways in which you chose to design the study and/or the method used to establish internal and external validity"(Abdou, 2014, p.56). In the case of this research, there is limited previous research dealing with statistics of people in Soweto, when it comes to the use of the Internet and is also very limited when it comes to demographics of this region. This is because a lot of inhabitants in Soweto are not registered and details were not captured by the Census undertaken a few years ago. Furthermore there is limited research when it comes to Wi-Fi and the digital divide.

1.10 Structure of dissertation

Chapter 1: Introduction, including a background of the study, identification of the problem statement, research objectives, proposed research model, literature review, research methodology and design and, finally, the limitations and contribution of the study.

Chapter 2: Provides a literature overview of the digital divide, access, consumer intentions, and customers' likelihood of return, Wi-Fi and adoption of innovation in South Africa.

Chapter 3: Explains the conceptual model adopted for this study.

Chapter 4: Comprises a detailed discussion of the research design and methodology adopted for this study.

Chapter 5: Provides the findings of the empirical study and the analysis and interpretation of the results.

Chapter 6: Provides a summary and conclusion. Recommendations, which are based on the literature review and on the empirical findings, are given.

1.11 Ethical Considerations

The survey, which was conducted in the form of questionnaires, was both confidential and anonymous, because respondents were not asked to enter their names. Further participation was voluntary and involved no risks. Respondents were able to withdraw from the survey at any time and stage. The collected data was archived and preserved from unauthorized access and the final research report will be available through the University of Witwatersrand library.

1.12 Conclusion

This chapter gave an overview of the study. The research problem statement, research questions, hypotheses and a brief methodology was provided. The following chapter provides and in-depth literature review.

Chapter 2: Literature Review

2.1 Introduction

This chapter will provide an in-depth literature review of the most important concepts of this study. First of all a brief introduction of the digital divide will be given. Secondly, the access factor will be discussed in detail, examining the different types of access, namely: motivational access, material access, skills access and usage access. The third section will be about free Wi-Fi, where it is used, why it is used and the benefits of it to end-users and businesses providing it. Furthermore, purchase intentions will be discussed and, finally, the likelihood of return of customers will be discussed.

Firstly a brief summary of what the digital divide is about and why it is an important concept for this study.

2.2 Research Context

Following two sections will cover the research context and discuss it in detail.

2.2.1 Townships

"The most obvious remnants of apartheid doctrine, at least with regard to spatial organization, is the so-called township" (Juergens, et al., 2013, p256). The following two sections discuss townships in South Africa in general and the most famous township Soweto and its history.

2.2.1.1 Townships in South Africa

In order to understand the concept of townships, the history of South Africa, especially the apartheid history needs to be explained in brief. Apartheid, meaning separateness, was a system which was enforced by the National Party, which was the governing party from 1948 to 1993. It was a system designed to segregate the country according to race, benefiting the white minority population and putting the non-white population at a disadvantage with limited rights. Laws including the Urban Areas Act (1923), the Group Areas Act (1950) and the Prevention

of Illegal Squatting Act (1950) were the most notable legislations. In the mid-1970s there was a lot of social and political uprising in South Africa. One example were the Soweto Riots. The apartheid was marked by a lot of violence and only in 1990 president de Klerk began negotiations for the end of apartheid. In 1994 Nelson Mandela and the African National Congress won the democratic elections, ending the apartheid era (Setswe, 2010).

"The term "township" has no formal definition but is commonly understood to refer to the underdeveloped, usually (but not only) urban, residential areas that during Apartheid were reserved for non-whites (Africans, Coloureds and Indians) who lived near or worked in areas that were designated 'white only' (under the Black Communities Development Act (Section 33) and Proclamation R293 of 1962, Proclamation R154 of 1983 and GN R1886 of 1990 in Trust Areas, National Home lands and Independent States"(Pernegger & Godehart, 2007,p2).

Between 1950 and the early 1980s more than 3.5 million people were removed from urban areas to the townships. The apartheid era ended 22 years ago (1994) and townships are a result of that regime, which stand till today. During the apartheid regime, people of black, Indian or coloured race were moved from their properties into so called townships. White people had their own designated areas to live and non-white people were all moved to townships. The term township was used to describe non-white neighbourhoods. Till today these townships are still standing and the people are free, but social and economic disparity is still very high (Juergens, et al., 2013).

It is very difficult to determine how many people in South Africa actually live in townships. According to the Census conducted in 2011 the three biggest townships are Soweto, with a population of 1 271 628, followed by Tembisa, with a population of 463 109 and thirdly Katlehong with 407 294 people staying there. All those three townships are in the Gauteng Province. More recent statistics do not exist, but the number of people staying in those townships is expected to be much higher (Census, 2011). Almost a quarter of the South African population resides in the 76 largest townships of the country and 73% of the population of Johannesburg stays in townships, informal settlements and low-income housing. This poses a great challenge to the city of Johannesburg (FinMarkt Trust, 2004).

Apartheid and segregation have ended, but a rapid growth of townships and low-income housing areas has been observed in the last decade. Townships are characterized by lack of infrastructure, low levels of community facilities, low commercial investments, low household incomes, high unemployment and poverty. Furthermore townships have a high level of HIV/AIDS rate and the crime rate is very high compared to non-township areas. On the upside townships are very culturally, socially and economically diverse. One can find many different cultures, languages and nationalities in townships, but also low-, medium – and high income people staying there. The majority of people staying in townships are characterized by unemployed and low income (Pernegger & Godehart, 2007).

2.2.1.2 Soweto Township

Soweto is one of the most famous townships in South Africa and falls under the City of Johannesburg. The name is an abbreviation for South Western Township and according to the Census 2011, 1 271 628 people stay in Soweto, which make it the biggest township in South Africa. The area is approximately 200 $km^2$and 98.5 % of the population consists of black people, followed by 1 % of coloured people. Zulu is the most spoken language constituting 37% of the population living in Soweto, closely followed by Sotho with 16 % and Tswana with 13% (Census, 2011).

Soweto has a famous history, which started in 1886, whereby black South Africans moved to the gold mines. On June 16, 1976 Soweto gained a lot of attention during the so called Soweto Uprising. Apartheid government implemented a new policy that enforced Afrikaans to be the main language in schools, instead of the native languages or English. Riots started and police started shooting at students, ending up in 23 people dying. The most famous person that died in those protests, was Hector Pieterson who has a famous memorial monument in Soweto. The consequences of those shootings were sanctions from countries all over the world and the start of the fight against the apartheid regime. Many political activists, went to into exile to train for the resistance. Finally, Soweto is also famous for its two Nobel Prize winners, Desmond Tutu and Nelson Mandela, who later became the first president after the Apartheid Regime (Kruger, 2014).

2.2.2 Digital Divide in South Africa

It has been 21 years after Apartheid in South Africa now, but the history has affected many sectors in the country, which are still prevalent today. The digital divide can be considered as one of the issues, creating a gap between the more economically advantaged and disadvantaged. Many people do not have access to technology and the Internet, because it is either not available to them or they cannot afford it. The government has tried to close those gaps, by offering free Wi-Fi or other incentives to the disadvantaged, but closing this gap poses a great challenge (Molawa, 2009).

Table 2.1 shows that there has been a significant increase in Internet usage in South Africa in the recent years. In 2008 only 4.6 million people of the population were online and by 2015 more than 25 million people were online. By the end of 2016 almost 30 million Internet users are expected. It is also notable that most users accessed or access the Internet via their mobile phones or mobile devices (PWC, 2012).

Table 2.1 Internet Users in South Africa

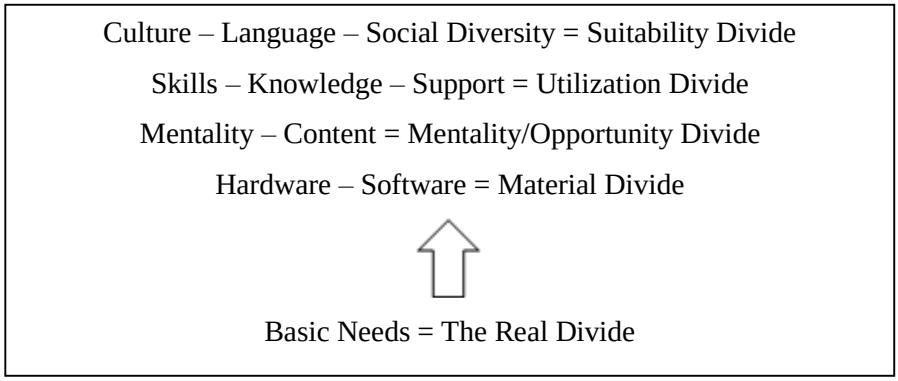
Technology	2008	2009	2010	2011	2012	2013	2014	2015	2016
Dial-up	3.3	3.2	2.3	1.5	0.9	0.5	0.3	0.2	0.1
Fixed broadband	0.7	0.8	1.4	1.6	2.2	3.0	4.0	5.2	6.6
Mobile broadband	0.6	1.3	3.2	5.8	9.5	13.2	16.7	20.1	23.1
Total	4.6	5.3	6.8	8.9	12.6	16.7	21.1	25.5	29.8

Source: PricewaterhouseCoopers LLP, 2012

The digital divide in South Africa is strongly prevalent, when looking at geographic variables. People in urban areas are more likely to be engaged with the Internet than people living in rural areas (Dutta-Bergman, 2005). In order to understand the digital gap in South Africa, one needs to consider its history, especially Apartheid. Furthermore, South Africa is a multicultural

country with 11 official languages. In regard to that, one has to have in mind that most content on the Internet is in English. Although Apartheid has been over for almost 21 years, South Africa still faces many problems, including the division of the country by ethnic inequality. These problems result in discrepancies in access to Information and Communication Technology (ICT). In South Africa the digital divide is "directly related to material inequalities that are part of the legacy of apartheid and colonialism" (Zegeye & Harris, 2003, p.250). The government, ICT companies and educational institutions are the major players that can aid in overcoming the digital divide. Finally, the following figure illustrates the real divide and the different digital divides which can be observed in South Africa (Guomundsdottir, 2005).

Figure 2.1 The real divide and the different digital divides



Source: Guomundsdottir, 2005, p.9

In order to bridge the digital divide in South Africa the government plays a vital role. They have to put mechanisms in place addressing the issue of the divide. In 1996 the telecommunications act was introduced to promote the universal and affordable provision of telecommunication services. Other organisations and IT industry players also have, and had, a notable role in aiding to overcome the digital divide. Educational organisations including schools offering computer courses, NGOs offering free training for the people and tertiary institutions, including universities also play an important role (Oludolapo, 2010).

South Africa still has challenges to overcome, in order to bridge the digital divide, namely:

- High level of inequality;
- Weak ICT infrastructure, especially in rural areas;
- A lack of ICT readiness in government; and
- More pressing demands in public services (Mphidi, 2004)

Not solving the problem of the digital divide and maintaining the current level of inequality can lead to the following:

- Limited information access;
- Limited international dialogue and more restrictive government services;
- Worldwide stagnation of some foreign markets due to lack of technological tools;
- Lost opportunities; and
- Less social and economic growth (Fuchs & Horak, 2008)

On the other hand bridging that gap and getting closer to equality can have following effects: (Bramley, et al., 2009)

- Globalization that enables less developed countries to:
    - Acquire knowledge
    - Better educational methods
    - Improve government activities
    - Increase health care provisions
    - Establish a global community
    - Attract a wider range of investors and tourists
- International e-commerce
- Free access to information
- Enables people to make more informed and educated decisions concerning international and national issues
- Negative effects:
    - Terrorism
    - High infrastructure investment costs

2.3 Theoretical Groundings

Following paragraphs provide a detailed discussion of the theoretical groundings for this study.

2.3.1 Digital Divide Overview

The digital divide can be understood as a digital knowledge gap. This knowledge gap was first investigated in 1970. It was argued that if information flow of mass media grows into a social system, that the higher social classes with a higher education adapt to this information better than the lower classes with lower education. Thus the knowledge gap between those segments increases. "As the infusion of mass media information into a social system increases, higher socioeconomic status segments tend to acquire this information faster than lower socioeconomic-status population segments so that the gap in knowledge between the two tends to increase rather than decrease"(Tichenor, et al., 1970, p.160). Furthermore the people who are better off economically adapt to the new information flow easier than the ones who are economically weaker. This knowledge gap gets wider through the introduction of new media including computers, cell phones, internet access and other components (Molawa, 2009).

The term digital divide was first introduced in the 1990s and basically explains the gap between those people having access to new and innovative forms of information technology and those people who do not have access. Since the 1990s it has been an important issue which encompasses economic, social and political issues. The phenomena of the digital divide has been discussed in various journal articles including social sciences, information technology & information systems and in economics, business & management journals. Two popular approaches to the digital divide exist, namely the technological determinist view, which is a technology-led theory of social change and, secondly, the sociological and economic perspectives. The latter is based on theories including the diffusion of innovation theory, the knowledge gap hypothesis and the public/private spheres. Furthermore three main types of the digital divide are found in past literature, which can be seen in the following Table 2.2. The most extensive research divide is the social divide, followed by the global divide and finally the democratic divide (Srinuan & Bohlin, 2011).

Table 2.2 Types of digital divide

Type of digital divide	Number of articles	Percentage of subject	Percentage of all subjects
Global divide			
▪ Access	33	60.0 %	16.0 %
▪ Use	0	0.0 %	0.0 %
▪ Both access and use	22	40.0 %	11.3 %
Total	55	100.0 %	28.2 %
Social divide			
▪ Access	58	61.1 %	29.7 %
▪ Use	7	7.4 %	3.6 %
▪ Both access and use	31	32.6 %	15.9 %
Total	95	100.0 %	49.2 %
Democratic divide			
▪ Access	20	44.4 %	10.3 %
▪ Use	10	22.2 %	5.1 %
▪ Both access and use	15	33.3 %	7.7 %
Total	45	100.0 %	23.1 %
Total	196		100.0 %

Source: Srinuan & Bohlin, 2011, p.6

For the purpose of this research the concept of the digital divide played a major role. The digital divide can be defined as follows: "The digital divide refers to unequal patterns of material access to, usage capabilities of, benefits from computer-based information- and communication technologies that are caused by certain stratification processes that produce classes of winners and losers of the information society, and participation in institutions governing ICTs and society" (Fuchs & Horak, 2008, p.101). The Information Communication Technology (ICT) sector is expanding quickly and new technologies are brought out on a frequent basis facilitating the people in their private and in their business life. The problem is that only a part of the population benefits from these new technologies and that a great part of the population is left out. "The disparity in access to Information and Communication Technologies (ICTS)

which may result from differences in class, race, age, culture, geography or other factors can effectively deprive certain citizens to participate in the global economy“(Mphidi, 2004, p.1). Furthermore one can say that the gap is between those who have access to or knowledge of the ICT and to those who do not have access/knowledge. It can be described in terms of:

- Subjects who have connectivity;
- Characteristics of connectivity;
- Means of connectivity →infrastructure, skills, locations, application;
- Intensity of connectivity; and
- Purpose of connectivity (Kroukamp, 2005)

Lastly, previous literature (Kroukamp, 2005) resulted in the following determinant factors of the digital divide:

1. Technology Access:
    - Availability of Infrastructure
    - Infrastructure Investment
2. Multidimensional approach
    - Income/socio-economic status/GDP per capita
    - Skills and experience
    - Geography/rural-urban location and population density
    - Education/literacy
    - Family structure
    - Age
    - Cost of access/price
    - Occupation
    - Marital status
3. Multi-perspective approach
    - Institution, structure and type of government
    - Race
    - Ethnicity
    - Gender
    - Culture

- Language
- Psychological factors (attitudes and trust)
- Direct network effect
- Content
- Speed and quality of service

The issue of the digital divide came up because of the development of the Internet and Technologies in general. It describes a situation whereby a certain portion of the population has information and another portion does not have it. Furthermore the people on the upside of the digital divide have access to computers and information sources, telephone, Internet services and other technology related devices. Those on the downside of the divide do not have access or the knowledge to use these things. Four basic kinds of barriers to access have been discussed in previous literature, namely:

- Mental or motivational access;
- Material access;
- Skills access; and
- Usage access (van Dijk & Hacker, 2003)

Mental or motivational access refers to a lack of elementary digital experience. Through that lack of digital experience, people are also less motivated to utilize it. The lack of material access refers to the situation whereby a person does not possess a computer or other technologies including network connections to the Internet. The third lack of access, according to the digital divide is one of skills access. Skills access, also called information access, can be explained as the skills needed to search, select and process information in computer and network resources. Lastly the lack of usage access signifies the lack of meaningful usage opportunities. Usage skills are also referred to as strategic skills including the capacities to use the Internet sources as a means for specific goals and also for improving oneself (Fuchs & Horak, 2008).

Another article by van Dijk and Hacker (2003) summarizes four main barriers to access. Firstly, lack of elementary digital experience. This is defined as a lack of interest, computer anxiety or

unattractiveness of using new technology. This was referred to earlier on as mental access. Secondly, material access refers to non-possession of the required hardware including computers, other devices and having a network connection. Lack of digital skills is the third main barrier, which is referred to as skills access. It is caused by lack of education and support. Lack of significant usage opportunities, usage access, is the last main barrier. Further on the article summarizes that income, education, occupation, age, gender, ethnicity and geographic location are the most important variables determining the digital divide (van Dijk & Hacker, 2003).

Fuchs & Horak (2006) investigated the phenomenon of the digital divide in South Africa and Ghana. They argue that the digital divide is not only concerned with access to the Internet, but also with its terms of usage and its benefits. Their article cites Manuel Castells for a definition of the digital divide with "Inequality of access to the Internet" and access to the Internet "a requisite for overcoming inequality in a society in which dominant functions and social groups are increasingly organized around the Internet" (Castells, 2002, p.248). Further on the article divides the digital divide into three dimensions, namely social divide, global divide and democratic divide. The global divide refers to differences of Internet access between developed and industrialized societies. Secondly, the social divide can be explained as a gap between people having a lot of information and those being information poor in each country. Finally the authors argue that there is a three-class structure in the network society. The information elite, which is on top, the participating majority and the disconnected and excluded at the bottom (Fuchs & Horak, 2008).

Previous research has investigated the impact of socio-demographic variables on e-government use among Internet users. One research by Nievhaves et al. (2012) distinguished three different research constructs Firstly, they studied the cumulative effect, investigating the effect of the digital divide variables on e-Government adoption on the whole population. Secondly the influence of digital divide variables on the Internet adoption in general was investigated and lastly the influence on e-government adoption was investigated. The findings of this research were that age has a positive influence, and gender, income and education have a significant impact as well (Nievhaves, et al., 2012).

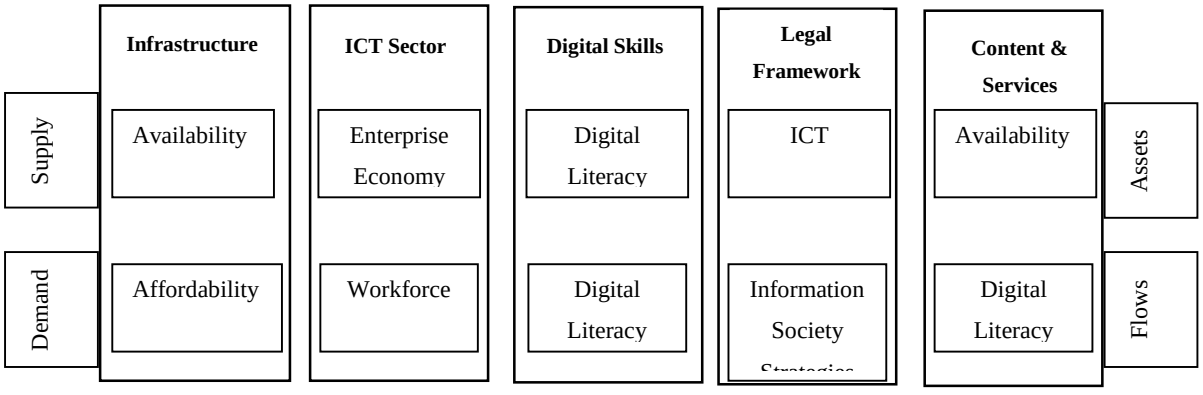
Previous literature has provided several definitions for the digital divide. Thakur and Singh (2013) argued that there are multiple divides which exist in relation to ownership and access to new technologies. Content also plays a major role in terms of local information, language barriers, lack of cultural diversity and other literacy barriers. The latter not only copes with basic literacy, but also includes functional, occupational, technological, information and adaptive literacy. Finally, the community and outside support also play a vital role regarding the digital divide (Thakur & Singh, 2013).

The digital divide has frequently been discussed in the context of education. Three derivatives have been found (Pena-Lopez, 2010):

- Access to technologies by teachers and students and how they learn to use those technologies;
- Exposure to those technologies is changing the way students learn and the way they are engaged; and
- Impact of access and exposure on academic performance

In order to understand the connection between the digital divide and education, the following models of the digital economy will bring more clarification.
The first model in Figure 2.2 explains the digital divide with five main pillars, namely infrastructure, ICT sector, digital skills, legal framework and content and services

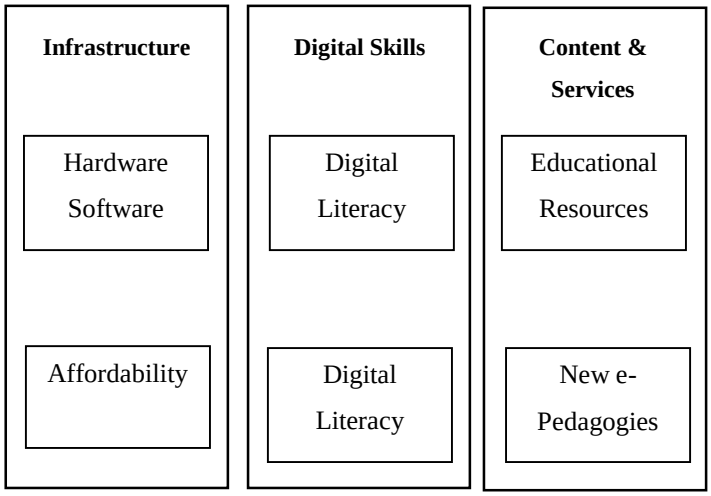
Figure 2.2 A comprehensive 360 digital framework to model the digital economy



Source: Pena Lopez, 2009

The next model in Figure 2.3 has been derived from the previous model and was simplified and brought into context with education. The key issues here are the following: Firstly, the pillar of infrastructure refers to what is required in a classroom to enable access to technology for the students. It involves hardware, software and connectivity, but affordability also plays a major role. The second pillar, digital skills, refers to what is needed to use those infrastructures. Here the level of digital literacy is important and how it can be increased through digital literacy training. Finally content and services refer to what is used for teaching and learning purposes. Educational resources and new e-pedagogies are the main issue (Pena-Lopez, 2010).

Figure 2.3 A comprehensive 360 digital framework to model e-education



Source: Pena-Lopez, 2010, p.23

The ICT sector plays a major role in education all over the world. A global trend has been witnessed towards quality education for all. Both developed and developing countries are working on the global participation of students to shape the global information society. Education is regarded as the primary way for ICTs to produce competent, skilled and qualified learners to contribute to the economic growth. Not providing the necessary skills to learners, can result in them being left behind. (Oludolapo, 2010).

There is still a long way to go, to overcome the digital divide globally. Policies and programs have to be implemented, which aim to strengthen and expand the infrastructure, improve access

and information more widely and focus on improving skills of individuals. A great amount of effort has been spent to create access in public institutions, enabling individuals to be able to connect at a low or at no cost. Furthermore, policies have been implemented to include disadvantaged groups in the participation. Finally, most countries have introduced e-government platforms, whereby their citizens can utilize certain services and get information. To sum up, policy measures to improve the use and access to ICT are the following (OECD, 2001):

- Network infrastructure
    - Infrastructure development
    - Regulatory initiatives to enhance network competition
- Diffusion to individuals and households
    - Access in schools
    - Access in other public institutions
- Education and training
    - Training in schools
    - Vocational training
- Diffusion to business
    - ICT support and training for small businesses
    - Assistance to regions and rural areas
- Government projects
    - Government services online
    - Government as model users of ICT

The next section will briefly cover the situation and prevalence of the digital divide in South Africa.

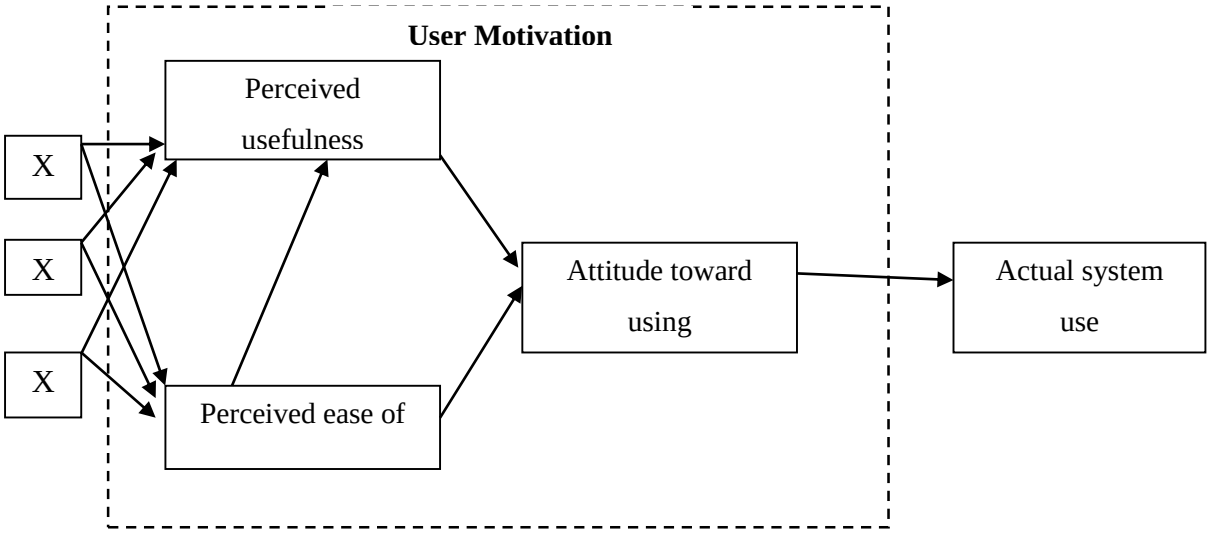
2.3.2 Adoption of Innovation

As mentioned in Chapter 1, Everett Rogers was one of the first to research and develop a diffusion theory. He argued that there are five different adopter types over time, namely:

innovator, early adopter, early majority, late majority and laggards. This concept is based on a normal distribution which shows adoption over time.

The most famous model for consumer adoption regarding innovation and technology is the TAM model. The conceptual Technology Acceptance Model (TAM) was first introduced by Fred Davis in 1985. It states that the *system features and capabilities (stimulus)* had a direct influence on the *user's motivation to use the system (organism)* which in the end results in the *actual system use (response).* In 1986 he proposed the first TAM model. It also states that a user's motivation to use a new information system is determined by three factors, namely: *Perceived ease of use, perceived usefulness* and *attitude towards using a new system*. He believed that the attitude of a user was the most important variable and perceived usefulness and perceived ease of use influenced the attitude (Chuttur, 2009).

Figure 2.4 Original TAM proposed by Fred Davis

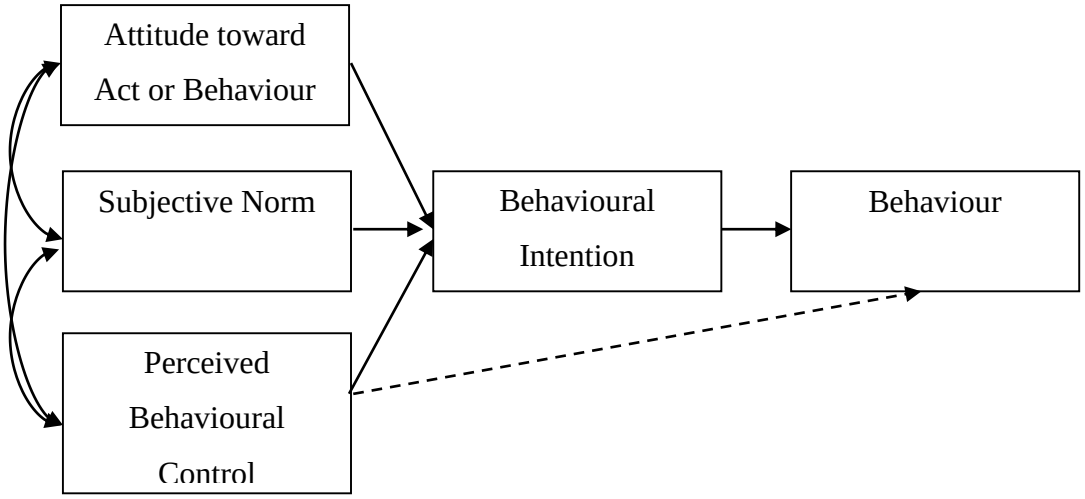


Source: Davis, 1986, p.240

Figure 2.4 illustrates the factors in someone's attitude in accepting new technologies. Firstly, the perceived usefulness and ease of use are determining factors in someone's attitude development towards using a new technology. If the attitude is positive, an actual usage will occur.

Another well-known theory which explains market adoption is the Theory of Reasoned Action (TRA). The following figure illustrates the conceptual model of TRA.

Figure 2.5 TRA Model



Source: Fishbein & Ajzen, 1975

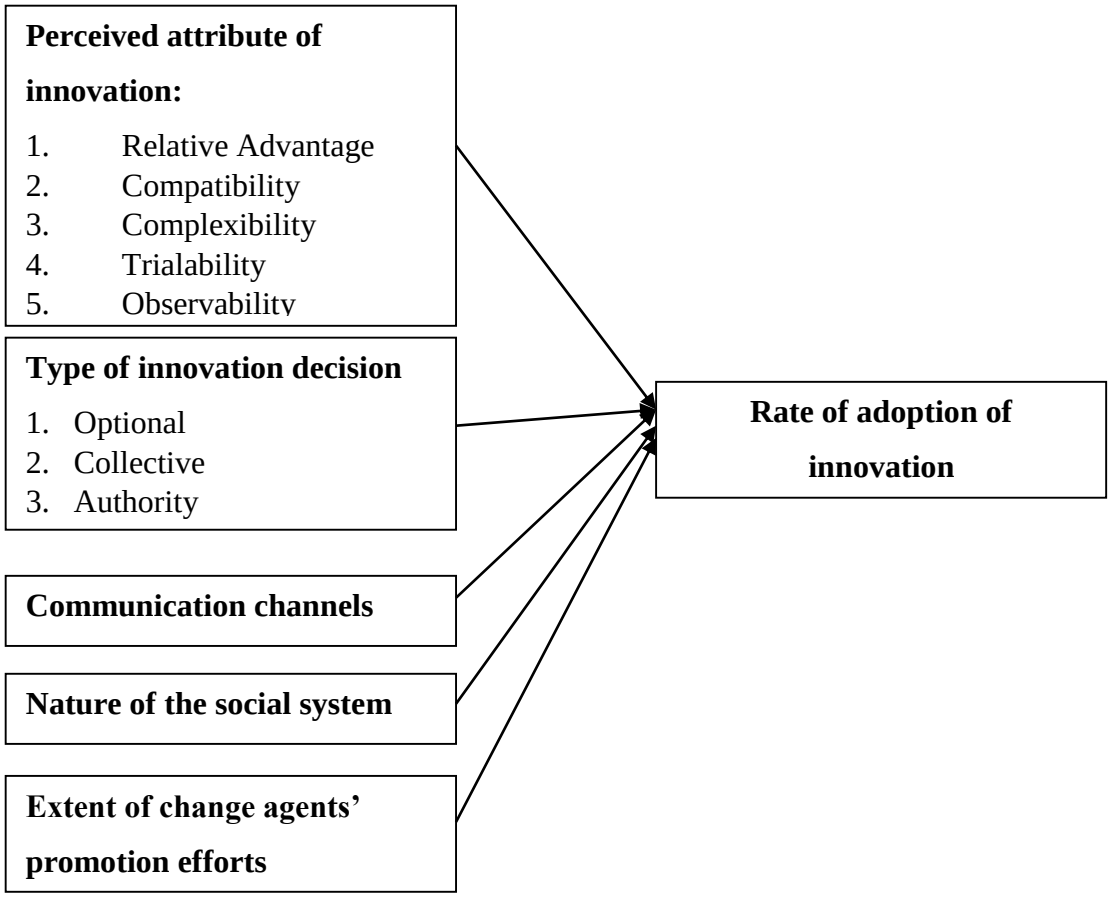
The model depicted in Figure 2.5 illustrates that behaviour is a result of behavioural intention. It is influenced by a person's attitude towards a behaviour, the subjective norm and the perceived behavioural control.

In terms of adoption of innovation most previous research on that topic cites and references Rogers' model, which is displayed in the figure below. After developing the innovation diffusion model, Rogers developed the innovation decision process model, which he defines as: "The innovation-decision process is the process through which an individual passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision" (Rogers, 2003). Five stages are involved in the process, which are all influenced by communication channels, which can be mass media, interpersonal, face to face and so on. This process starts with knowledge, which can be regarded as the phase in which an individual gets exposed to a new innovation. Following that stage is the persuasion stage, in which a person

forms an attitude towards an innovation. This stage is influenced by the perception of an individual towards the innovation and includes: Relative Advantage, Compatibility, Complexity, Trialability and Observability. During the third stage individuals have to make a decision whether they reject or adopt the innovation. At the fourth stage the individual implements, starts using the innovation and, finally, in the last stage he seeks confirmation (Rogers, 2003).

Following figure illustrates the variables which determine the rate of adoption of innovations. Variables that determine the rate of adoption are perceived attributes, type of innovation-decision, communication channels, nature of social system and the extent of change of agents' promotional efforts.

Figure 2.6 Rate of Adoption of Innovation Model



Source: Rogers, 2003

2.4 Empirical Literature

2.4.1 Access

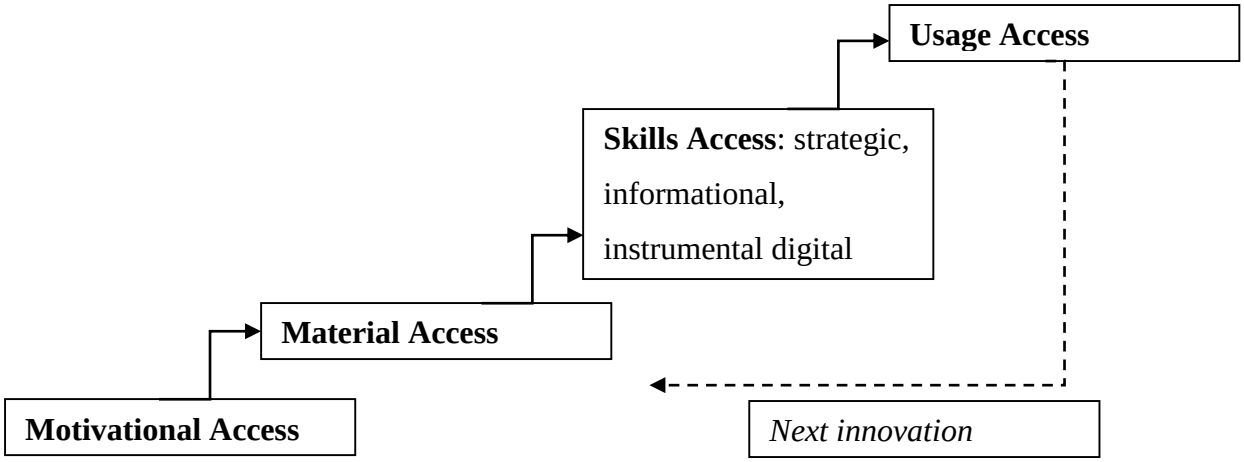
In terms of access to the Internet and technology four basic kinds of barriers to access have been discussed in previous literature, namely: (van Dijk & Hacker, 2003)

- Mental or motivational access;
- Material access;
- Skills access; and
- Usage access

Mental or motivational access refers to a lack of elementary digital experience. Through that lack of digital experience, people are also less motivated to utilize it. The lack of material access refers to the situation whereby a person does not possess a computer or other technologies including network connections to the Internet. The third access, which is lacking according to the digital divide is one of skills access. Skills access also called information access, can be explained as the skills needed to search, select and process information in computer and network resources. Lastly, the lack of usage access signifies the lack of meaningful usage opportunities. Usage skills are also referred to as strategic skills including the capacities to use the Internet sources as a means for specific goals and also for improving oneself (Fuchs & Horak, 2008).

The model below in figure 2.7 was used to develop the conceptual model for the study. It was developed by Van Dijk in 2005 and used for his study investigating the digital divide in Europe. Motivational, material, skills and usage access will be explained now in more detail.

Figure 2.7 Framework used to develop conceptual model



Source: van Dijk, 2005. p.22

Figure 2.8 Access Rainbow



Source: Osunkunle, 2010, p.375

The above Figure 2.8 was used in a study investigating how to bridge the digital divide in South Africa and the impacts of new media technologies on development in South Africa. It was developed by Clement and Shade (1996) and will be explained in the following paragraph:

- **Carriage facilities**: Are those facilities that store, serve or carry information. They include telephone, radio, television, Internet and other networks. It must be ensured that those facilities are affordable and available to the people, in order to minimize the digital divide.
- **Devices:** Actual material devices, including telephones, computers, mobile devices, printers, scanners, routers and other equipment.
- **Software Tools:** These refer to the programme that operate the devices and make connections to services. They need to be affordable, multilingual, privacy enhancing, and easy enough for everyone to use.
- **Content / Services**: Is considered the main element and refers to the information and services available on the Internet. It is vital that these are found to be useful to the people and of value in their day to day-to-day lives. Content includes informational content, educational content, entertainment content and others.
- **Service / Access Provision:** The parties offering network services and access, have to be easily accessible and affordable to the users. Parties included are Internet service provider, communities, schools, libraries and government organisations.
- **Literacy / Social facilitation:** Information Communication Technologies are relatively complex in their nature. Therefore people require the skills to use them effectively.
- **Government / Policy:** The central challenge of governance is to foster a democratic process that allows all the stakeholders to have access to basic information and to participate in public policy making with ICTs playing a vital role in information processing and dissemination (Osunkunle & Oludolapo, 2010).

Lastly, before going in-depth into the different access factors, the following access challenges can be summarised in the African continent and in South Africa:

- Poverty due to high levels of unemployment;
- High levels of illiteracy and skills shortage; and
- Low levels of infrastructure result in insufficient bandwidth to allow sufficient telephone lines to upgrade the level of Internet connectivity.

Larger rural areas of Africa have the challenge of access to the Internet due to:

- Poverty and lack of resources;
- Costs of technology;
- Lack of infrastructure;
- Limited or no access to electricity; and
- Low levels of literacy and English being the dominant language on the Internet.

(Molawa, 2009)

The following paragraphs will discuss the different types of access in detail and what their implications are for the use of new technologies and the Internet.

2.4.1.1 Motivational Access

As mentioned already in Chapter 1, motivational access refers to a person's motivation to use new technologies, like computers, mobile devices and the Internet. In developed countries the lack of motivational access has decreased over the last years. But there are people who fear new technologies or simply just dislike them and do not want to use them. Reasons for not wanting to use new technologies are: No need or significant usage opportunities; No time or liking; Rejection of the medium; Lack of money; and lack of skills (van Dijk, 2008).

The question posed for this access factor is whether people are limited in their use of technology, based on variables like age, gender, race or other socio-cultural factors? Warschauer (2004) considers the concept of mental access as a social resource. These include, for example, the knowledge someone has already gathered through his or her family or community. He argues that sharing of knowledge is key to effective use of new technologies within communities, meaning that it should be used in ways that can build on and maximise pre-existing strengths and resources of the community, including knowledge and values (Warschauer, 2004).

Motivational access can be referred to people who are considered "want-nots". Three distinct groups were identified, who did not overcome the barrier of this access factor. Firstly, the intermittent users, who have gone offline for extended periods. Secondly, the so called

dropouts, who have lost connection to the Internet and, lastly, the net-evaders, who refuse to use the Internet, whether they have the resources or not. Therefore one can state that having a computer and Internet access does not mean it is utilised. The main influences for motivational access are of a social or cultural and a mental or psychological nature. One social explanation is that the Internet does not have appeal to low-income groups or low-educated people (Katz & Rice, 2002). Nonetheless, mental and psychological factors are more striking in explaining motivational access. Technophobia and technology anxiety are the most common barriers. The former refers to a general fear towards technology and distrust in its functions. The latter refers to a feeling of discomfort or stress when using new technologies. Both are most prevalent with old people and also people with a low education (van Dijk, 2006).

2.4.1.2 Material Access

Material access, which is also called physical access, is a situation whereby a person has the hardware and connectivity to the Internet. Factors influencing material and physical access include the following: Availability and cost of technology; Language; Level of literacy and education; Freedom of expression; Culture in a country; and policies in place strengthening the information society and access in general (van Dijk, 2008).

Material access includes three major facets. Firstly, physical access - whether technology is available and accessible. Secondly, the issue of appropriate technology, whether it is according to local circumstances and how people want to use it. Finally, affordability - if people can afford to use it. Warschauer (2004) defines the term material access as physical resources, namely computers and connectivity.

When looking at the digital divide between developed and developing countries, one refers to the global divide. A social divide is present within a country, between the rich and the poor. Lastly, a so-called democratic divide exists within the online community, in terms of those who use and those who do not use Internet technologies to engage and participate in public life. Physical access has a similar S-curve to the adoption of innovations curve, which is depicted

in the figure below. It tries to explain the adoption of the highest and the lowest social strata (Norris, 2001).

2.4.1.3 Skills Access

Following the first two access factors, one needs to have a look at skills access. Skills access can also be referred to as digital skills and consist of three main types, namely, operational skills, information skills and strategic skills (Stayaert, 2000).

Inadequacy of digital skills is usually caused by a lack of education or social support, but can also be caused by insufficient user-friendliness. Three main concepts can be used to explain this access type. Firstly, the capacity of a person, whether he or she understands how to use a technology and be aware of its benefits and uses. Next the content plays a vital role. For example, is there relevant content, in terms of language? And lastly, integration of new technologies must be considered. Does it integrate into peoples' daily activities? Warschauer refers to skills access as digital resources, whereby content and language are in the foreground (Warschauer, 2004).

2.4.1.4 Usage Access

The final stage and the ultimate objective of the access process is usage access. It can be measured with usage time, usage applications, broadband use and usage activity or creativitiy (van Dijk, 2008).

Previous studies have found that usage time differs between males and females. Usage applications are linked to demographic factors. Belonging to a different social category results in a preference for different kinds of applications. Age, education, gender and ethnicity have a vital influence once more. A usage gap exists between highly educated people with a high social status, who use advanced computer and Internet applications for getting information, communication, work or business or to educate themselves and less educated people with a lower social status, who might use different applications for their entertainment, shopping or communication in general. The Internet connection one has also has a strong effect on usage

time and the types of applications being used. People who have a fast broadband internet connection can utilise and take advantage of the new media. Broadband also has a positive effect on the active and creative use of the Internet, which is the final part of usage access. It refers to the active or passive behaviour on the Internet. Active and creative users contribute to the World Wide Web, by creating webpages or blogs. In conclusion, social and cultural differences in society are reflected in computer and Internet use (van Dijk, 2006).

If there is a barrier or a lack of usage access, opportunities are lost. Trust, the legal and regulatory framework, the local economic environment, the macro-environment and political will are the main concepts behind this access factor. Trust refers to whether people are confident in using technologies and if they are aware of the implications. The legal environment in a country strongly affects how people use technology. For example, some non-democratic countries forbid certain webpages or gadgets for the people. An environment needs to be created in which the use of new technology is stimulated. The economic environment refers to policies and an economy that can sustain technology use. Finally, political will refers to the plans and actions of the government. Warschauer (2004) refers to usage access as human resources, which are explained by literacy and education.

2.4.2 Free Wi-Fi

The following sections explain in detail the concept of free Wi-Fi. Firstly a brief introduction will be given on the technological aspects of Wi-Fi. Furthermore the commercial aspects of Wi-Fi will be discussed. Finally free Wi-Fi initiatives around the world and in South Africa will be discussed.

2.4.2.1 Technical Overview

To understand what Wi-Fi is, one first needs to understand the concept of the Internet. The Internet is an interconnected global computer network and the World Wide Web (www) is a subset of it which includes easy to use interfaces. In order to connect with the Internet a so called Internet Service Provider (ISP) is required. One can connect to the Internet via a voice-grade telephone connection, broadband, leased line or via a wireless connection. Wireless

connections can be in the form of Bluetooth, Ultra Wide Band, Wireless Ethernet (Wi-Fi) or via mobile telephone networks (Napier et al, 2006).

Wi-Fi has become the most preferred technology for wireless access to the Internet. This is due to government policies around the world. Wi-Fi is using a 2.4 and 5.15-5.35 GHz frequency bands, which is unlicensed in most countries therefore stimulating the private use of Wi-Fi. Most devices including laptops, computers, tablets, mobile phones and other technological devices are enabled to connect to Wi-Fi networks. People use Wi-Fi at their homes, connecting multiple devices at the same time and also use Wi-Fi in public places (Bouzalmat, 2011).

The following Table 2.3 summarises the advantages and disadvantages of Wi-Fi:

Table 2.3 Advantages and Disadvantages of Wi-Fi

Advantages of Wi-Fi	Disadvantages of Wi-Fi
▪ Easy to set up ▪ Inexpensive ▪ Unnoticeable ▪ Mobility ▪ No cables required ▪ Standardized	▪ Security issues ▪ Hackers ▪ Malware

Source: Bouzalmat, 2011

Wi-Fi is easy to set up, it is relatively inexpensive, it does not take much space, it encourages mobility and all Wi-Fi access points and devices are standardized. Disadvantages include security issues, which can result in a third party hacking a device or receiving malware.

2.4.2.2 Commercial Overview

The use of Wi-Fi to connect to the Internet has exploded in recent years. More and more mobile devices are Wi-Fi enabled, the number of public Wi-Fi hotspots is increasing and the user acceptance is growing. Furthermore it is much cheaper than mobile data and in many cases it

is even free. Mobile operators have also realised that offloading data traffic to Wi-Fi networks can help them avoid overloaded data networks (Grayson, 2014).

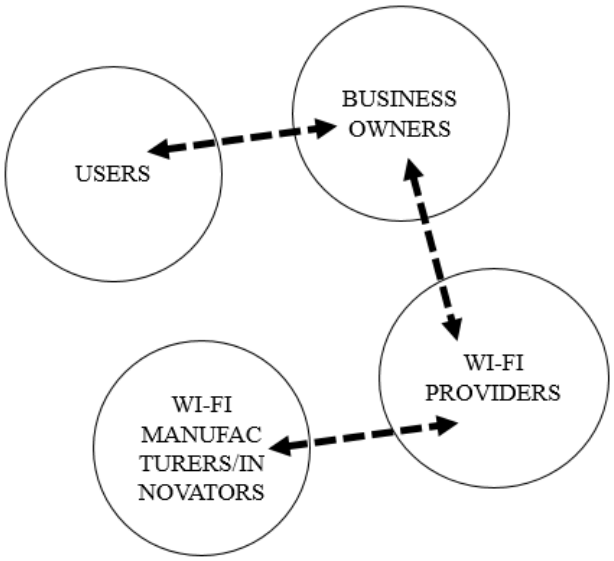
Wi-Fi nowadays is considered an essential complementary service for small businesses. Offering Wi-Fi to consumers can strongly influence their behaviour. Wi-Fi is an ideal offering for the following business types:

- Restaurants and bars;
- Cafes and bakeries;
- Medical and dental offices;
- Retailers and specialty stores;
- Automotive sales and repair;
- Health clubs and gyms;
- Salons and spas;
- Barber shops and laundromats;
- Amusements and entertainment; and
- Financial and legal firms

Offering Wi-Fi is a strong way to attract and retain customers, but it does not make sense for most businesses to become an Internet Service Provider (ISP). Therefore businesses need to partner with ISPs who offer hotspot solutions. The advantage to the consumer is obvious - access to the Internet when on the move. The advantages of offering a Wi-Fi hotspot to consumers include free advertising, driving traffic, promotions at point of sale and collection of customer information (Harris, 2014).

Three main actors are identified, which are illustrated in the figure below. Users or customers want a good customer service, catering both for their hospitality and their technological needs. The business owners want to ensure they attract new customers and retain the old ones. They want to get more customers for their main product or service. In the meantime technology providers (Wi-Fi Providers and manufacturers) want to get more people to use the Wi-Fi so they can sell more equipment and services (Gupta, 2004).

Figure 2.9 Actors in Wi-Fi Industry



Source: Gupta, 2004, p.13

Offering free Wi-Fi can be used to obtain a competitive advantage, which can boost your business. Five ways will be discussed now (Chai, 2013):

- Minimum order please: Most shops offer Wi-Fi to their customers. Therefore it is not really a competitive advantage anymore. Shop owners and businesses need to find ways to distinguish themselves. One method would be free unlimited Wi-Fi in exchange for a minimum purchase.
- Free advertising: By offering Wi-Fi to their customers, businesses can easily advertise to them. They can do that either through their landing page or push promotions to the customers' devices.
- Make customers "like" you: Many businesses have implemented a system whereby customers who log onto their Wi-Fi have to like or connect via their social media profiles. This can create social media awareness.
- Wi-Fi promotions: This is similar to the previous one and includes customers sharing or re-tweeting an offer or promotion.
- Wi-Fi customer analytics: A relatively new technique emerging in the market. It involves customers sharing some of their information or also linking their social media profiles in

exchange for receiving free Wi-Fi. The great benefit for a business is that they can monitor the customers' behaviour, find out where they go, what their interests are, their demographic profiles and so on.

Three distinct business models for public Wi-Fi hotspots have been identified by Gadh et al. (2003):

- Explicit: In this business model an owner of a location offers Wi-Fi in partnership with an Internet Service Provider (ISP). Revenue is generated through paid subscribers. Users are authenticated by the Wireless ISP.
- Implicit: Here Wi-Fi is offered for free to the customers and the location provider pays for the costs. Usually one finds that kind of model in retail locations. In contrast to the explicit model, security is not given.
- Emplicit**:** Most hotspots are somewhere in-between the two previous ones. The needs of the location owner and the WISPs are linked. For example, a person buys a coffee at a coffee shop and receives a voucher or pin code to use the Wi-Fi. Or the other way around, the WISP offering coupons for a certain product at the coffee shop.

2.4.2.3 Free Wi-Fi initiatives globally

Wi-Fi these days can be found at almost every coffee shop. Businessmen, students and others sit in coffee shops with their tablets, mobile devices and laptops and utilize the Wi-Fi while having a coffee. Previous research on this topic found that Wi-Fi in a coffee shop is almost a necessity. Customers expect Internet access anytime and anywhere. Furthermore free Wi-Fi offered at a coffee shop increases the value of it as a community gathering place (Gupta, 2004).

Not only does Wi-Fi in shops, restaurants and coffee shops have to be looked at, but also public Wi-Fi offered by the government and municipalities. Cities including New York, Chicago, Philadelphia and San Francisco are some of the cities in the USA which are covered by free public Wi-Fi (Jassem, 2010).

So-called Municipal wireless networks are networks whereby a whole city gets turned into a Wi-Fi zone making it possible for everyone to connect. A wireless mesh network gets deployed and 100s of routers have to be installed throughout the city. Several cities all over the world have implemented this concept. Some examples are listed below (Strachan, 2014):

- Taipei, Taiwan:
  Has over 5000 hotspots and visitors can get 30 days of free access.
- Florence, Italy:
  For 72 euros visitors receive a museum pass, which covers most museums and includes the fare for public transport and 72 hours of free Wi-Fi. Hotspots are all over the city including parks and piazzas.
- Tel Aviv, Israel:
  In 2013 Israel launched a Wi-Fi network for locals and tourists, which consists of 80 hotspots.
- Hong Kong:
  Hong Kong being one of the most developed cities, also offers free Wi-Fi. Several networks exist, including GovWiFi, which is accessible at parks, public buildings and libraries and MTR WiFi which offers 15 minutes of free Wi-Fi.
- Paris, France:
  Paris also has a public Wi-Fi network with over 200 hotspots. Users can use the Wi-Fi for 2 hours per day for free.
- New York, USA:
  Most shops and restaurants offer free Wi-Fi and additionally the city provides free Wi-Fi in public locations including 16 parks and tourist locations. Subways have also implemented Wi-Fi hotspots.
- Other cities include: Helsinki, Macau, Perth, Chicago, Los Angeles, and Seoul.

2.4.2.4 Free Wi-Fi initiatives in South Africa

Similar developments can be seen in South Africa. Project Isizwe is the most prominent endeavour, which covers a large part of Pretoria with free Wi-Fi. The City of Johannesburg is also currently in the process of covering the city with free public Wi-Fi. Covering parts in

South Africa, where people do not have access or cannot afford Internet access, could help in bridging the digital divide (Jassem, 2010).

1. Tshwane, South Africa: Project Isizwe is a non-profit organization whose goal it is to provide Internet access to people across the country. Their focus is to provide free Internet access in public places in low income communities, including townships.

2. Cape Town – South Africa: The government of the Western Cape started a pilot project rolling out Wi-Fi to the community of Delft. 90 000 people in 4 different areas are going to be covered.

3. Stellenbosch – Western Cape, South Africa

In collaboration with Stellenbosch University Alan Knott-Craig Jnr, founder of Project Isizwe, expanded his network.

2.4.3 Purchase Intentions

In order to understand the concept of purchase intentions one has to investigate consumer behaviour in general and focus on the consumer decision making process. Therefore a brief introduction of consumer behaviour, which factors influence it and the decision process will be provided.

According to Kotler (1994, p.139), purchasing behaviour or consumer behaviour can be defined as: "The study of how people buy, what they buy, when they buy and why they buy." Another more recent definition was provided by Schiffman (2010, p39):"The behaviour that consumers display in searching for, purchasing, using, evaluating, and disposing of products and services that they expect will satisfy their needs." These two definitions capture the most important aspects of buyer behaviour, the circumstances for buying and the factors influencing the decision process.

A consumer's buying behaviour is influenced by four major factors:

- Cultural characteristics: Are regarded as the most influential factor in buyer behaviour. According to Kotler and Armstrong (2007), human behaviour is learned and that certain

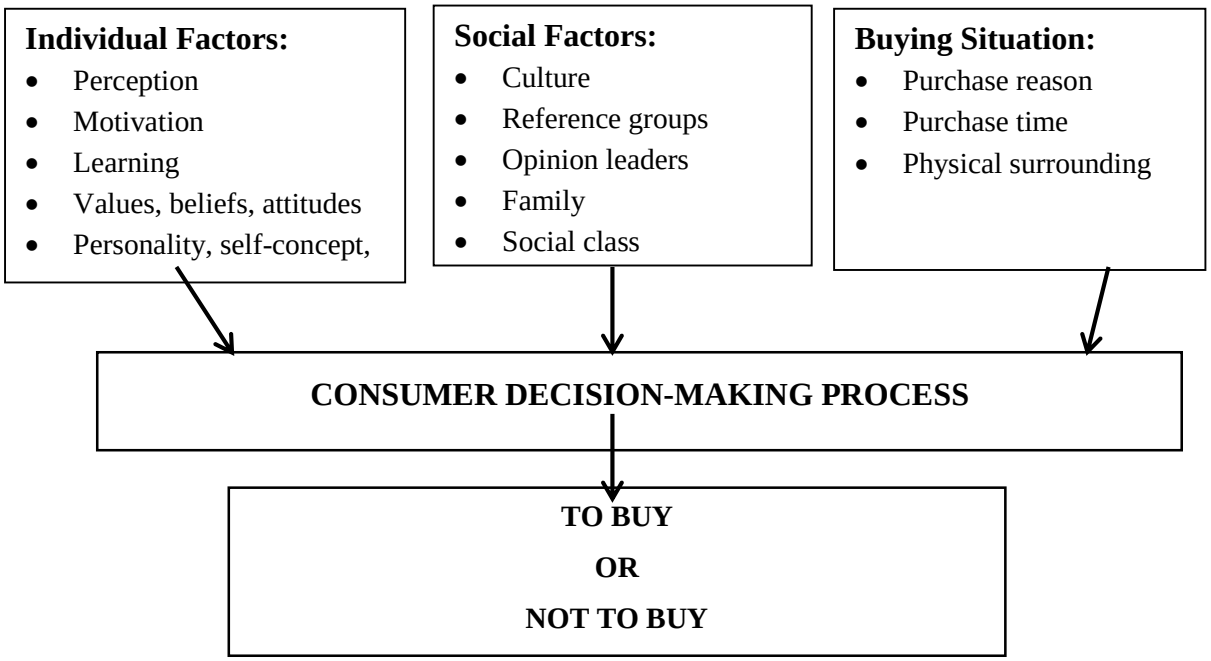
values in the culture are adapted. Furthermore culture also includes subculture and social class, which in turn also have a great influence on buyer behaviour and decision-making.

- Social characteristics: Includes groups, for example reference groups or aspirational groups, family, roles and status. These are external influences, which can have a direct or indirect influence on buyer behaviour and decision making processes.
- Personal characteristics: Includes variables like age, occupation, economic circumstances, lifestyle, personality and self-concept. When someone's personal characteristics change, his preferences and behaviour also changes.
- Psychological characteristics: Factors include motivation (Maslow's hierarchy of needs), perception, learning, beliefs and attitudes.

In the light of the above, marketers need to know who is involved in buying decisions and the different roles people play in them (Hasslinger, et al., 2007).

There are various models for consumer behaviour. A model of consumer behaviour by Klopper *et al*. is discussed next.

Figure 2.10 Conceptual Model of Consumer Behaviour



Source: Lamb et al., 2010

This model is very similar, in terms of the characteristics, to what Hasslinger et al., (2007) stated about consumer behaviour, but it only has three main factors influencing the consumer decision-making process, namely individual factors, social factors and the buying situation: (Lamb, et al., 2010)

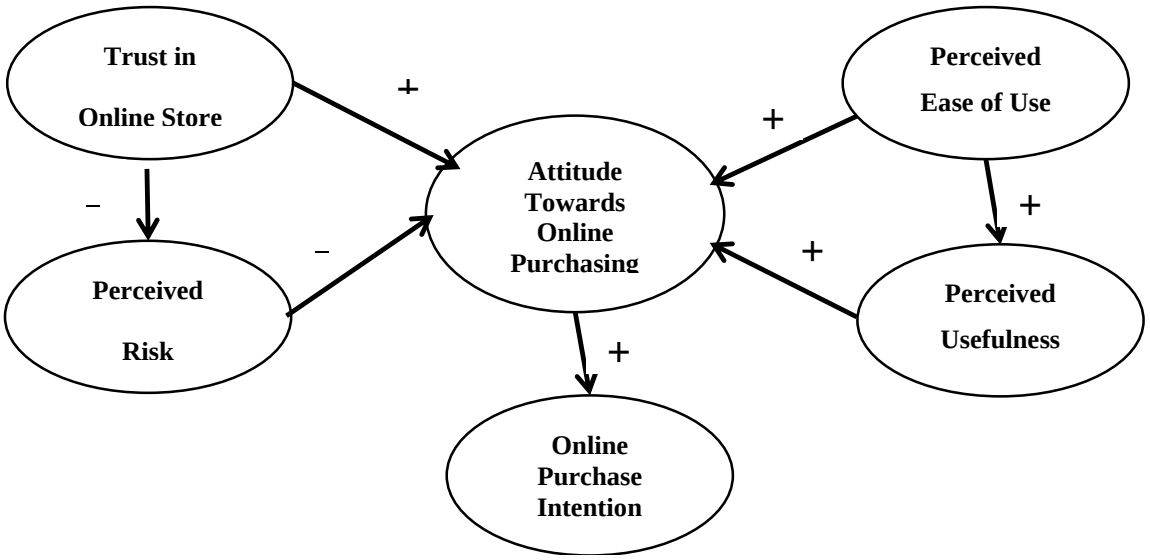
- Individual Factors: Include perceptions, motivation, learning, values, beliefs, attitudes, personality, self-concept and lifestyle.
- Social Factors: Are the same factors as in the previous model mentioned by Hasslinger et al., (2007) namely culture, reference groups, opinion leaders, family and social class.
- Buying Situation: The previous model discussed did not include this variable. Factors of a buying situation are purchase reason, purchase time and physical surrounding.

With regards to purchasing behaviour, the decision making process consumers go through, is very important. This decision process consists of 5 stages: (Kotler, 1982)

1) Problem recognition: Consumer has an unfulfilled need or desire and normally occurs when he is experiencing problems with an old product or sees a newer, better one.
2) Information search: Can be either internal via memory or experience or it can be an external search, which can be either controlled or not controlled by marketers.
3) Evaluation of alternatives: Consumer has to make trade-offs and rank order products according to their attributes.
4) Purchase decision: The consumer must decide whether he buys the product now, later or not at all.
5) Post purchase behaviour: Is the consumer's behaviour after he or she has conducted a purchase. Can result in cognitive dissonance, which can be explained as an inconsistency between values and behaviour.

The length of this process can vary from person to person, and each stage may be influenced by external factors, which were discussed before.

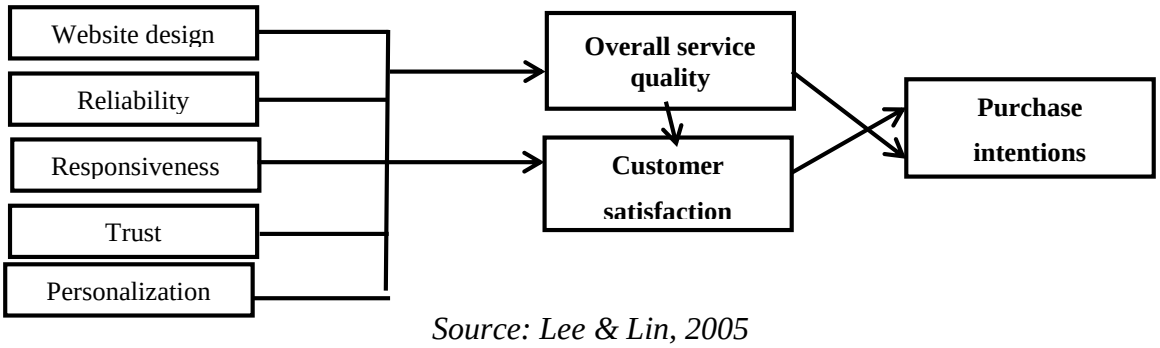
Figure 2.11 Conceptual Model of Online Shopping



Source: Ajzen & Fishbein, 1980; Davis, 1989; Jarvenpaa et al., 2000.

Lee and Lin (2005) conducted research in Taiwan to investigate purchase intentions and customer satisfaction using e-service quality variables to draw conclusions on overall service quality, customer satisfaction and purchase intentions. The predictor variables were website design, reliability, responsiveness, trust and personalization. Lee and Lin (2005) found out that website design, reliability, responsiveness, trust and personalization had a positive influence on overall service quality and customer satisfaction. Under the circumstances of a customer being content with the overall service quality, his satisfaction is positively influenced and hence purchase intentions (Lee & Lin, 2005).

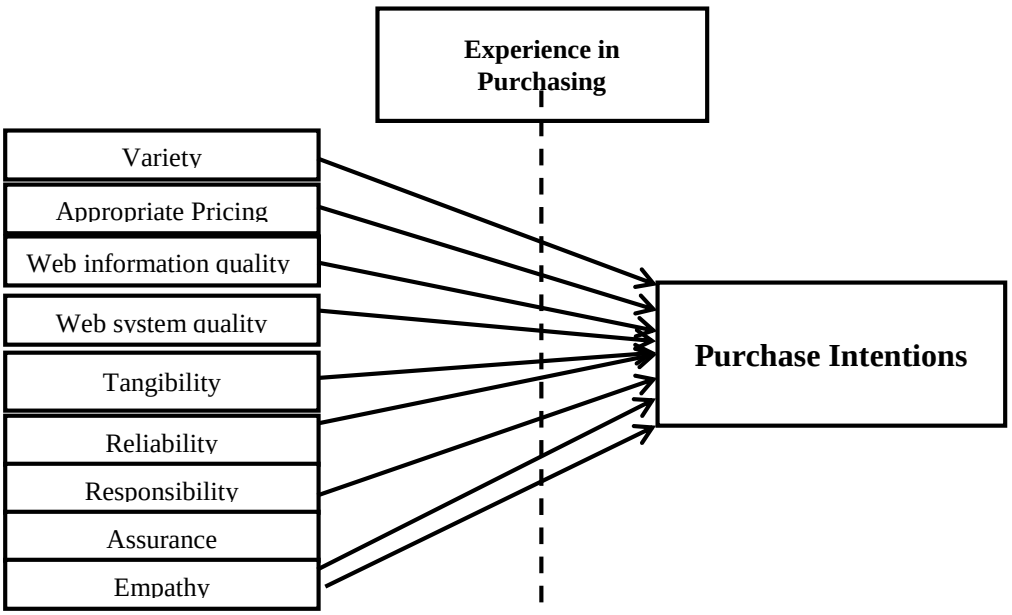
Figure 2.12 Alternative Conceptual Model of Online Shopping



Source: Lee & Lin, 2005

Jiredilok et al., (2014) state that various research has been conducted into online purchasing intentions and the following conceptual model sums up the most important factors and creates a positive link between satisfaction and purchase intention. The factors depicted in Figure 2.14, have the presumption of having a positive level of satisfaction, have a positive influence on purchase intention. In addition to that, a distinction between experienced and inexperienced users is made. In this research the factors Appropriate Pricing, Web Information Quality, Responsibility, Assurance and Empathy were found to have a positive influence on purchase intention (Jiradilok, et al., 2014).

Figure 2.13 Purchase Intentions Model



Source: Jiradilok et al., 2014

The digital divide can be understood through demographic variables. Different demographic factors including age, gender, race, income and education impact the likelihood of a purchase over the Internet. Furthermore, these variables can be used to segment and target markets which makes it relevant to marketers. A study conducted on this by Akhter (2003) investigated the relationship of gender, age, education and income on purchase intention. The findings were the following:

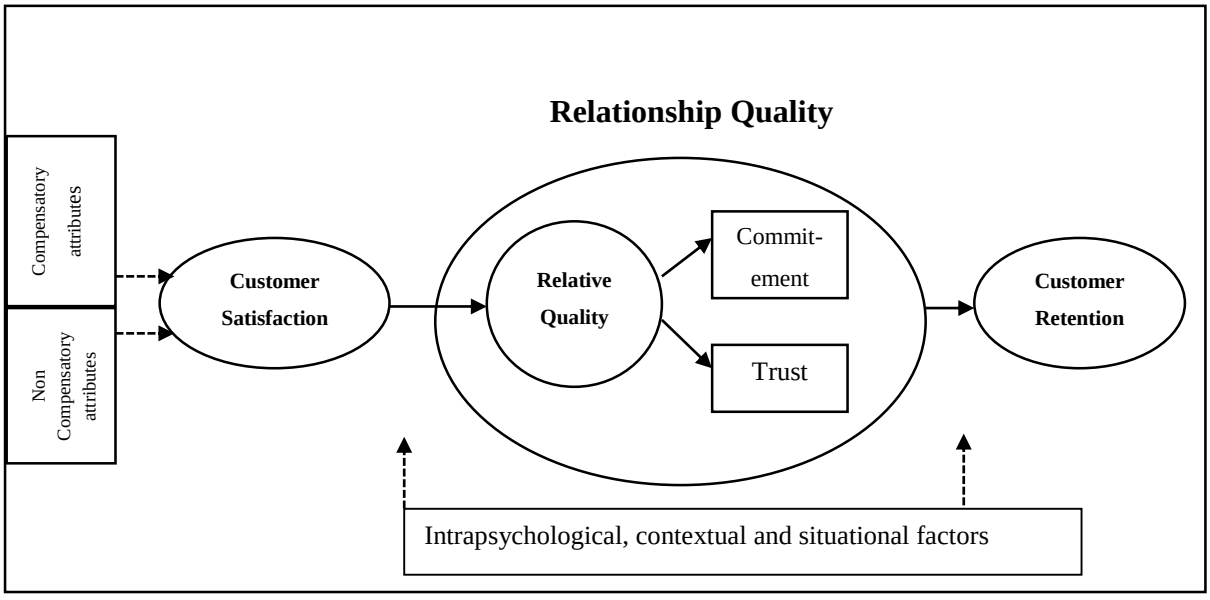
- Males are more likely to purchase on the Internet;

- Young people are more likely to purchase on the Internet;
- Education has a positive influence on online purchases; and
- Income has a positive influence on online purchases (Akhter, 2003).

2.4.4 Customer Likelihood of Return

In terms of relationship marketing, the satisfaction of the customer is seen as a necessary predecessor of customer retention, the likelihood to return. Kotler stated: "The key to customer retention is customer satisfaction" (Kotler, 1994). Customer satisfaction is key to most companies' success and competitiveness. However, past studies and investigations could not prove that there is a strong positive relationship between satisfaction and retention. In order to understand this relationship, one has to examine it from a broader view including other variables like the customers' quality perception (Hennig-Thurau & Klee, 1997). A model explaining the relationship is depicted below.

Figure 2.14 Conceptual model of the satisfaction - retention relationship



Source: Hennig-Thurau & Klee, 1997

A study conducted in 2012 investigated the impact of Wi-Fi service on customers' likelihood of return in restaurants. The findings were that offering Wi-Fi in a restaurant is strongly and

positively correlated with customers' intention to return to that restaurant. Furthermore they discovered a negative correlation between the cost of Wi-Fi access and the likelihood of return and another negative correlation between the perceived risk of using the Wi-Fi to the likelihood of returning (Cobanoglu, et al., 2012).

2.5 Conclusion

Basic concepts have been discussed including the digital divide, access factors, free Wi-Fi| concepts, consumer behaviour and the adoption of innovation. The following chapter will be a discussion of the conceptual framework development, giving and in-depth overview of the conceptual model, including the input, mediating and output factors.

Chapter 3: Conceptual Framework Development

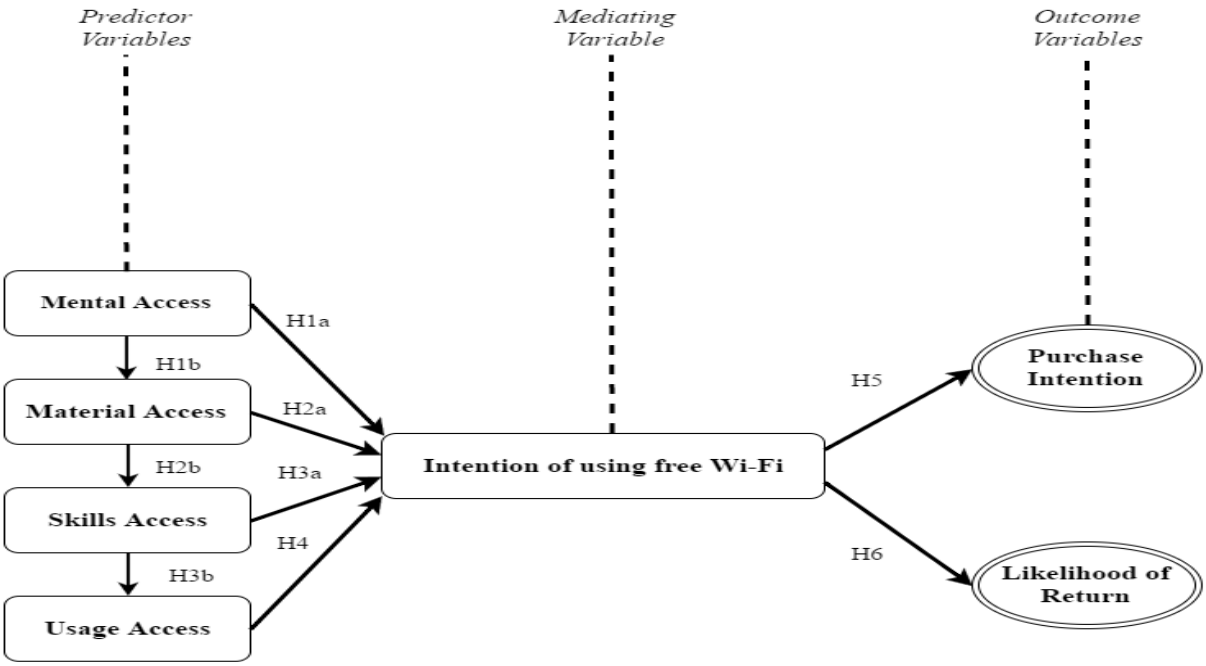
3.1 Introduction

Understanding the different factors that make up the digital divide in terms of access is vital. Furthermore, the impact of these access factors on the willingness and intention to use new technologies or Wi-Fi has to be looked at. Finally, the impact that free Wi-Fi has on customers' purchase intentions and their likelihood to return to a place is investigated in this model. This chapter presents the proposed conceptual model, which links the input variables of the digital divide model to the mediating variable of free Wi-Fi to the output variables, which are purchase intentions and likelihood of return. On the basis of that model, each variable will be discussed in more detail.

3.2 Theoretical Model

The proposed model in Figure 3.1 will be discussed in detail. Mental access has a positive influence on material access, material access has a positive influence on skills access and finally skills access has a positive influence on usage access.

Figure 3.1 Conceptual Model



3.3 Hypotheses Development

The hypotheses are developed from the conceptual model, which is based on literature surrounding access factors, the intention to use Wi-Fi, purchase intentions and the likelihood to return. These hypotheses are linked to the empirical objectives of the research.

The following hypotheses have been prepared:

Hypothesis (H1a): Mental access has a positive influence on intention to use Wi-Fi

Hypothesis (H1b): Mental access has a positive influence on Material access

Hypothesis (H2a): Material access has a positive influence on intention to use Wi-Fi

Hypothesis (H2b): Material access has a positive influence on Skills access

Hypothesis (H3a): Skills access has a positive influence on intention to use Wi-Fi

Hypothesis (H3b): Skills access has a positive influence on Usage access

Hypothesis (H4): Usage access has a positive influence on intention to use Wi-Fi

Hypothesis (H5): Intention of using Wi-Fi has a positive influence on purchase intentions

Hypothesis (H6): Intention of using Wi-Fi has a positive influence on the likelihood of return

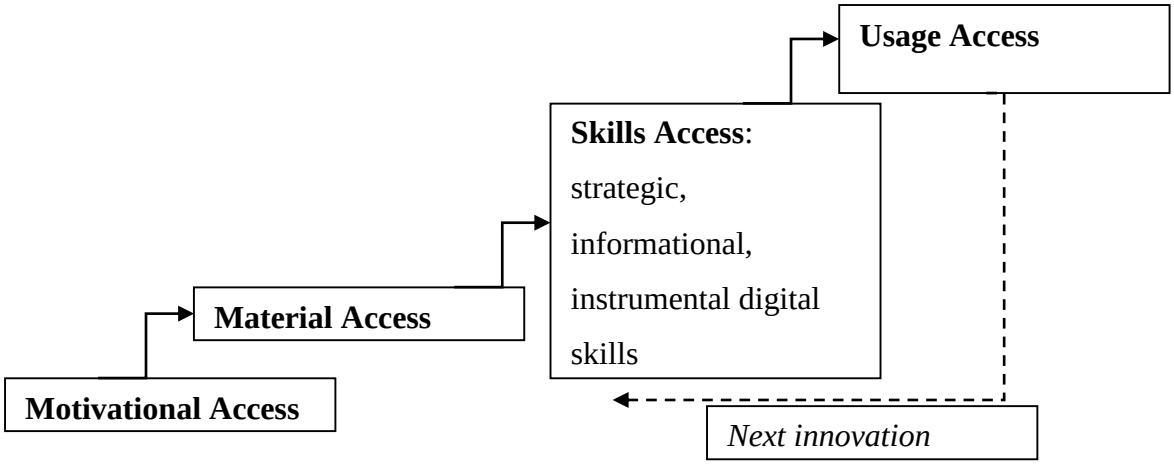
3.4 Overview of Theoretical Groundings

Following sections discuss the theoretical groundings and the most important concepts which were used to develop the theoretical model of this study.

3.4.1 Digital Divide Model

The first concept that has been researched for the purpose of this study was the concept of the digital divide. It has already been discussed in detail in the previous two chapters. The below Figure 3.2 illustrates the model developed by Van Dijk (2005), explaining the four main factors that influence individuals in terms of the digital divide. Motivational, material, skills and usage access are the four variables that have been adopted as the input variables for this research. These four access variables are in a certain order and are prerequisites for one another. For example, if someone does not have material access, skills access and usage access will be limited or not present at all.

Figure 3.2 Digital Divide Model



Source: Van Dijk, 2005, p.22

Previous research has discussed the relationship between the digital divide and free Wi-Fi. Many cities all over the world have implemented Wi-Fi hotspots all over their cities to ensure that all residents are covered. Research by Sharma and Mokhtar (2006) suggests that free Wi-Fi can be a tool to overcome the digital divide.

The digital divide is defined by people who have access and people who do not have access. Therefore the four different access factors were chosen as the input variables to the conceptual model.

3.4.2 Wi-Fi to bridge the digital divide?

For the development of the conceptual model it was vital to connect the concept of the digital divide and its access barriers with a solution that could also close the gap of the digital divide. The relationship is two-fold: The four access variables need to be in place to some certain extent, in order for a person to have the intention to use free Wi-Fi. Secondly, having the opportunity to use free Wi-Fi eliminates the barrier of material access (Internet access), but the individual needs to have a device to connect with.

Previous research by Middleton & Chambers (2010) suggests, that Wi-Fi access plays a vital role for economic growth and assists in closing the gap of the digital divide. The conclusion of Middleton & Chambers research was that the access to Wi-Fi, the adoption and the usage can serve as a tool to reduce the digital divide. It is vital to consider offering free Wi-Fi all over the world, especially to those who cannot access or afford it. The material access gap can be closed.

3.4.3 The influence of Wi-Fi on consumer behaviour

Different consumer behaviour models have been discussed in the previous chapter and they were important for the development of the conceptual model. The outcome variables are factors that are determined by consumer behaviour, whether someone has the intention to buy and the likelihood of return.

Consumers nowadays are increasingly mobile and are constantly connected to the Internet. Being connected to the Internet is a need most people have, which emphasizes the importance of Wi-Fi availability. In many industries offering Wi-Fi to their customers is a critical factor, which improves satisfaction, the likelihood to return, intention to purchase something or create positive word-of-mouth for that business (Lee & Tussyadiah, 2010). “While Wi-Fi is a powerful way to attract and retain customers, it is not practical for most businesses to become Internet service providers” (Harris, 2014, p.1).

A study conducted by Cobanoglu et al. (2012) found that offering Wi-Fi as a complementary service is positively correlated with customers’ intention to return to a place and they also concluded that there is a positive correlation between perceived value of Wi-Fi and the intention to return. It also suggests a negative correlation between the cost of Wi-Fi and the intention to return. In the future an increase in Wi-Fi demand is expected (Cobanoglu, et al., 2012).

3.5 Input factors in the Model

Following paragraphs discuss the input factors of the conceptual model in detail.

3.5.1 Mental/Motivational Access

As already mentioned in previous chapters, the first access variable refers to the degree of motivation an individual has towards using new technologies. It can be explained by social & cultural factors, but also by demographic variables including: age, gender, income, education, social status and household structure. There are some people though, who don't have the time, do not see the significance in usage opportunities or basically just reject a new medium.
This refers to the motivation to use technology, including computers or mobile devices and to connect to the Internet (Katz & Rice, 2002, p.93).

Segametsi (2009) argued, that besides demographics, cultural and social variables, knowledge plays a key role. Acquired knowledge through friends, family or colleagues is a detriment factor. Furthermore sharing that knowledge of technology with other people and within the community can facilitate and encourage the motivation to use new technologies.

The relationships between motivation and the intention to use Wi-Fi can furthermore be elaborated by taking the TAM into consideration. It states, that motivation to use new technologies is determined by three factors. Firstly, users need to perceive the new technology as useful, otherwise they will not have the motivation to use it. Secondly, if the new technology is easy to use, a positive attitude towards it is formed. Finally, a positive attitude, which can be compared to the variable motivational access, can lead to an actual use of a new system or technology (Wallace & Sheetz, 2014).

3.5.2 Material Access

Material or physical access basically refers to the situation whereby an individual has a computer, mobile device or Internet connection. It includes a wide range of hardware, software and services (van Dijk, 2008).

Material or physical access is mostly determined by demographic factors including income, education, age, gender and ethnicity. Gaps are evident between low and high income people, between majority ethnicities and minority ethnicities, yet the divide in terms of gender seems to be closing in the recent years. Regarding age and physical access, one can observe that it culminates in the age group of 25-40 years of age and strongly declines thereafter. In First World or developed countries the physical divide is decreasing, on the other hand the gap is widening in developing countries (van Dijk, 2006).

The most important factors determining physical access are the following: Income was found to be the most important factor, followed by age and education. Differences in economic, social and cultural capital have been used in previous literature to explain the differences in physical access. Other researchers use a resources based approach to explain the phenomena (de Haan, 2003: Dutta-Bergmann, 2005). They argue that those differences are related to the dissemination of resources, which can be temporal, mental, material, social or cultural. Therefore some people participate more, some participate less in certain fields of society including economy, politics, social institutions or communities (van Dijk, 2006).

Material access and the intention to use Wi-Fi are interrelated. Not owning an internet-enabled device will negatively impact the intention to use Wi-Fi and owing a device, but not being able to afford an own Internet connection will result in a positive influence towards the intention of using Wi-Fi.

3.5.3 Skills Access

Once a person has the motivation to use computers and has access to them, he or she has to learn how to use the hardware and software. Three types of skills fall under skills access. Number one, are the operational skills or instrumental skills, which are the most basic. These skills can be explained as having the capacity to use hardware and software. Second are the information skills, which can be split into formal information skills and substantial information skills. The latter refers to the capability to find, select, process and evaluate information in certain sources. Formal information skills, refers to the ability to work with formal

characteristics of computers and the Internet. Finally, strategic skills are concerned with the ability to utilise computer and network resources to achieve specific objectives, which in turn can improve a person's position in society. According to previous studies (van Dijk, L. et al, 2000; de Haan, 2003) the gap between skills access is much higher than the gap of physical access. Finally, digital skills are obtained through practice, meaning through trial and error rather than in a formal setting (van Dijk, 2006).

Skills access plays a vital role in regard to the intention of using Wi-Fi. Someone with limited skills, may not have the ability to connect to a Wi-Fi network.

3.5.4 Usage Access

Usage access is the last stage and ultimate aim of the process. It can be measured in four ways:

- Usage time
- Usage applications, number and diversity
- Broadband or narrowband use
- More or less active or creative use (van Dijk, 2008)

If there is a barrier or a lack of usage access, opportunities are lost. Trust, the legal and regulatory framework, the local economic environment, the macro-environment and political will are the main concepts behind this access factor. Trust refers to whether people are confident in using technologies and if they are aware of the implications. The legal environment in a country strongly affects how people use technology. For example, some non-democratic countries forbid certain webpages or gadgets for the people. An environment needs to be created in which the use of new technology is stimulated. The economic environment refers to policies and an economy that can sustain technology use. Finally political will refers to the plans and actions of the government. Warschauer refers to usage access as human resources, which are explained by literacy and education (Warschauer, 2004).

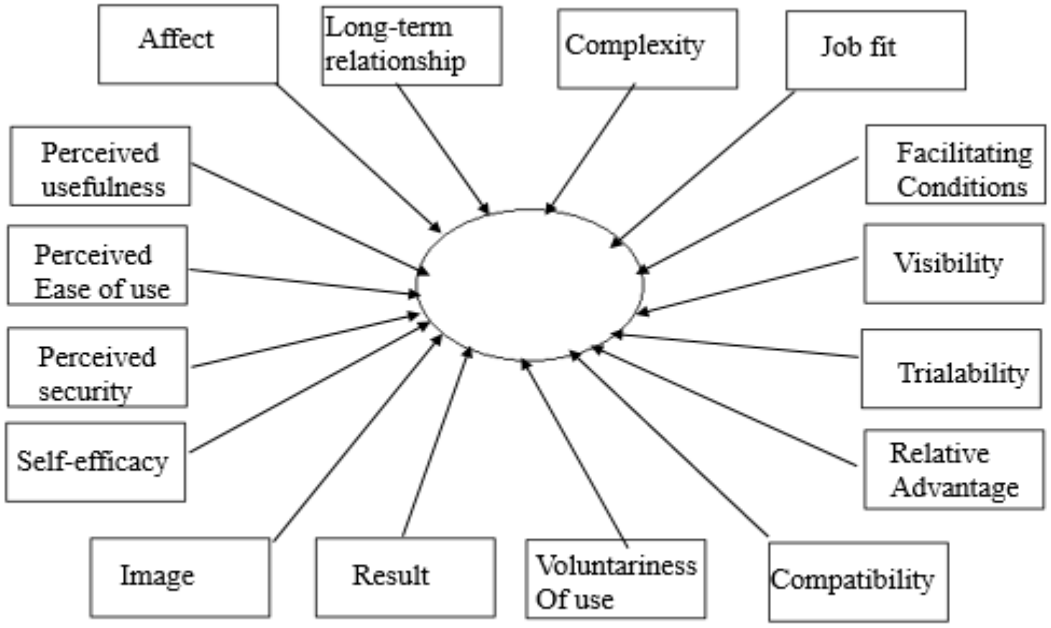
3.6 Mediating factors in the Model

3.6.1 Intention to use free Wi-Fi

Wi-Fi has changed the way people connect to the Internet. Today most computers, smart phones, printers, cameras, laptops, video game consoles and so on have the capability to utilize and connect to a Wi-Fi network. The use of technology has become simple and convenient for users, making it possible to access and share information anywhere at any time. However some people are reluctant to use Wi-Fi, which can be explained by their perceptions and attitudes towards it. Previous studies have discussed the impact of consumer attitudes on the use of new innovations and technologies (Ktoridou, et al., 2012).

According to Figure 3.3, the following factors impact the intention to use Wi-Fi: The complexity of using Wi-Fi whether it is fit for a specific job; if there are facilitation conditions present and visibility. Furthermore it is important whether a user can try out the Wi-Fi, if it provides him with a relative advantage and if it is compatible. Finally, perceptions play a vital role too. Is it perceived to be useful; the perceived time of use; perceived security and self-efficacy (Ktoridou, et al., 2012).

Figure 3.3 Factors impacting the intention to use Wi-Fi



Source: Ktoridou et al., 2012

Table 3.1 summarises previous research hypotheses on Wi-Fi.

Table 3.1 Previous Research Hypotheses on Wi-Fi

Hypotheses	Wi-Fi Awareness	Interest in Wi-Fi	Likelihood to use Wi-Fi
H1a: The older the respondents, the less they will be aware of, interested in, and likely to use Wi-Fi	nonsignificant	nonsignificant	nonsignificant
H1b: Female respondents will be less aware of, less interested in, and likely to use Wi-Fi	R=.16** (gender/female)	nonsignificant	nonsignificant

H1c: The less income respondents have the less they will be aware of, interested in, and likely to use Wi-Fi	nonsignificant	nonsignificant	nonsignificant
H1d: Respondents of ethnicities will be less they will be aware of, interested in, and likely to use Wi-Fi	R=.11*	nonsignificant	nonsignificant
H2: The weaker the motivation of Wi-Fi use to get information, to pass time, and to escape, the less they will be aware of, interested in, and likely to use Wi-Fi	R=.17* (info-learning) R=.09** (pass time) R=.08* (social escape)	R=.49*** R=.38*** R=.40*	R=.37 R=.34 R=.37
H3: The less respondents use mass media, the less they will be aware of, interested in, and likely to use Wi-Fi	R=.16** (reading newspaper)	nonsignificant	nonsignificant
H4: The less computer hardware the respondents own, the less they will be aware of, interested in, and likely to use Wi-Fi	R=.09* (PCs owned)	R=.20**	R=.21**

Source: Zemlianski & St. Amant, p.401, 2008

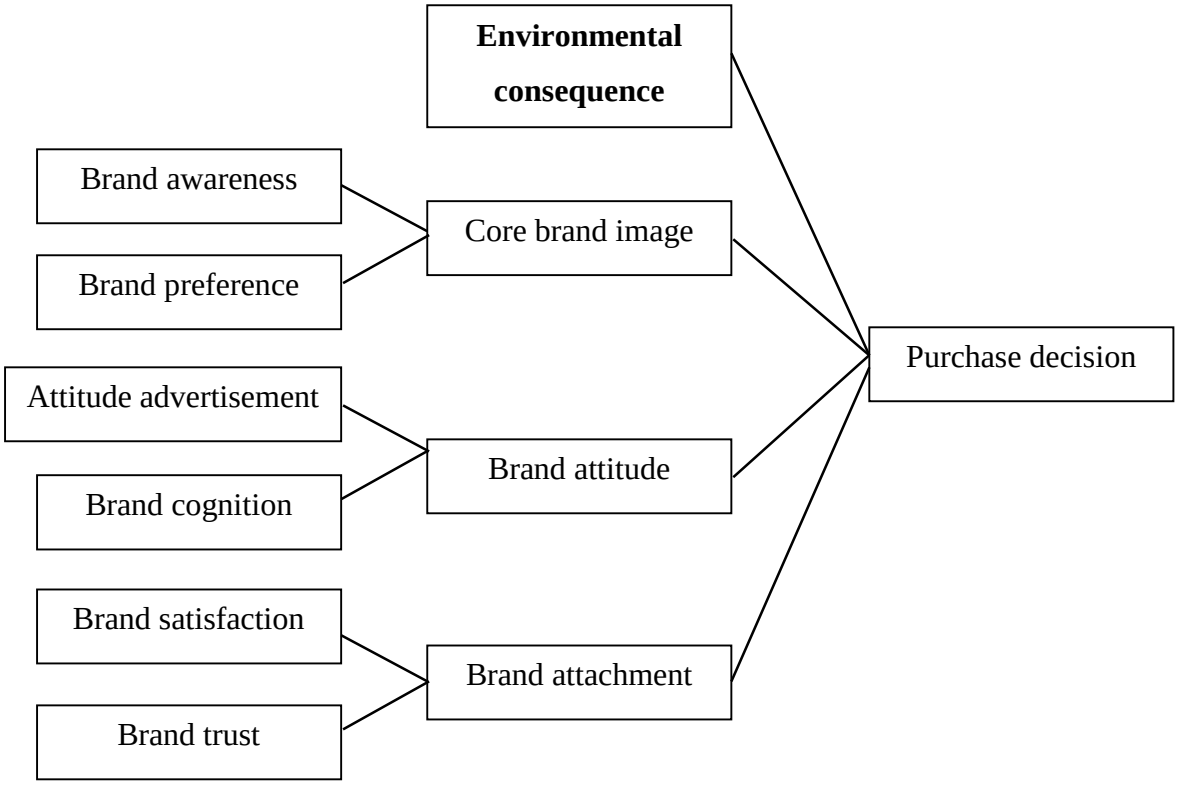
The findings in above table suggest, that gender, ethnicity, motivation to use Wi-Fi, mass media use of people and material possession of technology have a significant influence on Wi-Fi awareness. In terms of the likelihood or intention to use Wi-Fi, previous research found that motivational access and material access have a significant influence on the intention to use Wi-Fi (Zemliansky & St. Amant, 2008).

3.7 Output factors in the model

3.7.1 Intentions to purchase

Previous studies have investigated the impact of brand on consumer purchase intentions. The elements of a brand namely the core brand image, brand attitude and brand attachment were found to have a significant positive impact on purchase decision intentions. The core brand image is determined by a person's brand preference and awareness; brand attitude is defined by the attitude toward the advertisement and brand cognition; and lastly, brand attachment which is a result of brand satisfaction and trust. Furthermore environmental circumstances also have an influence on purchase decision intention. Free Wi-Fi falls under environmental circumstances (Shah, et al., 2012).

Figure 3.4 Model of Purchase decision/intention



Source: Shah et al., 2012, p.105

Furthermore, research by Cobanoglu et al., (2012) states, that there is a significant influence of offering Wi-Fi and consumers' intention to purchase. The most mentioned case in previous literature are coffee shops. A significant amount of people go to coffee shops for the sole purpose of utilising free Wi-Fi, which in most cases converts them into purchasing customers (Cobanoglu, et al., 2012).

Finally, research by Maoyan, et al., (2014) investigated the relationship of purchase intentions and free Wi-Fi. Their findings were that personalised marketing messages and entertaining factors in providing free Wi-Fi have a significant impact on the customers' purchase intentions.

3.7.2 Likelihood of Return

The relationship between offering free Wi-Fi and the likelihood of return has been mainly discussed in the hotel and restaurant industry. Findings of previous research include, that offering Wi-Fi in a restaurant is strongly and positively correlated with customers' intention to return to that restaurant. Furthermore Cobanoglu, et al., (2012) discovered a negative correlation between the cost of Wi-Fi access and the likelihood of return and another negative correlation between the perceived risks of using the Wi-Fi to the likelihood of returning.

Lee and Tussyadiah (2010) also investigated the influence of Wi-Fi on customers in the hotel industry. In their study they state that offering Wi-Fi to hotel guests is a vital service, which should not be overlooked by any hotel. It is a vital factor, which influences the satisfaction of the guests.

3.8 Conclusion

In this chapter the conceptual model and the underlying hypotheses were outlined first. Secondly, the most important concepts for the development of the conceptual model and the hypotheses were discussed. Finally, the input factors, the mediating factors and the output factors of the model were discussed in detail. The next chapter will provide a general overview of research design and methodology and the different methods and concepts used for the study will be discussed.

Chapter 4: Research Design and Methodology

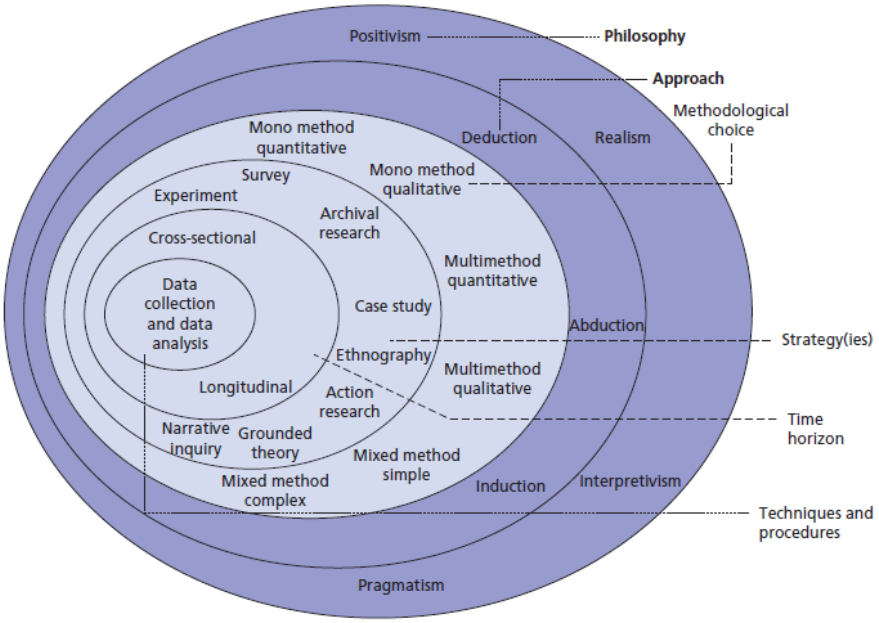
4.1 Introduction

This chapter covers the methodology and the research design used for this study. Moreover it explains the choice of methodology, the choice of the population and sample and an in-depth discussion about the measurement instruments, data collection and finally a data analysis.

4.2 Research Philosophy

Research Philosophy is about the concept of knowledge. Its deals with the nature, source and the creation of knowledge. During research data is collected and analysed, in order to answer the research question, which results in the creation of new knowledge (Bajpai, 2011). Furthermore research philosophy is about the formulation of the researcher's beliefs and assumptions. The figure illustrated below depicts the research process as an onion and one can clearly see that the research philosophy is positioned on the outer layer, meaning it has to be the first topic to be clarified (Saunders, et al., 2012).

Figure 4.1 Research Philosophy



Source: Saunders, et al., (2009)

Two major directions in research exist, namely objectivism and subjectivism, which each have different philosophical positions aligned between them. The objectivistic approach was developed from natural sciences. Objectivism has alternative labels, namely quantitative, positivist, scientific, experimentalist, traditionalist, and functionalist research. Subjectivism on the other hand can be qualitative, phenomenological, humanistic or interpretivist (Holden & Lynch, 2004).

As mentioned previously, the research philosophy reflects the assumptions of a researcher and those create a base for the research strategy. Research philosophy has been discussed widely in past studies and has many branches. For business studies, four main research philosophies exist: Pragmatism, Positivism, Realism and Interpretivism (Mkansi & Acheampong, 2012). Their use in relation to data collection are summarized in following table.

Table 4.1 Research Philosophies

	Pragmatism	Positivism	Realism	Interpretivism
Popular data collection methods	Mixed or multiple method designs, quantitative and qualitative	Highly structured, large samples, measurement, quantitative, but can use qualitative	Methods chosen must fit the subject matter, quantitative or qualitative	Small samples, in-depth investigations, qualitative

Source: Mkansi & Acheampong, 2012

Positivism was the paradigm that was chosen for this study. It suggests that objects of interest can be observed empirically and can be explained logically (Hunt, 1991). Moreover in the positivist view the researcher and the topic are regarded as independent entities, therefore limiting the influence when exploring a new concept. Finally positivism dictates a standard procedure for researchers, ensuring a study with no bias (Ponterotto, 2005).

4.3 Research Design

It is the plan or framework of how a researcher obtains research objects and collects data from them. This plan outlines what is going to happen with the research participants in terms of reaching results regarding the research problem (Welman & Kruger, 1999).

This research paper used a quantitative and not a qualitative approach. To get a better understanding why a quantitative approach and not a qualitative approach was used, the following table should bring clarity:

Table 4.2 Research Approaches

Qualitative Research	**Research Aspect**	**Quantitative Research**
Discover ideas, used in exploratory research with general research objects	**Common Purpose**	Test hypotheses or specific research questions
Observe and interpret	**Approach**	Measure and test
Unstructured, free-form	**Data Collection Approach**	Structured response and categories provided
Researcher is intimately involved. Results are subjective	**Researcher Independence**	Researcher uninvolved observer Results are objective
Small samples- often in natural settings	**Samples**	Large samples to produce generalizable results (results that apply to other situations)
Exploratory research designs	**Most Often Used**	Descriptive and causal research designs

Source: Zikmund & Babin (2013, p.99)

Both approaches have their own advantages and disadvantages. The main advantages of quantitative research, include, that they are cheaper, more convenient, easier to analyse, more objective and less time consuming (Maree & Pietersen, 2007).

4.3.1 Quantitative Research

"Quantitative marketing research addresses research objectives through empirical assessments that involve numerical measurement and analytical approaches" (Zikmund & Babin, 2013, p. 99). It also requires less interpretation and subjectivity, compared to the qualitative approach. Researchers using this approach try to find direct or indirect relationships for specific models and do this by using scales, for example the Likert scale. Before commencing with quantitative research, hypotheses are stated, which in the course of the research will be either accepted or rejected by measuring and testing them. Relatively large samples are required to get useful results. The quantitative approach is most often used for causal and descriptive research designs. Finally one great advantage of this approach is that results are objective and the researcher is relatively uninvolved (Zikmund & Babin, 2013).

4.3.2 Qualitative Research

According to Zikmund and Babin (2013, p.99) qualitative research can be defined as: "… research that addresses marketing objectives through techniques allowing the researcher to provide elaborate interpretations of market phenomena without depending on numerical measurement". Instead of using numerical responses, qualitative research rather employs open-ended questions. It is very researcher-dependent, meaning that the person conducting the research has to draw conclusions from relatively unstructured responses. Some circumstances require a qualitative approach, for example when the objective is to develop a very in-depth understanding of some topic, or another example would be if one wants to study how consumers use a product in its natural setting.

Furthermore, qualitative research has four major orientations, namely: (Zikmund & Babin, 2013)

- Phenomenology: originating in philosophy and psychology;
- Ethnography: originating in anthropology;
- Grounded theory: originating in sociology; and
- Case studies: originating in psychology and business research.

4.4 Data Collection Design

Data can be collected using either obtrusive methods or unobtrusive methods. In this case an obtrusive method is being used, because respondents have to be disturbed in order to gather the data by filling out questionnaires. Primary or secondary data can be used. In this case it is primary data, because in contrast to secondary data is has the advantage that it applies to the population of interest, to the time period and appears in the correct units of measurement (Zikmund & Babin, 2013).

Furthermore Struwig and Stead (2001) state that it is important to indicate what type of data, the source, the form and also the nature of information that is to be collected.

- **Type of Data:** From a very broad perspective data can be divided into discrete data or continuous data. "Discrete data is data that can take on only specified values or codes, such as yes or no, or values such as 1,2,3…" (Krommenhoek & Galpin, 2014, p. 17). Continuous variables on the other hand can be any value. For the purpose of this research discrete data was collected, because questionnaires were distributed with closed-ended questions.
- **Source of Data:** Sources of data can be either primary sources or secondary sources. For this research secondary data was used to conduct the literature review to get a better understanding of what has been done so far. Primary data is the data collected through the questionnaires.
- **Form of Data:** Data can be collected in two ways. If collected overtly it means verbal communication was involved in the process. On the other hand one can collect data non-overtly which means no personal communication was required to collect it. For the purpose of this study it was collected overtly, because respondents were asked to fill out the questionnaires (Struwig & Stead, 2001).
- **Nature of Data:** Can take two forms and relates to the time frame in which the data is collected. It can be either a cross sectional study or a longitudinal study. For the purpose of this research a cross sectional study was used, meaning data was collected at a given point in time (Struwig & Stead, 2001).

Data collection in quantitative studies can be done as follows: (Van Wyk, 2007)
Firstly, it can be an experimental data collection, whereby the researcher applies treatments to groups. Secondary analysis of quantitative data refers to a situation whereby the research used data which has already been recorded. Finally, data can be collected through observations or surveys. For the purpose of this research surveys in the form of questionnaires were used.

4.5 Population

The population of this study were residents of the township Soweto. According to the Census of 2011 1,271,628 people reside in Soweto. Unofficial numbers of the population state a population from 2-3 million inhabitants. 98.5 % of the people living in Soweto are of black ethnicity and the most spoken language is Zulu, followed by Sotho (Census, 2011). Details of the Census 2011 can be found in the Appendix.

4.6 Sampling Design

Table 4.3 Sampling Design Steps

STEPS	DESCRIPTION
1. Define Population	*Can be defined in terms of x elements, y units, c extent and z time.*
2. Specify Sampling Frame	*The elements of population are specified*
3. Specify Sampling Unit	*The sampling unit is provided, e.g. city, campus*
4. Specify Sampling Method	*Method used to select sampling elements*
5. Determine Sampling Size	*How many elements of population are to be sampled*
6. Specify Sampling Plan	*The operational procedure for selecting sampling unit*
7. Select Sample	*Place and fieldwork necessary for selection of sample.*

Source: Struwig and Stead, 2001, p.110

Above Table 4.3 illustrates the steps involved in sampling design. It starts by defining the population, specifying the sampling frame, sampling unit and method. Finally, one has to determine the sample size, specify the plan and the last step is to select the sample.
For the purpose of this research a sample of 400 was chosen.

4.7 Primary Data Collection

4.7.1 Instruments

Questionnaires were used as an instrument to collect the data. Questions in a questionnaire can be either closed-ended or open-ended. Open-ended questions have pre-specified answers, which makes the analysis and coding of the data relatively easy. When designing questionnaires it is vital to give attention to some issues, including: the language used in the questions; questions should not be leading; including some reverse questions; not making the questionnaire too long; and which scales will be used to measure the responses. Other instruments include interviews, observations, case studies, focus groups and experiments (Krommenhoek & Galpin, 2014).

Research using questionnaires or surveys pose several advantages and disadvantages which are summarised in the following table.

Table 4.4 Advantages and Disadvantages of Using Surveys

Advantages	Disadvantages
Quick and cheap	Sampling error
Efficient and accurate	Administrative error
Straightforward analysis of data	Respondent error
Flexible	Bias

Source: Krommenhoek & Galpin, 2014

Further on the following guidelines should be followed: (Zikmund & Babin, 2013)

- Simple is better;
- Avoid leading and loaded questions;
- Avoid ambiguity;
- Avoid double-barrelled items;
- Avoid making assumptions; and
- Avoid taxing respondents' memory

A pilot study was conducted in class and with friends to find out if the questionnaire was designed properly. (For more on the pilot study see section 4.10)

4.7.2 Questionnaire

When deciding to conduct research via the distribution of questionnaires, one has to consider what type of questions should be used. Generally questions can either have open-ended responses or closed-ended responses. Open-ended questions are questions where the respondent can answer freely in his own words to a certain problem/question. On the other hand closed-ended or fixed-alternative questions give the respondent a limited choice of answers, where he has to decide which comes closest to his viewpoint. Closed-ended questions can further be divided into four categories, namely: (Zikmund & Babin, 2013)

- ***Simple-dichotomy question:*** Two alternative answers (yes or no)
- ***Multiple-choice question:*** Respondent must choose one answer from alternatives
- ***Frequency-determination question:*** Asks about general frequency of an event
- ***Checklist question:*** Respondent can select multiple answers for one question

This study used closed-ended questions to measure the effect of the constructs on the dependent variables in the conceptual model. Simple-dichotomy questions, multiple-choice questions and frequency-determination questions were employed. Finally 5-point Likert scales (1 = strongly disagree – 5 = strongly agree & 1 = never – 5 = always) were used to measure attitudes of respondents.

4.7.2.1 Section A

The first section of the survey consisted of demographic questions, asking the respondents about their gender, age, education, occupation, income, 1st language and ethnicity. The purpose of this section was to gather the necessary information and to ensure the respondents were from the desired target population. Furthermore the data was used to investigate certain relationships.

4.7.2.2 Section B

Section B consisted of questions in regard to the access behaviour of respondents. It was separated into four different sections, covering mental access, material access, skills access and usage access. These questions were used to determine the input factors of the research model.

4.7.2.3 Section C

Section C consisted of questions trying to establish the Wi-Fi behaviour of respondents and where they mostly use it. These questions were used to measure the mediating variable.

4.7.2.4 Section D

Section D consisted of two questions asking respondents if they intend to purchase something at a shop if it offers them free Wi-Fi. This was used to measure the outcome variable number one.

4.7.2.5 Section E

Finally section E, asked respondents whether they would return to a shop which offers free Wi-Fi. Outcome variable number two.

4.8 Data Processing and Analysis

Before the collected data was used and analysed, data editing and coding was necessary.

4.8.1 Data Editing and Coding

Before the collected questionnaires became useful, the data needed to be coded and edited. The data got entered into Microsoft Excel and in order to examine for mistakes or errors. Entering the data is referred to as editing and also involves the process where it is ensured that the data

is complete and consistent. When coding, numbers are assigned to each response and are categorized. This is necessary in order to export the data to analysing software like SPSS or SAS (Krommenhoek & Galpin, 2014).

For this research the data was edited and coded in Excel and after that it was analysed using SPSS 23 and AMOS.

The following table summarises how the data was coded:

Table 4.5 Data Coding

Section A: 1. Female=1, Male=2 2. 18-23=1, 24-29=2, 30-35=3, 36-41=4, Above 41=5 3. Below Matric=1, Matric=2. Undergrad=3, Postgrad=4, Any other=5 4. Unemployed=1, Student=2, Part-time=3, Full-time=4 5. R0-R4000=1, R4001-R8000=2, R8001-R12000=3, R12001-R16000=4, R16k-R20k=5, Above=6 6. Eng=1, Afri=2, Nde=3, Soth=4, Swa=5, Tso=6, Tsw=7, Ven=8, Xho=9, Zul=10, Other=11 7. Black=1, White=2, Coloured=3, Indian=4, Asian=5, Other=6
Section B: Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly Agree=5
Section C: Never=1, Rarely=2, Sometimes=3, Very Often=4, Always=5
Section D: Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly Agree=5
Section E: Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly Agree=5

4.8.2 Data Analysis and Statistical Techniques

After the data has been collected, coded and edited, it needs to be analysed to offer meaning and valuable insights. There are two broad concepts used to analyse the data, namely descriptive statistics and inferential statistics.

4.8.2.1 Descriptive Statistics

Descriptive statistics is usually used to summarise data and present it in a way or form that is easily understood by others. This can be in tabular, graphical (pie charts, bar graphs and histograms) or numerical form. Further on the measures of central tendency and skewness and kurtosis also can be used to analyse the data (Neergaard, et al., 2009).

4.8.2.2 Inferential Statistics

Inferential statistics are used to make conclusions if there is an inference about a population from a sample. It includes testing of model fit, reliability, validity and the testing of hypothesis. It also includes testing whether an independent variable has an effect on the outcome variables (Zikmund & Babin, 2013).

4.9 Reliability and Validity

4.9.1 Validity

In order to determine whether a questionnaire measures what it is supposed to measure, validity comes into play. When measuring the validity four main concepts have to be considered: Content validity, face validity, criterion related validity and construct validity (Struwig & Stead, 2001). Those concepts have been discussed in Chapter 1.

4.9.2 Reliability

After determining the validity of a questionnaire, one has to establish the reliability of it. Reliability refers to the consistency of a test. The Cronbach's Alpha and the Kuder-Richardson coefficient are the most popular measures for reliability (Krommenhoek & Galpin, 2014).

4.9.3 Model fit (Goodness of fit) Statistic

Sorbom and Joreskog generated the model fit or goodness-of-fit statistic as an alternative to the Chi-Square test and it is used to calculate the proportion of variance. The Chi-Square value is used to measure the overall fit of a model and assesses the extent of discrepancy between covariance matrices and the sample (Hooper, et al., 2008)

4.9.4 Average Variance Extracted

Average Variance Extracted (AVE) is used to determine convergent and discriminant validity. For each construct it can be obtained by the sum of squares of standardized factor loadings divided by this sum plus total error or variances for the indicators. If the value is greater than 0.05, it means that the indicators represent the construct correctly. AVE can be calculated as follows:

$$\text{AVE} = \frac{\text{summation of the squared of factor loadings}}{\text{summation of the squared of factor loadings}} + \text{summation of error variances}$$ (Fraering & Minor, 2006)

4.9.5 Model Chi-square ($\chi 2$)

The Chi-square is used to test hypothesis of an exact fit in a population. Furthermore the value is used to measure the overall fit and determine the incongruity between the sample and the fitted covariance matrices. The resulting statistics are considered to be lack of fit or badness of fit if the model has an insignificant value of 0.05 threshold (Hooper, et. al, 2008). According to Chinomona (2011) a Chi-square value less than three (3) is measured as an acceptable model fit or good fit.

4.9.6 Cronbach's Alpha Test

Lee Cronbach developed the Cronbach's Alpha in 1951 in order to suggest a new measure for internal consistency. It is expressed as a scale between 0 and 1 (Tavakol & Dennick, 2011). For the purpose of this study the standardized Cronbach's alpha was used to measure the internal reliability of each construct. The higher the Cronbach's alpha, the higher the reliability of the measurement test. If it has a low value then it indicates that there is little commonality or too few items in the test. (Chinomona, 2011).

4.9.7 Confirmatory Factor Analysis (CFA)

For the purpose of this study the so-called Confirmatory Factor Analysis was used. Generally it is used to examine the scale accuracy or the validity of the measurement scales. It involves convergent, reliability and discriminant validity and was assessed using IBM AMOS 23. Through CFA the following model fit tests can be established: the Incremental Fit Index (IFI), Goodness of Fit Index (GFI), Chi-squared/degrees of freedom, Tucker-Lewis Index (TLI), Normed Fit Index (NFI), Random Measure of Standard Error Approximation (RMSEA) and Composite Fit Index (CFI). All will be used to test the model fit (Wallace & Sheetz, 2014). Confirmatory factor analysis is used to attain the standard regression weights.

4.10 Pilot Study

Doing a pilot study before commencing the research is very important. Here a small sample from the population is used to test whether the questions in the questionnaire are easily understood; to find out approximately how long it takes for the respondents to complete it and, in general, to find out if the designed questionnaire is working for the research. It is better to do several pilot studies instead of skipping them and just handing out questionnaires. Once there has been a critical mistake, all questionnaires are worthless and the collection has to be repeated (Krommenhoek & Galpin, 2014).

A pilot study was conducted with 20 people. Several changes had to be made, because certain questions were not clear. Both the pilot survey and the final survey can be found in the Appendix.

4.11 Limitations

"The limitations of the study are those characteristics of design or methodology that impacted or influenced the application or interpretation of the results of your study. They are the constraints on generalizability and utility of findings that are the result of the ways in which you chose to design the study and/or the method used to establish internal and external validity" (Abdou, 2014, p.56).

Limitations in research include lack of adequate information, the lack of research equipment or inaccessibility of a region which has to be studied (Labaree, 2013).

4.12 Ethical Considerations

The survey which will be conducted in the form of questionnaires is confidential and anonymous. It is both anonymous and confidential, because respondents are not asked to enter their names. Further participation is voluntary and involves no risks. Respondents are able to withdraw from the survey at any time and stage. The collected data will be archived and preserved from unauthorized access and the final research report will be available through the Wits library.

4.13 Summary and Conclusions

The population of the study were residents of Soweto and a sample of 400 were chosen. Questionnaires with 5-point Likert scales were the instrument of choice. Furthermore research design, philosophy, data processing, limitations of the study, reliability and validity were disucssed. The following chapter will cover the analysis and interpretation of the data collected.

Chapter 5: Analysis & Interpretation

5.1 Introduction

In this chapter an analysis of the collected data will be provided. Furthermore the hypotheses from the conceptual model will be tested. The first part of this chapter comprises an analysis of descriptive statistics whereby demographic information will be graphically illustrated in the form of pie-charts, bar charts and histograms.

The second part of this chapter discusses inferential statistics in detail, which aims to analyse relationships between the constructs and the dependent variables.

Finally a discussion of the results is provided at the end of the chapter.

5.2 Descriptive Statistics

The following tables and charts are an output from a descriptive analysis conducted with SPSS 23 Statistics software.

Table 5.1 Sample Demographic Statistics

Gender	**Frequency**	**Percentage**
Female	167	41.8 %
Male	233	58.2 %
Total	400	100 %
Age	**Frequency**	**Percentage**
18-23	118	29.5 %
24-29	137	34.3 %
30-35	95	23.8 %
36-41	42	10.5 %
Above 41	8	2.0 %
Total	400	100 %

Educational Level	**Frequency**	**Percentage**
Below Matric	37	9.3 %
Matric	153	38.3 %
Undergraduate	112	28 %
Postgraduate	82	20.5 %
Any Other	16	4.0 %
Total	400	100 %
Occupation	**Frequency**	**Percentage**
Unemployed	94	23.5 %
Student	122	30.5 %
Part-time job	74	18.5 %
Full-time job	110	27.5 %
Total	400	100 %
Monthly Income	**Frequency**	**Percentage**
R0-R4000	255	63.7 %
R4001-R8000	61	15.3 %
R8001-R12000	59	14.8 %
R12001-R16000	18	4.5 %
R16001-R20000	6	1.5 %
Above R20001	1	0.3 %
Total	400	100 %
1st Language	**Frequency**	**Percentage**
English	32	8.0 %
Afrikaans	15	3.8 %
Ndebele	8	2.0 %
Sotho	173	43.3 %
Swazi	9	2.3 %
Tsonga	17	4.3 %
Tswana	45	11.3 %
Venda	7	1.8 %

Xhosa	21	5.3 %
Zulu	70	17.5 %
Other	3	0.8 %
Total	100	100 %
Ethnicity	**Frequency**	**Percentage**
Black	359	89.8 %
White	5	1.3 %
Coloured	24	6.0 %
Indian	4	1.0 %
Asian	6	1.5 %
Other	2	0.5 %
Total	400	100 %

A total of 400 questionnaires were collected and 42 % of respondents were female and 58 % were male. A slightly higher number of male than female respondents were captured in the survey.

According to Table 5.1, most respondents were between the ages of 24-29 years old, constituting 34 % of the sample; closely followed by the age group of 18-23 year olds, which constituted 30 % of the sample. The third most frequent age group was 30-35 years of age with 24 %. The remaining age groups were the 36-41 year olds constituting 11 % of the sample and the above 41 year old ones with 2%. The majority were the 18-29 year olds which made up 64% of the sample. The reason that most respondents were under 30, is that the generations falling under this age category are more engaged in technology and the Internet than the older generations. According to Burkolter and Kluge (2013) age has a negative effect on general technology and Internet behaviour. They argue that younger persons are more likely to engage in technology than older people (Burkolter & Kluge, 2012).

Question number three asked the respondents to indicate their educational level. Only 9 % of the respondents indicated that their educational level is below matric and the majority of 38 %

indicated they have matric. Furthermore 28 % of the respondents have an undergraduate degree and 21 % a postgraduate degree. The following table illustrates the current occupation held by the respondents of the sample.

One of South Africa's biggest issues is unemployment. According to the Quarterly Labour Force Survey (2014), which was conducted by the Government, about 30 % of South Africans are unemployed. In this survey 24 % of respondents indicated that they are unemployed. 31 % of respondents are currently studying at a tertiary institution and 46 % of the sample either have a full-time (28 %) or part-time job (19 %).

The majority of respondents, when asked about their monthly income, stated that their income lies in between R0-R4000, making up 64 % of the sample. 15 % of the sample have an income between R4001-R8000 closely followed by 15 % having an income of R8001-R12000. 6% said they have an income of R12001 or more.

The last two demographic questions were in regard to ethnicity and first language of the respondents. 90 % of the respondents stated they are of black ethnicity, followed by 6 % stating they are coloured. In terms of language the majority of respondents (43 %) stated their first language is Sotho followed by Zulu with 18 %. This statistic is relevant, because most of the content on the Internet is in English.

The previously discussed table summarized the demographic information of the collected data. The following figures and tables summarize some other variables which were asked in the questionnaire.

Table 5.2 Usage of new technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	1.3	1.3	1.3
	Disagree	2	.5	.5	1.8
	Neutral	27	6.8	6.8	8.5
	Agree	74	18.5	18.5	27.0
	Strongly Agree	292	73.0	73.0	100.0
	Total	400	100.0	100.0	

In the first question of Section B, respondents had to rate following statement “I want to use new technologies” from 1=Strongly Disagree to 5=Strongly Agree. 92 % of respondents either agreed or strongly agreed. Only 2 % stated they disagree with the statement. This is very vital, in terms of the model developed for this study. It is the precondition for the other access variables.

The following two bar charts in figure 5.1 & 5.2 illustrate the respondents' daily use of computers or mobile devices.

Figure 5.1 Daily computer usage

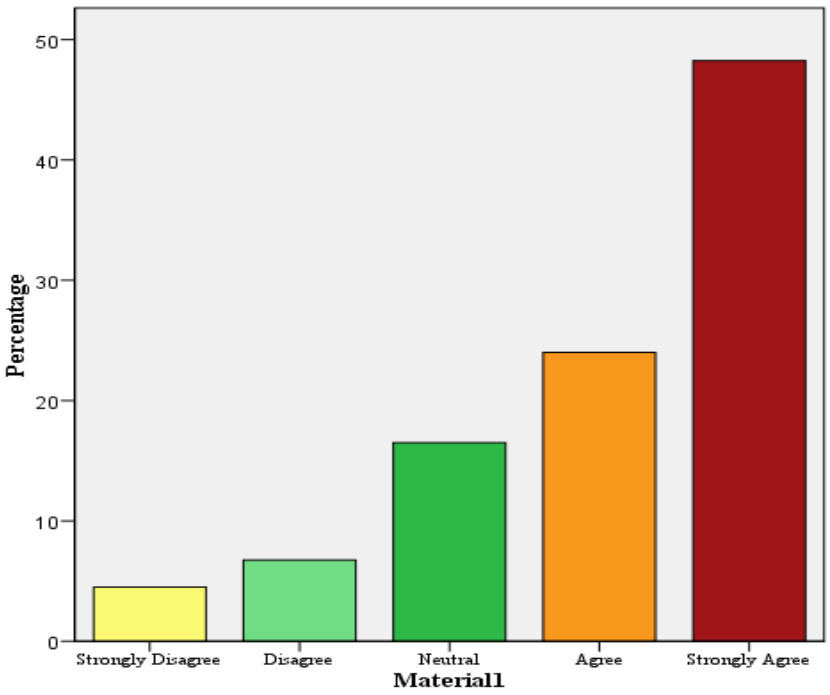
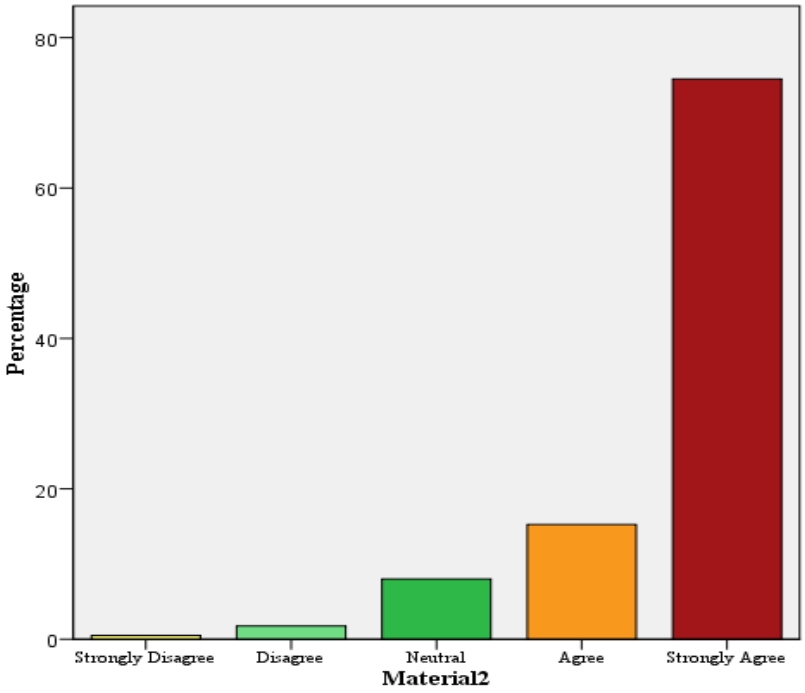


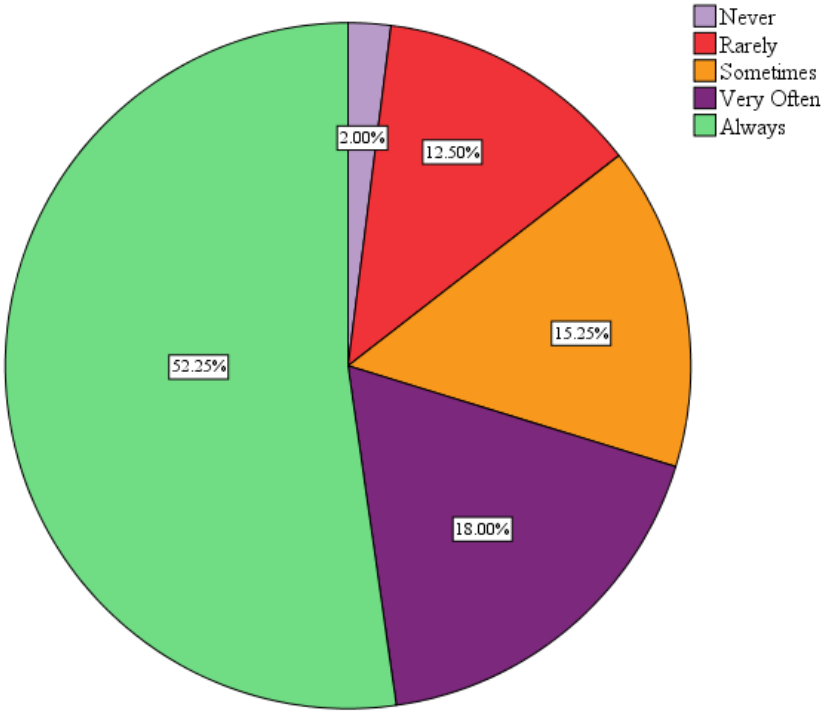
Figure 5.2 Daily mobile usage



When asked to rate the daily use of a computer 74 % of respondents agreed or strongly agreed. On the other hand 14 % disagree or strongly disagree. In terms of daily use of a mobile device 90 % of respondents stated they do use a mobile device daily. Only 2 % disagreed with the statement.

Following figure illustrates the free Wi-Fi usage of respondents.

Figure 5.3 Free Wi-Fi usage



When asked if the respondent uses free Wi-Fi 52 % said they use it always, followed by 18 % stating they use it very often. 15 % indicated they use it sometimes, 13 % said they use it rarely and finally 2 % stated they never use it.

Finally, respondents were asked about their behaviour in terms of a place offering free Wi-Fi. The results are depicted below.

Table 5.3 Purchase Intention

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	4.5	4.5	4.5
	Disagree	29	7.2	7.2	11.8
	Neutral	78	19.5	19.5	31.3
	Agree	86	21.5	21.5	52.8
	Strongly Agree	189	47.3	47.3	100.0
	Total	400	100.0	100.0	

Table 5.4 Likelihood of Return

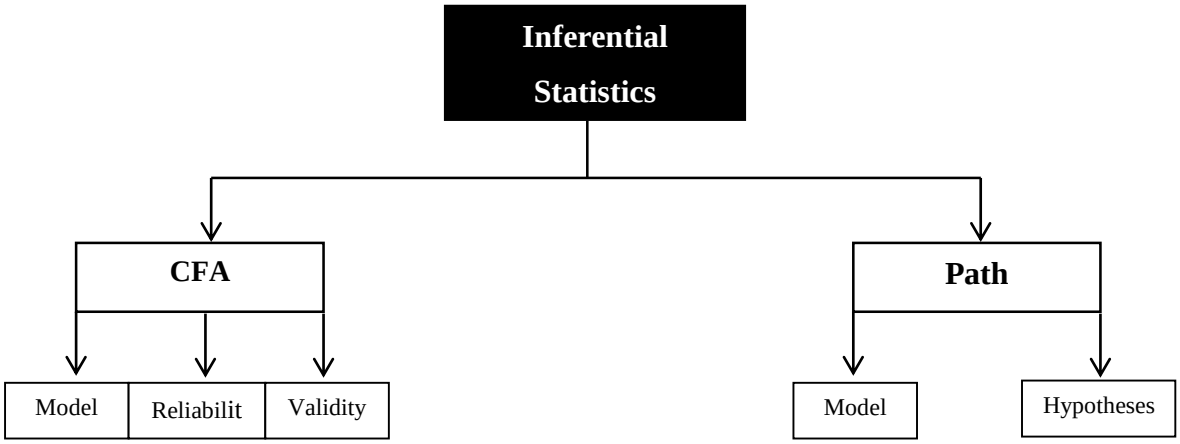
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	1.5	1.5	1.5
	Disagree	12	3.0	3.0	4.5
	Neutral	34	8.5	8.5	13.0
	Agree	80	20.0	20.0	33.0
	Strongly Agree	268	67.0	67.0	100.0
	Total	400	100.0	100.0	

Firstly, they were asked if they intend to purchase something if a shop or location offers free Wi-Fi. 69 % of the sample agreed or strongly agreed that they have a purchase intention if a shop offers Wi-Fi. When asked if they would return to a location whereby free Wi-Fi is offered 87% stated they would return.

5.3 Inferential Statistics

The following paragraphs discuss the inferential part of the statistics.

Figure 5.4 Inferential Statistics Overview



Source: Developed in study

Following Table 5.5 illustrates the Cronbach's Alpha Values in regards to the internal consistency.

Table 5.5 Cronbach Alpha Values

Cronbach's Alpha Value	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$\alpha > 0.5$	Unacceptable

Source: Tavakol and Dennick (2011)

The Cronbach Alpha was developed in 1951 by Lee Cronbach and has been used since then to check for internal consistency of tests or scale. Internal consistency, according to Tavakol and

Dennick (2011, p.53) can be defined as: “Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter relatedness of the items within the test.” Validity and Reliability are the two main concepts which must be ensured when assessing a certain measurement instrument. The Cronbach’s Alpha can be between 0 and 1. The closer it is to 1, the better the variables are correlated and internally consistent (Dennick & Tavakol , 2011).

Before the actual inferential analysis, estimated standardized regression weights for each question from the questionnaire were determined by using Amos, in order to find items which had to be deleted. Items with an estimate below 0.5 were deleted and are summarised in following table.

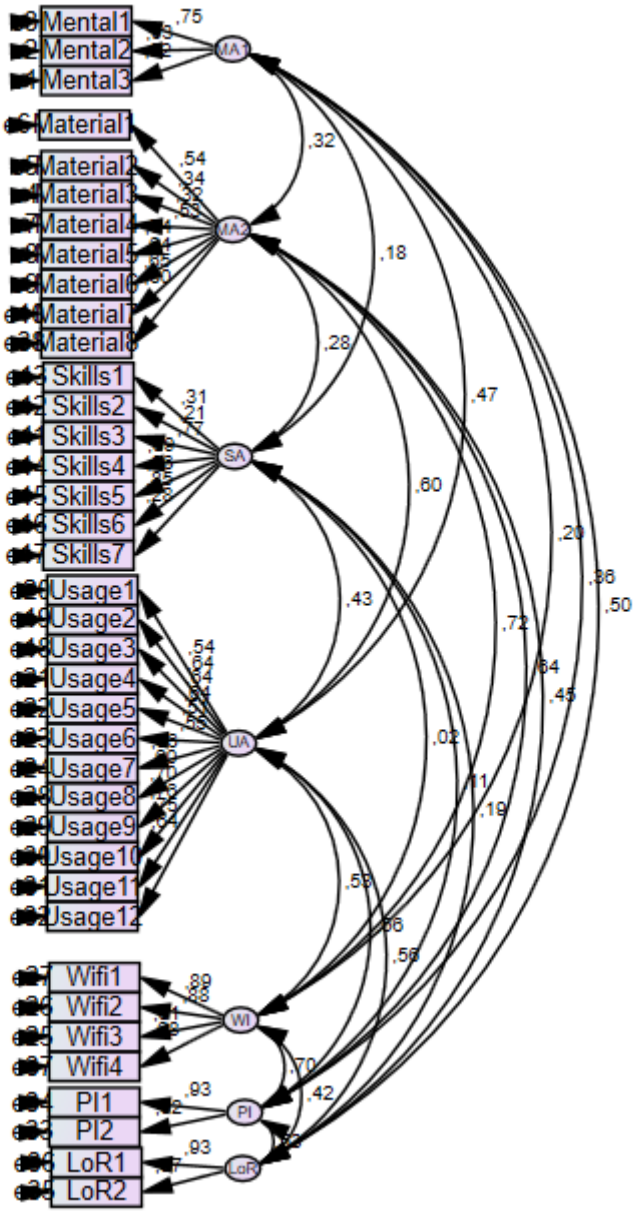
Table 5.6 Standardized Regression Weights

			Estimate
Mat3	<---	Mat	,323
Mat2	<---	Mat	,337
Ski2	<---	Ski	,212
Ski1	<---	Ski	,306
Ski4	<---	Ski	,386
Ski7	<---	Ski	,277

Six questions had a standardized regression weight below 0.5 and were therefore deleted.

IBM AMOS 23 was used for most of the inferential analysis. The figure below shows the model which was drawn up in AMOS, to test which items had to be deleted.

Figure 5.5 AMOS 1st Model



Above Figure 5.5 was the first model drawn up in IBM AMOS. It was used to determine which items had to be deleted.

5.3.1 Confirmatory Factor Analysis

5.3.1.1 Reliability

In order to establish the reliability of the constructs, SPSS 23 was used. The following table displays the reliability of the constructs, before and after deletion of omitted items.

Table 5.7 Cronbach's Alpha Summary

Construct	Items (to be deleted)	Cronbach's Alpha before deletion		Cronbach's Alpha after deletion	
		Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
Mental Access	B8-B10 (No items deleted)	0,863	0,870	0,863	0,870
Material Access	B11, B14-B18 (B12, B13 to be deleted)	0,775	0,771	0,786	0,782
Skills Access	B21, B23, B24 (B19, B20, B22, B25 to be deleted)	0,784	0,787	0,875	0,875
Usage Access	B26-B37 (No items deleted)	0,883	0,885	0,883	0,885
Wi-Fi	C38-C41 (No items deleted)	0,879	0,885	0,879	0,885
Purchase Intention	D42-D43 (No items deleted)	0,924	0,924	0,924	0,924
Likelihood of Return	E44-E45 (No items deleted)	0,897	0,897	0,897	0,897

Table 5.8 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.922	.928	32

Referring to Table 5.5 by Tavakol and Dennick, one can conclude that the items of the questionnaire with a Cronbach's Alpha of 0.922 (0.928 based on standardized items) are "excellent" in terms of internal consistency. A detailed list of all the constructs' Cronbach Alphas can be found in the Appendix.

5.3.1.2 Validity

Table 5.9 Correlations Matrix

Correlations

		Mental	Material	Skills	Usage	Wi-Fi	PI	LoR
Mental	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	400						
Material	Pearson Correlation	.231**	1					
	Sig. (2-tailed)	.000						
	N	400	400					
Skills	Pearson Correlation	.100*	.216**	1				
	Sig. (2-tailed)	.045	.000					
	N	400	400	400				
Usage	Pearson Correlation	.423**	.507**	.330**	1			
	Sig. (2-tailed)	.000	.000	.000				
	N	400	400	400	400			
Wi-Fi	Pearson Correlation	.192**	.619**	.004	.500**	1		
	Sig. (2-tailed)	.000	.000	.938	.000			
	N	400	400	400	400	400		
PI	Pearson Correlation	.329**	.527**	.047	.518**	.655**	1	
	Sig. (2-tailed)	.000	.000	.344	.000	.000		
	N	400	400	400	400	400	400	
LoR	Pearson Correlation	.454**	.327**	.116*	.511**	.381**	.491**	1
	Sig. (2-tailed)	.000	.000	.020	.000	.000	.000	
	N	400	400	400	400	400	400	400

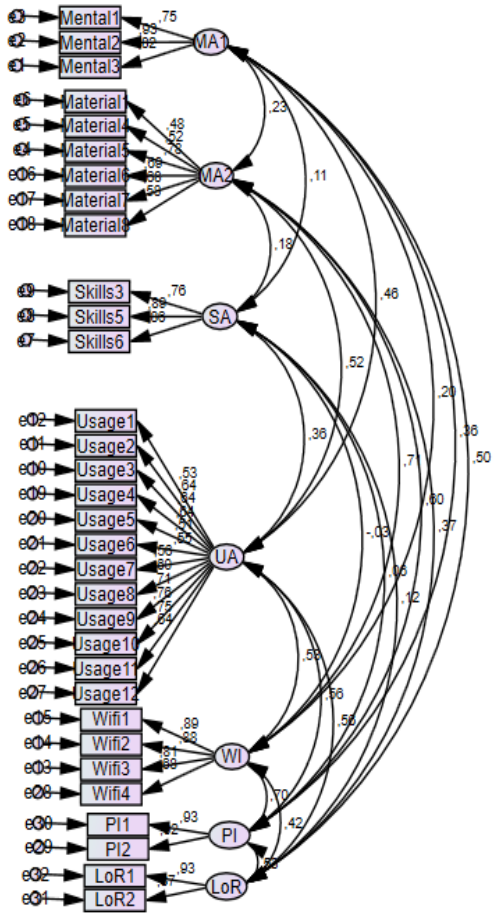
**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

As seen in the above table, the following conclusions can be made:

- Correlation is significant at 0.01 level for:
    - Mental →Material, Usage, Wi-Fi, PI and LoR
    - Material →Mental, Usage, Wi-Fi, PI and LoR
    - Skills → Material and Usage
    - Usage → Mental, Material, Wi-Fi, PI and LoR
    - Wi-Fi → Mental, Material, Usage, PI and LoR
    - PI → Mental, Material, Usage, Wi-Fi and LoR
    - LoR → Mental, Material, Usage, Wi-Fi, PI and LoR

- Correlation is significant at 0.05 level for:
    - Mental → Skills
    - Skills → Mental and LoR
    - LoR → Skills

Figure 5.6 AMOS 2nd Model

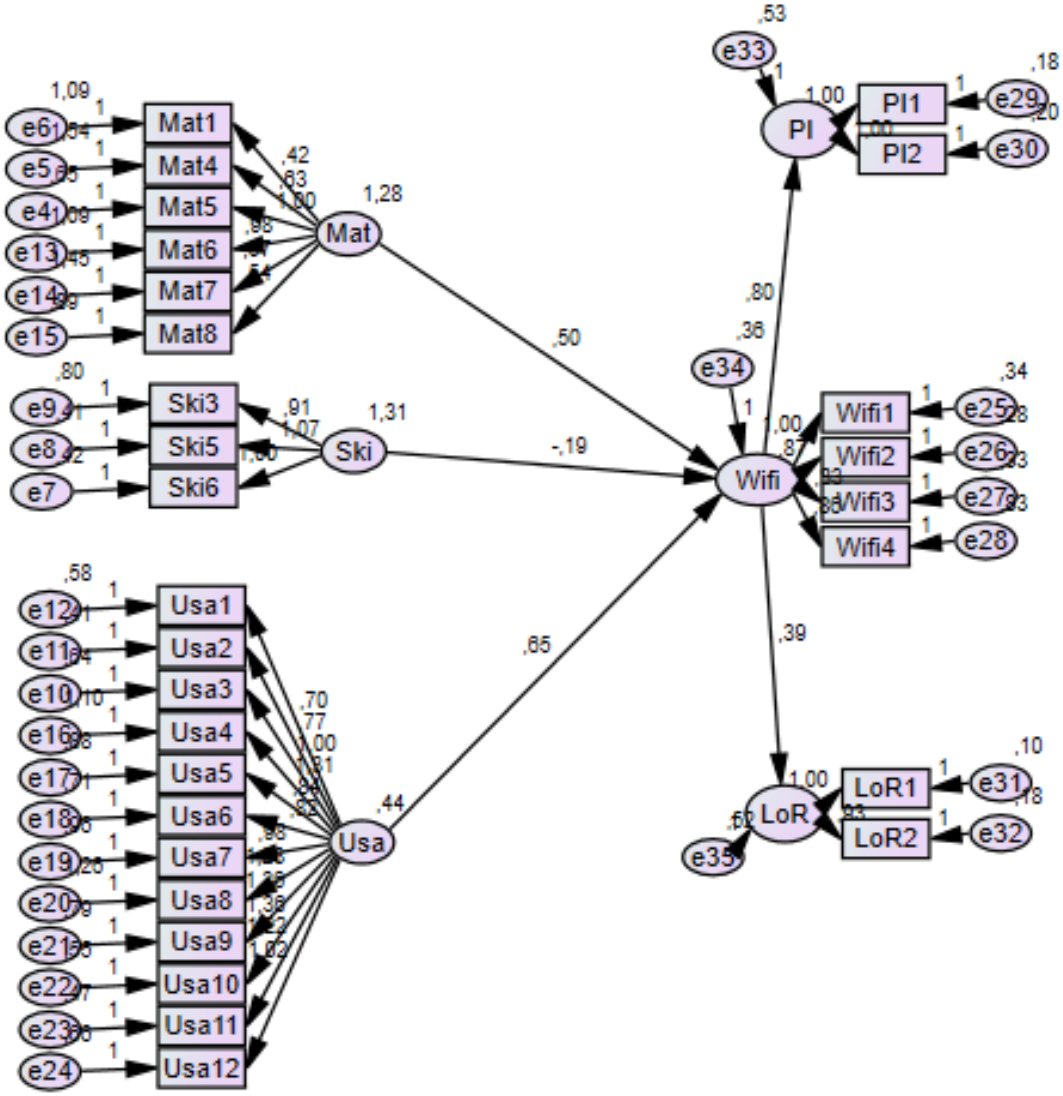


Above Figure 5.6 illustrates the second model that was drawn up in IBM AMOS. The items with a standardized regression weight below 0,5 were deleted.

5.3.2 Path Modelling/Structural Equation Modelling

Structural Equation Modelling (SEM) is a statistical technique, which uses several techniques, to test causal relationships of a conceptual model. It can be used for both confirmatory and exploratory research. In regard to confirmatory research the whole process of SEM starts with the development of hypothesis, which at a later stage will be tested using SEM. One of the great advantages of using SEM is, that variables which are not measured directly (latent variables) can be estimated. For the purpose of this study AMOS 23 Graphics was used to test the initially set up hypothesis (Ullman & Bentler, 2003).

Figure 5.7 AMOS 3rd Model



Notes: the variable mental access was removed in order to achieve a good model fit!

Table 5.10 Model Fit

Model	**CMIN/DF**	**GFI**	**NFI**	**IFI**	**TLI**	**CFI**	**RMSEA**
Default Model	2,487	0,901	0,901	0,938	0,909	0,937	0,061
Saturated model		1,000	1,000	1,000		1,000	
Independence model	17,424	0,240	,000	,000	,000	,000	0,203

Model Fit

Models are regarded as acceptable if:

- The Normed Fit Index (NFI) > 0.9 (Byrne, 1994)
- The Goodness of Fit Index (GFI) > 0.9 (Byrne, 1994)
- Incremental Fit Index (IFI) > 0.9 (Hu & Bentler, 1999)
- Tucker Lewis Index (TLI) > 0.9 (Hu & Bentler, 1999)
- The Comparative Fit Index (CFI) > 0.9 (Byrne, 1994)
- Root Mean Square Residual (RMSEA) < 0.08 (Browne & Cudeck, 1993)
- Relative Chi Square (CMIN) < 3 (Richard, 2014)

The results from AMOS show that the model fit is good. The CMIN/DF value is 2,487 which is below the acceptable value of 3. The GFI, NFI, IFI, TLI and CFI values are all above the acceptable value of 0,9 with values of GFI (0,901), NFI (0,901), IFI (0,938), TLI (0,909) and CFI (0,937). These values indicate the model fit is good. Lastly the Root Mean Square Residual (RMSEA) is acceptable if it is below the value of 0,08 and for this model this was achieved with a value of 0,061. Therefore the model fit can be regarded as good. In order to achieve that model fit, one of the variables in the model, namely mental access, had to be removed completely.

5.4 Hypotheses Testing

Following Tables 5.11, 5.12 & 5.13 conclude the results, which were used for the hypotheses testing.

The highlighted p-values in Table 5.11 indicate the significant relationships.

Table 5.11 Regression Weights

			Estimate	S.E.	C.R.	P	Label
Wi-Fi	<---	Men	-,019	,063	-,299	,765	
Wi-Fi	<---	Mat	,758	,098	7,760	***	
Wi-Fi	<---	Ski	-,188	,035	-5,392	***	
Wi-Fi	<---	Usa	,556	,085	6,538	***	
PI	<---	Wi-Fi	,932	,073	12,739	***	
LoR	<---	Wi-Fi	,423	,054	7,908	***	

Following Table 5.12 summarises which alternate hypotheses were supported or rejected.

Table 5.12 Hypotheses

Proposed relationship hypothesis	**Hypothesis**	**Path Coefficient**	**P Value**	**Supported/ Rejected**
Mental access (Men) → intention to use Wi-Fi (Wi-Fi)	H_1		0.765	Not supported and non-significant
Material access (Mat) → intention to use Wi-Fi (Wi-Fi)	H_2	0.50	0.01	Supported and significant
Skills access (Ski) → intention to use Wi-Fi (Wi-Fi)	H_3	-0.19	0.01	Supported and significant
Usage access (Usa) → intention to use Wi-Fi (Wi-Fi)	H_4	0.65	0.01	Supported and significant
Intention of using Wi-Fi (Wi-Fi) → purchase intentions (PI)	H_5	0.80	0.01	Supported and significant

Intention of using Wi-Fi (Wi-Fi) → likelihood of return (LoR)	H_6	0.39	0.01	Supported and significant

Table 5.13 illustrates the standardized regression weights, which were used to determine whether there is a positive or negative relationship.

Table 5.13 Standardized Regression Weights

			Estimate
Wi-Fi	<---	Men	,003
Wi-Fi	<---	Mat	,591
Wi-Fi	<---	Ski	-,229
Wi-Fi	<---	Usa	,451
LoR	<---	Wi-Fi	,461
PI	<---	Wi-Fi	,728

Hypothesis (H1a):

H_0: There is no relationship between mental access and the intention to use Wi-Fi

H_A: There is a relationship between mental access and the intention to use Wi-Fi

The p-value in Table 5.11 is 0.765 therefore not significant. The null hypothesis is not rejected. There is no relationship between mental access and the intention to use Wi-Fi.

Hypothesis (H1b):

H_0: There is no relationship between mental access and material access

H_A: There is a relationship between mental access and material access

To test this, the Pearson Correlation Coefficient was used as displayed in Table 5.9. For Mental Access and Material Access a value of 0.231 was the result and the correlation was significant at the 0.01 level. Therefore the null hypothesis is rejected. Mental access has a positive influence on material access.

Hypothesis (H2a):

H_0: There is no relationship between material access and the intention to use Wi-Fi

H_A: There is a relationship between material access and the intention to use Wi-Fi

The p-value of material access→intention to use Wi-Fi is significant. Therefore we reject the null hypothesis and conclude that there is a relationship between material access and the intention to use Wi-Fi. The standardized regression weight is 0,591 indicating there is a positive relationship.

Hypothesis (H2b):

H_0: There is no relationship between material access and skills access

H_A: There is a relationship between material access and skills access

To test this, the Pearson Correlation Coefficient was used as displayed in table 5.9. For material access and skills access a value of 0.216 was the result and the correlation was significant at the 0.01 level. Therefore the null hypothesis is rejected. Material access has a positive influence on skills access.

Hypothesis (H3a):

H_0: There is no relationship between skills access and intention to use Wi-Fi

H_A: There is a relationship between skills access and intention to use Wi-Fi

The p-value of skills access→intention to use Wi-Fi is significant. Therefore we reject the null hypothesis and conclude that there is a relationship between skills access and the intention to use Wi-Fi. The standardized regression weight is -0,229 indicating there is a negative relationship.

Hypothesis (H3b)*:*

H_0: There is no relationship between skills access and usage access

H_A: There is a relationship between skills access and usage access

To test this, the Pearson Correlation Coefficient was used as displayed in Table 5.9. For skills access and usage access a value of 0.330 was the result and the correlation was significant at the 0.01 level. Therefore the null hypothesis is rejected. Skills access has a positive influence on usage access.

***Hypothesis (H4)**:*

H_0: There is no relationship between usage access and intention to use Wi-Fi

H_A: There is a relationship between usage access and intention to use Wi-Fi

The p-value of usage access→intention to use Wi-Fi is significant. Therefore we reject the null hypothesis and conclude that there is a relationship between usage access and the intention to use Wi-Fi. The standardized regression weight is 0,451 indicating there is a positive relationship.

Hypothesis (H5):

H_0: There is no relationship between intention of using Wi-Fi and purchase intentions

H_A: There is a relationship between intention of using Wi-Fi and purchase intentions

The p-value of intention to use Wi-Fi→purchase intentions is significant. Therefore we reject the null hypothesis and conclude that there is a relationship between usage access and the intention to use Wi-Fi. The standardized regression weight is 0,728 indicating there is a positive relationship.

Hypothesis (H6):

H_0: There is no relationship between intention of using Wi-Fi and the likelihood of return

H_A: There is a relationship between intention of using Wi-Fi and the likelihood of return

The p-value of intention to use Wi-Fi→likelihood of return is significant. Therefore we reject the null hypothesis and conclude that there is a relationship between likelihood of return and the intention to use Wi-Fi. The standardized regression weight is 0,461 indicating there is a positive relationship.

5.5 Discussion of Results

The descriptive statistics suggests that of the 400 respondents 91.5 % want to use new technologies. Only 1.8 % disagreed or strongly disagreed. Hereby the variable mental access was measured and the result was quite positive. Mental access is the first step of the access concept and is a prerequisite for the other access variables (Srinuan & Bohlin, 2011). Furthermore 74.3 % of respondents indicated that they use a computer on a daily basis and 89.8 % indicated a daily use of a mobile device. These high numbers are a result of the steady decline

of Internet costs and technology costs. Mobile users have increased dramatically over the last years. In 2012 there were around 21.1 million Internet users in South Africa and in 2016 29.8 million Internet users are expected in South Africa (PwC South Africa Entertainment & Media Industry Group, 2012).

Three more descriptive statistics which are also very interesting will be highlighted now. Firstly, in regard to the frequency of Wi-Fi usage, 52.5 % of respondents indicated they always use free Wi-Fi, only 12.5 % said they rarely use it and 2.0 % stated they never use it. More than 50 % saying they frequently use Wi-Fi can be explained by the situation in Soweto in terms of Internet infrastructure. The infrastructure is relatively weak and the alternative of accessing the Internet is via mobile data. Mobile data, being relatively expensive and a high proportion of the Soweto population having a low income, results in people looking for a more affordable way to access the Internet.

Secondly, respondents were asked whether they intend to purchase something if free Wi-Fi is offered at a location. Almost 69 % agreed or strongly agreed when being asked. Therefore shops owners or owners of commercial places can benefit from offering Wi-Fi to their customers, not only by them buying something, but also through the collection of valuable information about their customers.

Finally, respondents were asked whether they would return to a location that offers free Wi-Fi. 68.8 % of the sample either agreed or strongly agreed to that question, meaning that more than 2/3 are likely to return. That has very positive implications for a business owner.

In the following paragraphs the results of the inferential statistics will be discussed in detail.
The first part of inferential statistics was the confirmatory factor analysis, which analysed the validity and reliability of the model. With the aid of standardized regression weights it was determined which items of the questionnaire had to be deleted in order to achieve a better internal consistency and good Cronbach's alpha value. Six items were deleted in that process. After the deletion of those items a Cronbach's alpha value of 0.922 was achieved, which is regarded as "excellent" in terms of internal consistency. Regarding validity, a Pearson

Correlation Matrix was used to test whether the questionnaire is testing what it is supposed to measure (Krommenhoek & Galpin, 2014). The result was that several correlations were significant at a 0.01 and 0.05 level.

The first input variable of the model was mental access. Mental access refers to whether a person wants to use new technologies or devices. In the first chapter the hypothesis was stated that mental access has a positive influence on the intention to use Wi-Fi. During the inferential analysis the result was that the relationship between those two variables was not significant and had a p-value of 0.765. While analyzing the correlations via a correlations matrix, one can come to the conclusion that the variable mental access has a correlation with every other variable in the model.

Material access was the second input variable in the model. Two hypotheses were made regarding this variable. Firstly whether there is a relationship between mental access and material access. The result, according to the Pearson Correlation Coefficient with a value of 0.231, a significant relationship exists. This is supported by previous literature, which discussed the digital divide in general and access barriers to technology. Secondly it was investigated if material access has a positive influence on the intention to use Wi-Fi. Through the analysis of the regression weights which were calculated in IBM AMOS 23, one can state that there is a positive relationship between those two variables. Therefore material access has a positive influence on the intention to use Wi-Fi. This can be supported by the logical consequence of someone having a Wi-Fi ready device, like a smartphone or tablet and him or her wanting to connect to the Internet (Harris, 2014).

The study investigated the interrelationship between the four access variables. As previously mentioned, mental access and material access were found to have a significant relationship. Furthermore two more hypotheses were constructed. Firstly, whether there is a relationship between material access and skills access and, secondly, between skills access and usage access. In both cases the Pearson Correlation Coefficient gave the answers to those hypotheses and both relationships were found to be significant.

Hypothesis three questioned if skills access has an influence on the intention to use Wi-Fi. The null hypothesis "there is no relationship between skills access and the intention to use Wi-Fi" was successfully rejected and the p-value indicated that skills access has a positive influence on the intention to use Wi-Fi. A person lacking certain technological skills, will have difficulties connecting to a Wi-Fi network. On the other hand, a person who is relatively skilled will not have difficulties entering the network. Hypothesis four could also be confirmed. It was found that usage access also has a positive influence on the intention to use Wi-Fi.

Finally, through path modelling the last two hypotheses were to be confirmed. Hypothesis five was confirmed, meaning that the intention to use free Wi-Fi has a positive influence on the intention to purchase something at the location where free Wi-Fi is offered. This hypothesis is furthermore confirmed by the fact that 69 % of respondents agreed or strongly agreed when being asked this question. Previous literature also supports that standpoint, that free Wi-Fi often induces people to make a purchase at that location (Gupta, 2004). The last hypothesis to be tested was whether the intention of using free Wi-Fi has a positive influence on the likelihood of return. Also here a significant relationship was found, concluding that offering free Wi-Fi at a location increases the likelihood of customers or visitors to return. This hypothesis is supported by the descriptive statistics which were analysed, stating that 87 % of respondents agreed or strongly agreed to return to a location offering free Wi-Fi. Previous literature has also found that relationship to be significant (Cobanoglu, et al., 2012).

5.6 Conclusion

It was found that material access, skills access and usage access have a positive influence on the intention to use Wi-Fi. Finally the intention to use Wi-Fi has a positive influence on both purchase intention and the likelihood of return. Furthermore it was found that mental access and material access, material access and skills access, skills access and usage access have significant correlations.

Chapter 6: Summary and Conclusion

6.1 Introduction

This chapter explores the findings of the research, implications, limitations and possible future research. It provides a complete conclusion of the entire study. The purpose of this research was to investigate the influence of mental access, material access, skills access and usage access on the intention to use free Wi-Fi and, furthermore, the influence of free Wi-Fi on the likelihood to return and the intention to purchase something. In this study nine hypotheses were formulated. Data was collected from people staying in Soweto in South Africa. The (SEM) Structural Equation Modelling was used to assess the proposed conceptual model by using IBM AMOS 23. Furthermore the Pearson Correlation Coefficient was used to determine three of the nine hypotheses. The empirical results of eight hypotheses posited were supported and significant. Only one hypothesis could not be supported. The study showed the importance of considering the digital divide in terms of marketing and also showed how important it is for shop owners or commercial business owners in townships to utilize the tool of free Wi-Fi in improving their business and adding value to their customers.

6.2 Objectives

6.2.1 Theoretical Objectives

The theoretical objectives of this research were:

- To view past literature on The Digital Divide
- To view past literature on free Wi-Fi
- To view past literature on Access to the Internet
- To view past literature on Purchase Intentions
- To view past literature on the Likelihood of Return

These objectives were reached. In Chapter One a brief literature review was conducted to give an overview of the different areas. Chapter Two provided an in-depth literature review on the digital divide, Wi-Fi, access to the Internet, purchase intentions and the likelihood to return.

Furthermore Chapter Three wherein the conceptual framework was discussed entails more in-depth literature discussion on the variables in the conceptual model.

6.2.2 Empirical Objectives

The empirical objectives of the study are:

- To investigate the relationship between mental access and intention to use Wi-Fi
  - A correlation between those two variables was found, but there was no direct influence of mental access on the intention to use Wi-Fi.
- To investigate the relationship between material access and intentions to use Wi-Fi
  - A correlation was found between those two variables and it was also found that material access has a positive influence on the intention to use Wi-Fi.
- To investigate the relationship between skills access and intentions to use Wi-Fi
  - No correlation was found between those two variables, but through SEM it was found that skills access has a negative influence on the intention to use Wi-Fi.
- To investigate the relationship between usage access and intentions to use Wi-Fi
  - A correlation was found and it was also found that usage access has a positive influence on the intention to use Wi-Fi
- To investigate the influence of intentions to use Wi-Fi on purchase intentions
  - There is a correlation between those two variables and the intention to use Wi-Fi has a positive influence on purchase intentions.
- To investigate the influence of intentions to use Wi-Fi on the likelihood of return
  - Finally, both variables are also correlating and it was found that the intention to use Wi-Fi has a positive influence on purchase intentions of customers.

6.3 Hypotheses

The hypotheses stated in Chapter One were tested through inferential statistics including correlation and regressions. They were tested using SPSS and AMOS software. The following results were attained according to regression and correlation:

The hypotheses are summarised in following table.

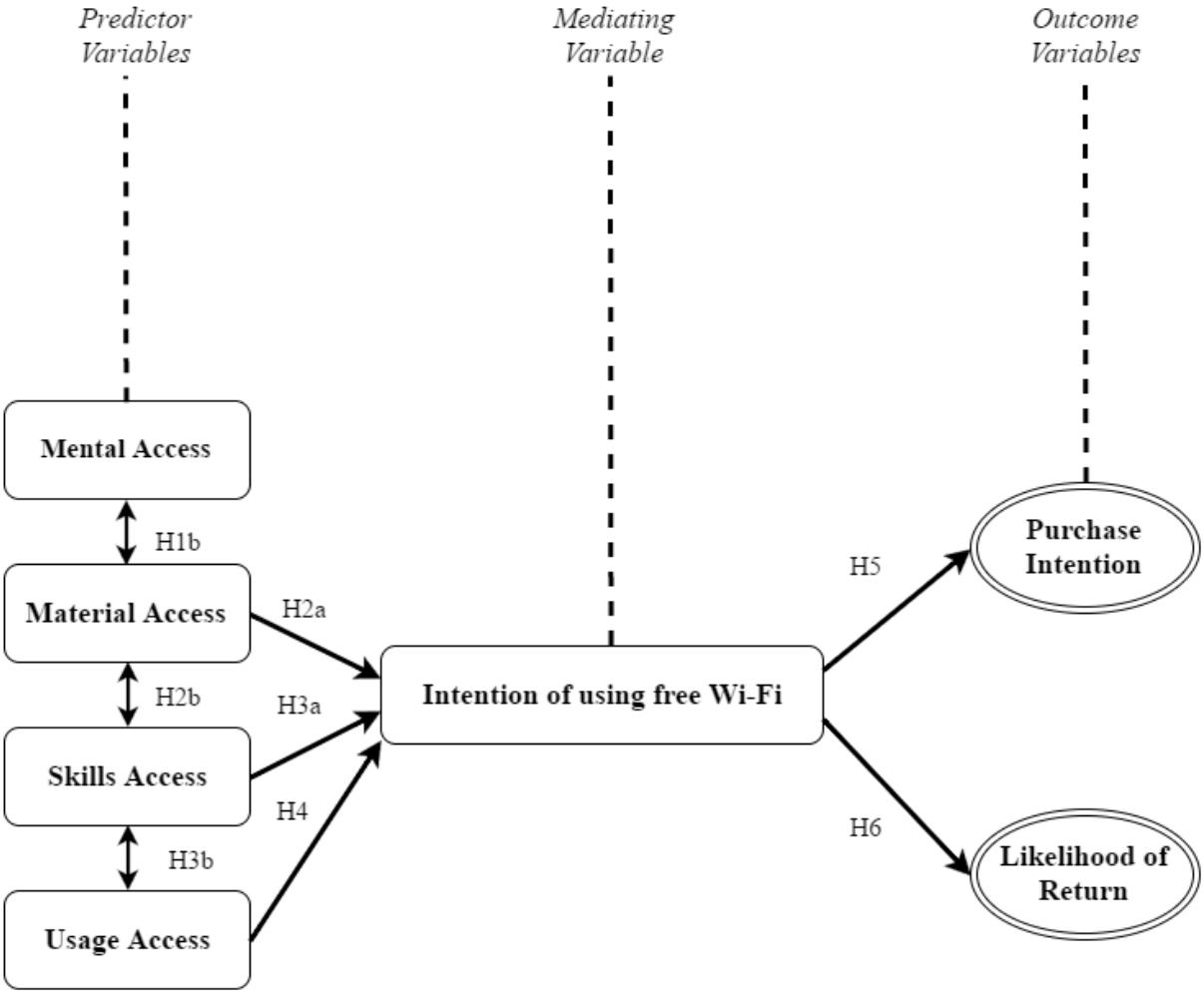
Table 6.1 Hypotheses Testing

Proposed relationship hypothesis	Hypothesis	Path Coefficient	P Value	Supported/ Rejected
Mental access (Men) → intention to use Wi-Fi (Wi-Fi)	H_1		0.765	Not supported and non-significant
Material access (Mat) → intention to use Wi-Fi (Wi-Fi)	H_2	0.50	0.01	Supported and significant
Skills access (Ski) → intention to use Wi-Fi (Wi-Fi)	H_3	-0.19	0.01	Supported and significant
Usage access (Usa) → intention to use Wi-Fi (Wi-Fi)	H_4	0.65	0.01	Supported and significant
Intention of using Wi-Fi (Wi-Fi) → purchase intentions (PI)	H_5	0.80	0.01	Supported and significant
Intention of using Wi-Fi (Wi-Fi) → likelihood of return (LoR)	H_6	0.39	0.01	Supported and significant

6.4 Modified Theoretical Model

The final model has only a few changes to the one which was drawn up initially at the beginning of the study. The relationship between mental access and the intention to use Wi-Fi has been removed, because no significant relationship was found. The other changes are the double sided arrows between the different access variables indicating their correlations.

Figure 6.1 Final Model



6.5 Implications of free Wi-Fi

Free Wi-Fi can have several positive implications on different parties. Firstly, business owners can benefit by offering Wi-Fi to their customers. Secondly, consumers can benefit from free Wi-Fi, especially in terms of costs and if they normally cannot afford it. And lastly, marketers can take advantage of free Wi-Fi, by data collection and customized advertising. Following

paragraphs highlight the most important implications for the three different parties. The implications are a result of the findings of the study.

For Business Owners

- Offering free Wi-Fi as a complementary service can add value to a business. Customers often expect to have Wi-Fi at certain places. Free Wi-Fi can even lead to a competitive advantage.
- The intention of customers purchasing something is positively influenced by offering free Wi-Fi to them. This research has proven that this is the case. For example, a coffee shop is offering free Wi-Fi and some of the customers come there to work on their laptops. They use the free Wi-Fi and decide to purchase a coffee or something else.
- The likelihood of return of customers is also positively influenced by offering free Wi-Fi to them. This is the case for places or businesses where customers have a long waiting time. If the business offers free Wi-Fi to its customers, the waiting time is more pleasant for the customers and therefore their likelihood of return increases.
- Business owners can collect valuable information about their customers. This can be done by creating a login before the customers can use the free Wi-Fi. Customers can only access the free Wi-Fi if they submit their social media credentials.
- Business owners in relatively low income areas can help bridge the digital divide by offering free Wi-Fi therefore doing something good for the community.
- Relatively low costs to business owners to implement a Wi-Fi network. The implementation and maintenance is outsourced to Internet Service Providers, therefore the business can focus on its main activities.
- Creating a competitive advantage through offering free Wi-Fi.
- Customers might be interacting on social media and mentioning or liking the location, creating awareness for the business.

For Consumers

- Connecting to the Internet for free. If someone cannot afford a data or an Internet connection he or she will still be able to connect and save costs.

- Being able to gather information or just browse the Internet while waiting. While waiting in the queue consumers can utilize the free Wi-Fi and have a more pleasant experience while waiting.
- Being online and being able to connect with friends.
- Being able to download apps or software without spending money on data.
- Educating themselves through the Internet. This is one of the crucial factors that contributes in overcoming the digital divide. People who were previously not connected to the Internet find free Wi-Fi they can connect to, they are able to educate themselves.
- Connecting with other people and socializing through email, Facebook, Twitter, Whatsapp, etc.

For Marketers

- Utilizing the collected information of the customers connected to the Wi-Fi. When customers enter their social media credentials, marketers collect valuable data and gain insights into the customers' preferences, interests and demographics. They can use this data to create customized marketing efforts.
- Pushing special promotions to people's devices. When a customer is connected to the free Wi-Fi, marketers can push general or customized marketing messages to a mobile device.
- Mobile advertising
- Target marketing
- Collecting data with relatively low effort and cost.

6.6 Recommendations

Many commercial places in South Africa offer free Wi-Fi. Whether it is a coffee shop, a restaurant, a shopping mall, a fashion store, a grocery store or a pharmacy, free Wi-Fi is found all over the country. In townships though, there is still a lack of free Wi-Fi hotspots, but a positive development can be seen. Free Wi-Fi not only adds value to the customers using it, but also to the business which offers it. From a socio-economic viewpoint, it lowers the Internet access barriers many South Africans still face and therefore contributes to minimizing the gap, which is known as the digital divide. The following recommendations are made to marketers:

- Consider the digital divide when marketing to different segments in the market, because one cannot use certain marketing channels for certain segments of the digital divide. For example, when trying reach a market in a location whereby people only have limited data or no Internet, one cannot use a YouTube advertisement to reach that market.
- Offer free Wi-Fi and collect valuable user information. By offering free Wi-Fi to the people, marketers do not make a loss. For example, users of free Wi-Fi have to sign up with their details or with their social media credentials and, thereby, valuable information about the customer is collected. As a result, marketers can send customized and personalized marketing messages to the people who signed up.
- Understanding the different channels in order to reach different segments of the market in terms of the digital divide. For example, if a business wants to reach a higher social class through mobile marketing, this business can use high definition videos as a marketing tool to reach that market. On the other hand, for the lower part of the digital divide, it is better to send a marketing message, which does not use too much data.
- Contribute to lowering the digital divide by educating people or offering free Wi-Fi. A lot of people cannot afford data for the Internet, or broadband is not available in a certain area. By offering free Wi-Fi, for example in townships, these problems will be solved and everyone is going to be able to connect to the Internet.
- Finally, recommendations for policy makers, politicians and big Internet Service Providers, is to offer free Wi-Fi in places where the penetration is relatively low. These are usually places like townships or rural areas. Millions of people in South Africa are living in townships and ignoring these markets is losing an opportunity. Policies should be in place stating that free Internet should be available for everyone. Internet Service Providers should invest in townships or rural areas by offering a limited amount of data to everyone for free and charge if people want to use more data.

Free Wi-Fi is an ideal offering for following businesses:

- Restaurants and Bars;
- Cafés and Bakeries;

- Medical and Dental Offices;
- Retailers and Specialty Stores;
- Automotive Sales and Repair;
- Health Clubs and Gyms;
- Salons and Spas;
- Barber Shops and Laundromats;
- Amusement and Entertainment; and
- Financial and Legal Firms

6.7 Future Research

Research in the future could investigate different input variables which influence the intention to use Wi-Fi. Furthermore, future research could also focus on different types of output variables which are a result of using free Wi-Fi.

A recommendation for future research is to utilize the concept of the digital divide when it comes to marketing. Marketers need to be fully aware what the digital divide means and how it affects the delivery of marketing messages or the chosen medium for marketing messages. Future research, therefore, could focus on what kind of marketing activities work best or do not work for different segments of the digital divide.

Finally, future research could also investigate more on the free Wi-Fi concept and its marketing implications. One could try to find out which factors are the most important to people when it comes to free Wi-Fi and one could also investigate the effectiveness of free Wi-Fi offered in terms of the data and results they deliver to shops or commercial places in general.

6.8 Conclusions

The Internet and its underlying activities are slowly, but surely, becoming a part of everyone's daily life in South Africa, at least in the urban areas. It poses many opportunities to businesses and also consumers. South Africa still faces many problems, like unemployment, crime and corruption. The key to a better future is education, which can be enabled and facilitated through

Internet access. Townships or rural places are still behind in terms of technology and it is vital that those groups of people are educated. People need to know what is going on in the nation, be curious and creative and speak their mind. Offering free Wi-Fi is one element which can contribute to a more educated and sophisticated South Africa. Discrepancies in the standard of living will take a long time to be minimized. The digital divide though, can be overcome, or rather, the gap of the digital divide can be reduced. Lastly the concept of free Wi-Fi should be considered by businesses which sell directly to the end-users. The benefits and social implications are great. Finally, marketers need to be aware of the concept of the digital divide, since different segments of the market can only be reached through certain types of channels.

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I. APPENDIX

I.I Questionnaires

I.I.I Pilot Study

Date: 1st September 2015
Good Day
My name is Julian Kovar and I am a Masters student of the Marketing Division in the School of Economic and Business Sciences at the University of the Witwatersrand, Johannesburg. I am conducting research on the issue of the digital divide and its implications for marketing.
As residents of Soweto, you are **invited** to take part in this survey. The purpose of this investigation is to find out the impact of free Wi-Fi in shops and public places and their impact on purchase intentions and the likelihood to return to a shop. Furthermore I want to find out the extent of the digital divide.
Your response is important and there are no right or wrong answers. This survey is both confidential and anonymous. Anonymity and confidentiality are guaranteed by not needing to enter your name on the questionnaire. Your participation is completely voluntary and involves no risk, penalty, or loss of benefits whether or not you participate. You may withdraw from the survey at any stage.
The first part of the survey is about demographic information. The second part of the survey investigates the access issues. The third part investigates the intention to use free W-Fi. The last part explores purchase intentions and the likelihood to return to a shop. The entire survey should take 10 minutes to complete.
Thank you for considering participating. Should you have any questions, or should you wish to obtain a copy of the results of the survey, please contact me on (079) 6475476 or at julian.kovar@online.de.
My supervisor's name, contact number and email are: Norman Chiliya, (011) 717 8063, Norman.Chiliya@wits.ac.za

Kind regards
Julian Kovar

Masters Student: Division of Marketing
School of Economic and Business Sciences
University of the Witwatersrand, Johannesburg

Section A: Demographic Information

Please tick appropriate box with a tick (✓).

1. **Gender:** Female ☐ Male ☐

2. **Age:**
   ☐18-23
   ☐24-29
   ☐30-35
   ☐36-41
   ☐Above 41

3. **Educational Level:**
   ☐Below Matric
   ☐Matric
   ☐Undergraduate
   ☐Postgraduate
   ☐Any Other (please specify)_____

4. **Occupation**
   ☐Unemployed
   ☐Student
   ☐Part-time job
   ☐Full-time job

5. **Monthly Income**
   ☐R0-R4000
   ☐R4001-R8000
   ☐R8001-R12000
   ☐R12001-R16000
   ☐R16000-R20000
   ☐R20001 and above

6. **Language**

☐ English ☐ Afrikaans ☐ Ndebele ☐ Sotho ☐Swazi ☐Tsonga

☐Tswana ☐Venda ☐Xhosa ☐Zulu ☐Other (please specify)

Section B: Access Information

Please indicate the number that best indicates the degree to which you agree or disagree with following statements:

Strongly Disagree Disagree Neutral Agree Strongly Agree

1 2 3 4 5

Mental Access

	1	**2**	**3**	**4**	**5**
7. I want to use new technologies	☐	☐	☐	☐	☐
8. I want to use the Internet	☐	☐	☐	☐	☐

Material Access

9. I own a Computer	☐	☐	☐	☐	☐
10. I own a Mobile Device	☐	☐	☐	☐	☐
11. I have Internet access via a modem (data)	☐	☐	☐	☐	☐
12. I have Internet access via broadband/DSL	☐	☐	☐	☐	☐
13. I have Internet access via Wi-Fi	☐	☐	☐	☐	☐
14. I access the Internet at Home	☐	☐	☐	☐	☐
15. I access the Internet at the Office	☐	☐	☐	☐	☐
16. I access the Internet at a public place	☐	☐	☐	☐	☐

Skills Access

I possess following skills:

17. I know how to use Microsoft Office	☐	☐	☐	☐	☐
18. I know how to create a Blog/Webpage	☐	☐	☐	☐	☐
19. I know how to use various types of technology	☐	☐	☐	☐	☐
20. I know how to program	☐	☐	☐	☐	☐
21. I know how to use social media	☐	☐	☐	☐	☐
22. I know how to look for and find information	☐	☐	☐	☐	☐

Usage Access

23. I use the Internet for reading the news	☐	☐	☐	☐	☐
24. I use the Internet for educating myself	☐	☐	☐	☐	☐
25. I use the Internet to look and apply for jobs	☐	☐	☐	☐	☐
26. I use the Internet to make money	☐	☐	☐	☐	☐
27. I use the Internet to create new relationships and contacts	☐	☐	☐	☐	☐
28. I use the Internet for entertainment purposes	☐	☐	☐	☐	☐
29. I use the Internet for other purposes (Please specify)	_____				

Section C: Wi-Fi

30. Do you use free Wi-Fi?

☐Yes

☐No

31. If yes, please specify the place you are using it at:

☐Public Places (e.g. library, airport)

☐At Home

☐ Coffee Shops, Restaurants, Filling Station

☐ Other (please specify) _____

Section D: Purchase Intention

	1	**2**	**3**	**4**	**5**
32. I intend to purchase something at a shop, If they offer free Wi-Fi	☐	☐	☐	☐	☐
33. Free Wi-Fi often drives me to a certain shop	☐	☐	☐	☐	☐

Section E: Likelihood of Return

	1	**2**	**3**	**4**	**5**
34. If a shop offers free Wi-Fi, I will return to That shop for future purchases	☐	☐	☐	☐	☐
35. I often return to a location, where free Wi-Fi is offered	☐	☐	☐	☐	☐

THANK YOU

I.I.II Final Questionnaire

Date: 1st October 2015

Good Day

My name is Julian Kovar and I am a Masters student of the Marketing Division in the School of Economic and Business Sciences at the University of the Witwatersrand, Johannesburg. I am conducting research on the issue of the digital divide and its implications for marketing.

As residents of Soweto, you are invited to take part in this survey. The purpose of this investigation is to find out the extent of the digital divide, what are the intentions to use free Wi-Fi and its implications on purchase intentions and the likelihood of return.

Your response is important and there are no right or wrong answers. This survey is both confidential and anonymous. Anonymity and confidentiality are guaranteed by not needing to enter your name on the questionnaire. Your participation is completely voluntary and involves no risk, penalty, or loss of benefits whether or not you participate. You may withdraw from the survey at any stage.

The first part of the survey is about demographic information. The second part of the survey investigates the access issues. Furthermore the intention to use free Wi-F is investigated. The last part measures the purchase intentions and the likelihood of return. The entire survey should take 10 minutes to complete.

Thank you for considering participating. Should you have any questions, or should you wish to obtain a copy of the results of the survey, please contact me on (079) 6475476 or at julian.kovar@online.de.

My supervisor's name, contact number and email are: Norman Chiliya, (011) 717 8063, Norman.Chiliya@wits.ac.za

Kind regards
Julian Kovar
Masters Student: Division of Marketing
School of Economic and Business Sciences
University of the Witwatersrand, Johannesburg

Section A: Demographic Information

Please tick appropriate box with a tick (✓).

1. **Gender:** Female ☐ Male ☐

2. **Age:**
☐18-23
☐24-29
☐30-35
☐36-41
☐Above 41

3. **Educational Level:**
☐Below Matric
☐Matric
☐Undergraduate
☐Postgraduate
☐Any Other (please specify)_____

4. **Occupation**
☐Unemployed
☐Student
☐Part-time job
☐Full-time job

5. **Monthly Income**
☐R0-R4000
☐R4001-R8000
☐R8001-R12000
☐R12001-R16000
☐R16000-R20000
☐R20001 and above

6. **1st Language**

☐ English	☐Afrikaans	☐Ndebele	☐ Sotho	☐Swazi	☐Tsonga
☐Tswana	☐Venda	☐Xhosa	☐Zulu	☐Other (please specify)	

7. Ethnicity

☐Black ☐ White ☐Coloured ☐ Indian ☐ Asian ☐Other (please specify)

Section B: Access Information

Please indicate the number that best indicates the degree to which you agree or disagree with following statements:

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**

Mental Access

	2	**2**	**3**	**4**	**5**
8. I want to use new technologies	☐	☐	☐	☐	☐
9. I want to use the Internet	☐	☐	☐	☐	☐
10. I want to use a computer or mobile device	☐	☐	☐	☐	☐

Material Access

11. I use a computer or laptop on a daily basis	☐	☐	☐	☐	☐
12. I use a mobile device (e.g. smartphone/tablet) on a daily basis	☐	☐	☐	☐	☐
13. I have internet access via a modem or data (e.g. prepaid mobilde data)	☐	☐	☐	☐	☐
14. I have Internet access via broadband/DSL	☐	☐	☐	☐	☐
15. I have Internet access via Wi-Fi	☐	☐	☐	☐	☐
16. I access the Internet at Home	☐	☐	☐	☐	☐
17. I access the Internet at the Office	☐	☐	☐	☐	☐
18. I access the Internet at a public place	☐	☐	☐	☐	☐

Skills Access

I possess following skills:

19. I know how to use Microsoft Office (e.g. Powerpoint, Excel, Word etc)	☐	☐	☐	☐	☐
20. I know how to use social media (e.g. Facebook, Twitter, Instagram etc.)	☐	☐	☐	☐	☐

21. I know how to create a Webpage or Blog	☐	☐	☐	☐	☐
22. I know how to send and receive emails	☐	☐	☐	☐	☐
23. I know how to program (e.g. Java, C++, Python, SQL etc.)	☐	☐	☐	☐	☐
24. I know how to use graphic design software (e.g. Photoshop, Illustrator etc.)	☐	☐	☐	☐	☐
25. I know how to look for and find information on the World Wide Web	☐	☐	☐	☐	☐

Usage Access

	1	**2**	**3**	**4**	**5**
26. I use the Internet for general browsing and reading the news	☐	☐	☐	☐	☐
27. I use the Internet for educating myself	☐	☐	☐	☐	☐
28. I use the Internet to look and apply for jobs	☐	☐	☐	☐	☐
29. I use the Internet to work from home and make money	☐	☐	☐	☐	☐
30. I use the Internet to create new relationships and contacts	☐	☐	☐	☐	☐
31. I use the Internet for entertainment purposes (e.g. games, music and videos)	☐	☐	☐	☐	☐
32. I use the Internet for shopping or gathering product information	☐	☐	☐	☐	☐
33. I use the Internet to interact and connect with the Government	☐	☐	☐	☐	☐
34. I use the Internet to conduct personal business (e.g. banking, selling goods or services	☐	☐	☐	☐	☐
35. I use the Internet to find directions (e.g. Google Maps)	☐	☐	☐	☐	☐
36. I use the Internet to share my opinion or post on blogs	☐	☐	☐	☐	☐
37. I use the Internet to communicate via VOIP (e.g. Skype, Viber or Whatsapp calling)	☐	☐	☐	☐	☐

Section C: Wi-Fi

Please indicate the number which best indicates your frequency of Wi-Fi usage.

Never	Rarely	Sometimes	Very Often	Always
1	2	3	4	5

	1	2	3	4	5
38. Do you use free Wi-Fi?	☐	☐	☐	☐	☐
39. I use free Wi-Fi at public places	☐	☐	☐	☐	☐
40. I use free Wi-Fi at coffee shops, restaurants, filling stations or any other commercial places	☐	☐	☐	☐	☐
41. I use free Wi-Fi at school, university or at work	☐	☐	☐	☐	☐

Please indicate the number that best indicates the degree to which you agree or disagree with following statements:

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Section D: Purchase Intention

	2	2	3	4	5
42. I intend to purchase something at a shop, if they offer free Wi-Fi	☐	☐	☐	☐	☐
43. I intend to purchase something the next time I use free Wi-Fi at a shop or restaurant	☐	☐	☐	☐	☐

Section E: Likelihood of Return

	1	2	3	4	5
44. If a place offers free Wi-Fi, I will return to that place in the future	☐	☐	☐	☐	☐
45. I often return to a location, where free Wi-Fi is offered	☐	☐	☐	☐	☐

I.II CENSUS SOWETO 2011

Population (2011)[1]	
• **Total**	1,271,628
• **Density**	6,400/km² (16,000/sq mi)
Racial makeup (2011)[1]	
• Black African	98.5%
• Coloured	1.0%
• Indian/Asian	0.1%
• White	0.1%
• Other	0.2%

I.III CENSUS 2011 Townships

Largest townships in South Africa at the time of the 2011 census:

Township	Population	Neighbouring city/town
Soweto	1,271,628	Johannesburg
Tembisa	463,109	Kempton Park
Katlehong	407,294	Germiston
Umlazi	404,811	Durban
Soshanguve	403,162	Pretoria
Khayelitsha	391,749	Cape Town
Mamelodi	334,577	Pretoria
Mitchell's Plain	310,485	Cape Town (former Coloured township)
Ibhayi	237,799	Port Elizabeth
Sebokeng	218,515	Vanderbijlpark
Mangaung	217,076	Bloemfontein
Ivory Park	184,383	Midrand
Botshabelo	181,712	Bloemfontein
Alexandra	179,624	Johannesburg
Kwa-Mashu	175,663	Durban
Vosloorus	163,216	Boksburg
Mdantsane	156,835	East London
Etwatwa	151,866	Benoni
Meadowlands	138,354	Roodepoort
Tsakane	135,994	Brakpan
Thabong	135,613	Welkom
Evaton	132,851	Vanderbijlpark
Township	Population	Neighbouring city/town
Daveyton	127,967	Benoni
Ntuzuma	125,394	Madadeni
Embalenhle	118,889	Secunda
Kagiso	115,802	Krugersdorp
Mabopane	110,972	Pretoria

Township	Population	Neighbouring city/town
Saulsville	105,208	Pretoria
Jouberton	104,977	Klerksdorp
Thokoza	105,827	Alberton
KwaThema	99,517	Springs, Gauteng
Guguletu	98,468	Cape Town
Diepsloot	95,067	Johannesburg
Ga-Rankuwa	90,945	Pretoria
Kwanobuhle	87,585	Uitenhage
Seshego	83,863	Pietersburg
Msogwaba	82,509	Nelspruit
Edendale	79,573	Pietermaritzburg
Osizweni	77,845	Newcastle
Orange Farm	76,767	Johannesburg
Hlubi	73,931	Newcastle
Duduza	73,295	Nigel, Gauteng
Mpumalanga	62,406	Pinetown
Sharpeville	37,599	Vereeniging
Imbali	30,157	Pietermaritzburg

I.III AMOS OUTPUT

I.III.I AMOS 1st Run

Notes for Model (Default model)

Computation of degrees of freedom (Default model)

Number of distinct sample moments:	741
Number of distinct parameters to be estimated:	97
Degrees of freedom (741 - 97):	644

Result (Default model)

Minimum was achieved

Chi-square = 3209,870

Degrees of freedom = 644

Probability level = ,000

Estimates (Group number 1 - Default model)

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Mental3	<---	MA1	1,000				
Mental2	<---	MA1	,915	,045	20,138	***	
Mental1	<---	MA1	,879	,053	16,636	***	
Material3	<---	MA2	1,000				
Material2	<---	MA2	,700	,154	4,539	***	
Material1	<---	MA2	1,728	,312	5,533	***	
Material4	<---	MA2	2,125	,386	5,507	***	
Material5	<---	MA2	2,834	,476	5,957	***	
Material6	<---	MA2	2,699	,467	5,782	***	
Material7	<---	MA2	2,914	,503	5,798	***	

			Estimate	S.E.	C.R.	P	Label
Skills3	<---	SA	1,000				
Skills2	<---	SA	,148	,037	4,014	***	
Skills1	<---	SA	,274	,047	5,818	***	
Skills4	<---	SA	,368	,050	7,391	***	
Skills5	<---	SA	1,118	,064	17,423	***	
Skills6	<---	SA	1,048	,061	17,178	***	
Skills7	<---	SA	,209	,040	5,260	***	
Usage3	<---	UA	1,000				
Usage2	<---	UA	,788	,071	11,082	***	
Usage1	<---	UA	,726	,076	9,555	***	
Usage4	<---	UA	1,320	,119	11,129	***	
Usage5	<---	UA	,845	,092	9,174	***	
Usage6	<---	UA	,833	,085	9,747	***	
Usage7	<---	UA	,995	,101	9,884	***	
Wifi3	<---	WI	1,000				
Wifi2	<---	WI	1,095	,053	20,511	***	
Wifi1	<---	WI	1,256	,061	20,751	***	
Usage8	<---	UA	1,253	,119	10,491	***	
Usage9	<---	UA	1,350	,113	11,986	***	
Usage10	<---	UA	1,342	,105	12,740	***	
Usage11	<---	UA	1,195	,095	12,532	***	
Usage12	<---	UA	1,021	,092	11,096	***	
PI2	<---	PI	1,000				
PI1	<---	PI	1,007	,038	26,182	***	
LoR2	<---	LoR	1,000				
LoR1	<---	LoR	1,076	,056	19,069	***	
Wifi4	<---	WI	1,042	,071	14,625	***	

			Estimate	S.E.	C.R.	P	Label
Material8	<---	MA2	1,878	,330	5,696	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
Mental3	<---	MA1	,825
Mental2	<---	MA1	,928
Mental1	<---	MA1	,748
Material3	<---	MA2	,323
Material2	<---	MA2	,337
Material1	<---	MA2	,543
Material4	<---	MA2	,535
Material5	<---	MA2	,736
Material6	<---	MA2	,639
Material7	<---	MA2	,647
Skills3	<---	SA	,774
Skills2	<---	SA	,212
Skills1	<---	SA	,306
Skills4	<---	SA	,386
Skills5	<---	SA	,863
Skills6	<---	SA	,846
Skills7	<---	SA	,277
Usage3	<---	UA	,637
Usage2	<---	UA	,640
Usage1	<---	UA	,537
Usage4	<---	UA	,643
Usage5	<---	UA	,513
Usage6	<---	UA	,550
Usage7	<---	UA	,559

			Estimate
Wifi3	<---	WI	,810
Wifi2	<---	WI	,879
Wifi1	<---	WI	,887
Usage8	<---	UA	,599
Usage9	<---	UA	,704
Usage10	<---	UA	,762
Usage11	<---	UA	,746
Usage12	<---	UA	,641
PI2	<---	PI	,921
PI1	<---	PI	,932
LoR2	<---	LoR	,873
LoR1	<---	LoR	,931
Wifi4	<---	WI	,681
Material8	<---	MA2	,602

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
MA1	<-->	MA2	,074	,018	4,040	***	
MA1	<-->	SA	,120	,039	3,105	,002	
MA1	<-->	UA	,195	,029	6,758	***	
MA1	<-->	WI	,102	,030	3,444	***	
MA1	<-->	PI	,246	,041	6,050	***	
MA1	<-->	LoR	,244	,032	7,657	***	
MA2	<-->	SA	,108	,029	3,697	***	
MA2	<-->	UA	,143	,029	4,956	***	
MA2	<-->	WI	,214	,040	5,343	***	
MA2	<-->	PI	,249	,047	5,274	***	
MA2	<-->	LoR	,124	,026	4,687	***	

			Estimate	S.E.	C.R.	P	Label
SA	<-->	UA	,304	,048	6,327	***	
SA	<-->	WI	,017	,049	,342	,732	
SA	<-->	PI	,131	,064	2,038	,042	
SA	<-->	LoR	,157	,047	3,345	***	
UA	<-->	WI	,288	,039	7,364	***	
UA	<-->	PI	,403	,051	7,851	***	
UA	<-->	LoR	,285	,037	7,619	***	
WI	<-->	PI	,625	,063	9,921	***	
WI	<-->	LoR	,261	,039	6,669	***	
PI	<-->	LoR	,439	,053	8,232	***	

Correlations: (Group number 1 - Default model)

			Estimate
MA1	<-->	MA2	,324
MA1	<-->	SA	,179
MA1	<-->	UA	,465
MA1	<-->	WI	,196
MA1	<-->	PI	,360
MA1	<-->	LoR	,505
MA2	<-->	SA	,282
MA2	<-->	UA	,599
MA2	<-->	WI	,723
MA2	<-->	PI	,638
MA2	<-->	LoR	,448
SA	<-->	UA	,432
SA	<-->	WI	,019
SA	<-->	PI	,114
SA	<-->	LoR	,193

			Estimate
UA	<-->	WI	,530
UA	<-->	PI	,564
UA	<-->	LoR	,564
WI	<-->	PI	,704
WI	<-->	LoR	,417
PI	<-->	LoR	,531

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
MA1	,400	,042	9,614	***	
MA2	,130	,043	3,062	,002	
SA	1,130	,129	8,760	***	
UA	,438	,064	6,846	***	
WI	,673	,070	9,581	***	
PI	1,168	,101	11,552	***	
LoR	,584	,058	10,076	***	
e1	,188	,019	10,001	***	
e2	,054	,011	4,692	***	
e3	,243	,020	11,963	***	
e4	1,119	,081	13,835	***	
e5	,498	,036	13,805	***	
e6	,931	,071	13,079	***	
e7	1,471	,112	13,124	***	
e8	,886	,080	11,129	***	
e9	1,377	,111	12,391	***	
e10	1,542	,125	12,319	***	
e11	,755	,067	11,203	***	
e12	,526	,037	14,037	***	

	Estimate	S.E.	C.R.	P	Label
e13	,820	,059	13,933	***	
e14	,875	,063	13,800	***	
e15	,485	,058	8,285	***	
e16	,492	,055	9,000	***	
e17	,590	,042	13,970	***	
e18	,641	,049	13,146	***	
e19	,393	,030	13,134	***	
e20	,569	,042	13,544	***	
e21	1,084	,083	13,116	***	
e22	,877	,064	13,614	***	
e23	,703	,052	13,505	***	
e24	,956	,071	13,476	***	
e25	,352	,030	11,681	***	
e26	,238	,025	9,699	***	
e27	,289	,031	9,334	***	
e28	1,229	,092	13,324	***	
e29	,810	,064	12,711	***	
e30	,570	,047	12,137	***	
e31	,499	,040	12,326	***	
e32	,656	,050	13,128	***	
e33	,207	,034	6,061	***	
e34	,180	,034	5,312	***	
e35	,183	,027	6,675	***	
e36	,103	,029	3,582	***	
e37	,845	,065	13,038	***	
e38	,811	,064	12,703	***	

Matrices (Group number 1 - Default model)

Standardized Residual Covariances (Group number 1 - Default model)

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	97	3209,870	644	,000	4,984
Saturated model	741	,000	0		
Independence model	38	9672,626	703	,000	13,759

Model	RMR	GFI	AGFI	PGFI
Default model	,151	,628	,572	,546
Saturated model	,000	1,000		
Independence model	,383	,212	,169	,201

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	,668	,638	,716	,688	,714
Saturated model	1,000		1,000		1,000
Independence model	,000	,000	,000	,000	,000

Model	PRATIO	PNFI	PCFI
Default model	,916	,612	,654
Saturated model	,000	,000	,000
Independence model	1,000	,000	,000

Model	NCP	LO 90	HI 90
Default model	2565,870	2392,740	2746,431
Saturated model	,000	,000	,000
Independence model	8969,626	8655,246	9290,444

Model	FMIN	F0	LO 90	HI 90
Default model	8,045	6,431	5,997	6,883
Saturated model	,000	,000	,000	,000
Independence model	24,242	22,480	21,692	23,284

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	,100	,096	,103	,000
Independence model	,179	,176	,182	,000

Model	AIC	BCC	BIC	CAIC
Default model	3403,870	3424,886	3791,042	3888,042
Saturated model	1482,000	1642,550	4439,675	5180,675
Independence model	9748,626	9756,859	9900,301	9938,301

Model	ECVI	LO 90	HI 90	MECVI
Default model	8,531	8,097	8,984	8,584
Saturated model	3,714	3,714	3,714	4,117
Independence model	24,433	23,645	25,237	24,453

Model	HOELTER .05	HOELTER .01
Default model	88	91
Independence model	32	33

Minimization: ,069

Miscellaneous: 1,764

Bootstrap: ,000

Total: 1,833

I.III.II Amos 2nd Run

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
Mental3	<---	MA1	1,000				
Mental2	<---	MA1	,917	,046	20,104	***	
Mental1	<---	MA1	,880	,053	16,623	***	
Material5	<---	MA2	1,000				
Material4	<---	MA2	,696	,070	9,909	***	
Material1	<---	MA2	,509	,056	9,007	***	

			Estimate	S.E.	C.R.	P	Label
Skills6	<---	SA	1,000				
Skills5	<---	SA	1,076	,053	20,210	***	
Skills3	<---	SA	,919	,053	17,373	***	
Usage3	<---	UA	1,000				
Usage2	<---	UA	,785	,071	11,043	***	
Usage1	<---	UA	,723	,076	9,515	***	
Wifi3	<---	WI	1,000				
Wifi2	<---	WI	1,093	,053	20,572	***	
Wifi1	<---	WI	1,252	,060	20,767	***	
Material6	<---	MA2	,979	,074	13,284	***	
Material7	<---	MA2	1,019	,079	12,946	***	
Material8	<---	MA2	,601	,055	10,933	***	
Usage4	<---	UA	1,322	,119	11,132	***	
Usage5	<---	UA	,848	,092	9,195	***	
Usage6	<---	UA	,834	,086	9,744	***	
Usage7	<---	UA	,994	,101	9,869	***	
Usage8	<---	UA	1,253	,120	10,485	***	
Usage9	<---	UA	1,351	,113	11,987	***	
Usage10	<---	UA	1,342	,105	12,731	***	
Usage11	<---	UA	1,198	,095	12,543	***	
Usage12	<---	UA	1,021	,092	11,084	***	
Wifi4	<---	WI	1,042	,071	14,660	***	
PI2	<---	PI	1,000				
PI1	<---	PI	1,004	,038	26,194	***	
LoR2	<---	LoR	1,000				
LoR1	<---	LoR	1,077	,056	19,058	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
Mental3	<---	MA1	,824
Mental2	<---	MA1	,929
Mental1	<---	MA1	,748
Material5	<---	MA2	,778
Material4	<---	MA2	,525
Material1	<---	MA2	,479
Skills6	<---	SA	,864
Skills5	<---	SA	,889
Skills3	<---	SA	,762
Usage3	<---	UA	,637
Usage2	<---	UA	,637
Usage1	<---	UA	,535
Wifi3	<---	WI	,811
Wifi2	<---	WI	,879
Wifi1	<---	WI	,885
Material6	<---	MA2	,694
Material7	<---	MA2	,677
Material8	<---	MA2	,577
Usage4	<---	UA	,644
Usage5	<---	UA	,515
Usage6	<---	UA	,550
Usage7	<---	UA	,558
Usage8	<---	UA	,599
Usage9	<---	UA	,705
Usage10	<---	UA	,762
Usage11	<---	UA	,747
Usage12	<---	UA	,640

			Estimate
Wifi4	<---	WI	,682
PI2	<---	PI	,923
PI1	<---	PI	,931
LoR2	<---	LoR	,873
LoR1	<---	LoR	,932

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
MA1	<-->	MA2	,157	,041	3,810	***	
MA1	<-->	SA	,082	,040	2,033	,042	
MA1	<-->	UA	,194	,029	6,749	***	
MA1	<-->	WI	,102	,030	3,446	***	
MA1	<-->	PI	,246	,041	6,040	***	
MA1	<-->	LoR	,243	,032	7,652	***	
MA2	<-->	SA	,221	,074	2,995	,003	
MA2	<-->	UA	,372	,053	7,003	***	
MA2	<-->	WI	,634	,069	9,217	***	
MA2	<-->	PI	,707	,082	8,624	***	
MA2	<-->	LoR	,307	,053	5,806	***	
SA	<-->	UA	,272	,048	5,662	***	
SA	<-->	WI	-,029	,052	-,563	,573	
SA	<-->	PI	,076	,068	1,123	,261	
SA	<-->	LoR	,108	,049	2,206	,027	
UA	<-->	WI	,289	,039	7,370	***	
UA	<-->	PI	,403	,051	7,849	***	
UA	<-->	LoR	,285	,037	7,615	***	
WI	<-->	PI	,627	,063	9,937	***	
WI	<-->	LoR	,262	,039	6,672	***	

			Estimate	S.E.	C.R.	P	Label
PI	<-->	LoR	,440	,053	8,238	***	

Correlations: (Group number 1 - Default model)

			Estimate
MA1	<-->	MA2	,231
MA1	<-->	SA	,114
MA1	<-->	UA	,464
MA1	<-->	WI	,196
MA1	<-->	PI	,360
MA1	<-->	LoR	,505
MA2	<-->	SA	,180
MA2	<-->	UA	,519
MA2	<-->	WI	,713
MA2	<-->	PI	,604
MA2	<-->	LoR	,372
SA	<-->	UA	,361
SA	<-->	WI	-,031
SA	<-->	PI	,062
SA	<-->	LoR	,124
UA	<-->	WI	,531
UA	<-->	PI	,563
UA	<-->	LoR	,564
WI	<-->	PI	,705
WI	<-->	LoR	,417
PI	<-->	LoR	,532

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
MA1	,399	,042	9,596	***	

	Estimate	S.E.	C.R.	P	Label
MA2	1,170	,136	8,599	***	
SA	1,295	,127	10,223	***	
UA	,438	,064	6,842	***	
WI	,676	,070	9,603	***	
PI	1,171	,101	11,575	***	
LoR	,584	,058	10,070	***	
e1	,189	,019	10,031	***	
e2	,053	,011	4,625	***	
e3	,243	,020	11,963	***	
e4	,763	,075	10,174	***	
e5	1,492	,113	13,161	***	
e6	1,017	,076	13,372	***	
e7	,439	,054	8,135	***	
e8	,398	,058	6,853	***	
e9	,790	,068	11,608	***	
e10	,641	,049	13,139	***	
e11	,395	,030	13,138	***	
e12	,571	,042	13,547	***	
e13	,350	,030	11,663	***	
e14	,238	,025	9,703	***	
e15	,292	,031	9,412	***	
e16	1,205	,103	11,737	***	
e17	1,434	,120	11,955	***	
e18	,848	,066	12,860	***	
e19	1,083	,083	13,105	***	
e20	,875	,064	13,606	***	
e21	,702	,052	13,500	***	

	Estimate	S.E.	C.R.	P	Label
e22	,957	,071	13,473	***	
e23	1,229	,092	13,318	***	
e24	,808	,064	12,695	***	
e25	,570	,047	12,122	***	
e26	,497	,040	12,295	***	
e27	,657	,050	13,123	***	
e28	,844	,065	13,036	***	
e29	,204	,034	5,982	***	
e30	,182	,034	5,402	***	
e31	,183	,027	6,688	***	
e32	,103	,029	3,561	***	

I.III.III AMOS 3rd Run

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
WI	<---	MA1	-,050	,072	-,688	,492	
WI	<---	MA2	,546	,055	10,000	***	
WI	<---	SA	-,217	,039	-5,543	***	
WI	<---	UA	,584	,096	6,065	***	
LoR	<---	WI	,390	,043	9,097	***	
PI	<---	WI	,802	,051	15,819	***	
Mental3	<---	MA1	1,000				
Mental2	<---	MA1	,916	,047	19,668	***	
Mental1	<---	MA1	,874	,053	16,519	***	
Material5	<---	MA2	1,000				
Material4	<---	MA2	,699	,070	9,953	***	
Material1	<---	MA2	,505	,056	8,954	***	
Skills6	<---	SA	1,000				
Skills5	<---	SA	1,075	,053	20,204	***	
Skills3	<---	SA	,919	,053	17,375	***	
Usage3	<---	UA	1,000				
Usage2	<---	UA	,786	,071	11,060	***	
Usage1	<---	UA	,722	,076	9,504	***	
Material6	<---	MA2	,979	,074	13,292	***	
Material7	<---	MA2	1,017	,079	12,931	***	
Material8	<---	MA2	,600	,055	10,929	***	
Usage4	<---	UA	1,324	,119	11,154	***	
Usage5	<---	UA	,839	,092	9,111	***	
Usage6	<---	UA	,821	,085	9,617	***	
Usage7	<---	UA	,992	,101	9,856	***	
Usage8	<---	UA	1,255	,119	10,506	***	

			Estimate	S.E.	C.R.	P	Label
Usage9	<---	UA	1,363	,113	12,076	***	
Usage10	<---	UA	1,343	,105	12,748	***	
Usage11	<---	UA	1,196	,095	12,538	***	
Usage12	<---	UA	1,015	,092	11,038	***	
Wifi1	<---	WI	1,000				
Wifi2	<---	WI	,869	,039	22,100	***	
Wifi3	<---	WI	,829	,040	20,723	***	
Wifi4	<---	WI	,859	,055	15,737	***	
PI1	<---	PI	1,000				
PI2	<---	PI	,998	,040	24,741	***	
LoR1	<---	LoR	1,000				
LoR2	<---	LoR	,930	,069	13,396	***	

Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
WI	<---	MA1	-,031
WI	<---	MA2	,586
WI	<---	SA	-,246
WI	<---	UA	,384
LoR	<---	WI	,478
PI	<---	WI	,744
Mental3	<---	MA1	,826
Mental2	<---	MA1	,930
Mental1	<---	MA1	,744
Material5	<---	MA2	,779
Material4	<---	MA2	,527
Material1	<---	MA2	,476
Skills6	<---	SA	,864

			Estimate
Skills5	<---	SA	,889
Skills3	<---	SA	,762
Usage3	<---	UA	,638
Usage2	<---	UA	,639
Usage1	<---	UA	,534
Material6	<---	MA2	,695
Material7	<---	MA2	,676
Material8	<---	MA2	,576
Usage4	<---	UA	,645
Usage5	<---	UA	,509
Usage6	<---	UA	,542
Usage7	<---	UA	,557
Usage8	<---	UA	,601
Usage9	<---	UA	,712
Usage10	<---	UA	,763
Usage11	<---	UA	,747
Usage12	<---	UA	,637
Wifi1	<---	WI	,867
Wifi2	<---	WI	,857
Wifi3	<---	WI	,824
Wifi4	<---	WI	,689
PI1	<---	PI	,930
PI2	<---	PI	,924
LoR1	<---	LoR	,931
LoR2	<---	LoR	,873

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
MA1	<-->	MA2	,157	,041	3,799	***	
MA2	<-->	SA	,221	,074	2,997	,003	
SA	<-->	UA	,273	,048	5,674	***	
MA1	<-->	SA	,082	,041	2,033	,042	
MA1	<-->	UA	,194	,029	6,738	***	
MA2	<-->	UA	,372	,053	6,998	***	

Correlations: (Group number 1 - Default model)

			Estimate
MA1	<-->	MA2	,230
MA2	<-->	SA	,180
SA	<-->	UA	,362
MA1	<-->	SA	,114
MA1	<-->	UA	,464
MA2	<-->	UA	,518

I.IV Cronbach's Alpha coefficients for each construct

Reliability Statistics	
Cronbach's Alpha	N of Items
.863	3

Cronbach's Coefficient Alpha	Corrected Item-Total Correlation
Mental 1	.686
Mental 2	.816
Mental 3	.740

Reliability Statistics	
Cronbach's Alpha	N of Items
.775	8

Cronbach's Coefficient Alpha	Corrected Item-Total Correlation
Material 1	.464
Material 2	.305
Material 3	.307
Material 4	.507
Material 5	.644
Material 6	.554
Material 7	.573
Material 8	.452

Reliability Statistics	
Cronbach's Alpha	N of Items
.784	7

Cronbach's Coefficient Alpha	Corrected Item-Total Correlation
Skills1	.439
Skills2	.393
Skills3	.607
Skills4	.520
Skills5	.614
Skills6	.618
Skills7	.401

Reliability Statistics	
Cronbach's Alpha	N of Items
.883	12

Cronbach's Coefficient Alpha	Corrected Item-Total Correlation
Usage1	.475
Usage2	.588
Usage3	.604
Usage4	.616
Usage5	.474
Usage6	.497
Usage7	.542
Usage8	.572
Usage9	.682
Usage10	.702
Usage11	.701
Usage12	.577

Reliability Statistics	
Cronbach's Alpha	N of Items
.879	4

Cronbach's Coefficient Alpha	Corrected Item-Total Correlation
Wifi1	.793
Wifi2	.802
Wifi3	.751
Wifi4	.640

Reliability Statistics	
Cronbach's Alpha	N of Items
.924	2

Cronbach's Coefficient Alpha	Corrected Item-Total Correlation
PI1	.859
PI2	.859

Reliability Statistics	
Cronbach's Alpha	N of Items
.897	2

Cronbach's Coefficient Alpha	Corrected Item-Total Correlation
LoR1	.813
LoR2	.813

I.V Standardized Regression Weights: (Group number 1 - Default model)

			Estimate
Wifi	<---	Men	,003
Wifi	<---	Mat	,591
Wifi	<---	Ski	-,229
Wifi	<---	Usa	,451
LoR	<---	Wifi	,461
PI	<---	Wifi	,728
Men3	<---	Men	,821
Men2	<---	Men	,937
Men1	<---	Men	,740
Mat5	<---	Mat	,814
Mat4	<---	Mat	,500
Mat1	<---	Mat	,415
Ski6	<---	Ski	,869
Ski5	<---	Ski	,886
Ski3	<---	Ski	,760
Usa3	<---	Usa	,638
Usa2	<---	Usa	,624
Usa1	<---	Usa	,519
Mat6	<---	Mat	,730
Mat7	<---	Mat	,673
Mat8	<---	Mat	,546
Usa4	<---	Usa	,638
Usa5	<---	Usa	,513
Usa6	<---	Usa	,545
Usa7	<---	Usa	,554
Usa8	<---	Usa	,587
Usa9	<---	Usa	,712

			Estimate
Usa10	<---	Usa	,771
Usa11	<---	Usa	,764
Usa12	<---	Usa	,640
Wifi1	<---	Wifi	,856
Wifi2	<---	Wifi	,845
Wifi3	<---	Wifi	,812
Wifi4	<---	Wifi	,671
PI1	<---	PI	,926
PI2	<---	PI	,920
LoR1	<---	LoR	,930
LoR2	<---	LoR	,871

I.VI Model fit

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	154	698,817	281	,000	2,487
Saturated model	435	,000	0		
Independence model	29	7074,145	406	,000	17,424

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	,220	,901	,846	,582
Saturated model	,000	1,000		
Independence model	,454	,240	,185	,224

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	,901	,857	,938	,909	,937
Saturated model	1,000		1,000		1,000
Independence model	,000	,000	,000	,000	,000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	,692	,624	,649
Saturated model	,000	,000	,000
Independence model	1,000	,000	,000

NCP

Model	NCP	LO 90	HI 90
Default model	417,817	343,891	499,425
Saturated model	,000	,000	,000
Independence model	6668,145	6398,666	6944,029

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1,751	1,047	,862	1,252
Saturated model	,000	,000	,000	,000
Independence model	17,730	16,712	16,037	17,404

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	,061	,055	,067	,001
Independence model	,203	,199	,207	,000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	1006,817	1031,858	1621,502	1775,502
Saturated model	870,000	940,732	2606,287	3041,287
Independence model	7132,145	7136,861	7247,898	7276,898

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2,523	2,338	2,728	2,586
Saturated model	2,180	2,180	2,180	2,358
Independence model	17,875	17,200	18,566	17,887

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	184	194
Independence model	26	27

Minimization:	,047
Miscellaneous:	1,328
Bootstrap:	,000
Total:	1,375