UNIVERSITY OF KWA-ZULU NATAL

The smartphone bubble that popped – A smarter techno savvy consumer

BY

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DECLARATION

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Abstract

This research investigated a shift in consumer behaviour due to the durability of smartphones, which has resulted in a smarter more techno-savvy consumer and ultimately a pop in the smartphone bubble. This shift emerged as power companies, such as Apple and Samsung, reported a decline in their smartphone sales as product introduction strategies failed due to a lack of innovation. This research looked at the role that brand preference, word of mouth (friends and family), product extensions, and paid vs. freemium applications play in a consumer's ultimate choice of purchasing a new smartphone. A quantitative study was conducted whereby a questionnaire was used to collect data from respondents at North Beach, Durban. The questionnaire consisted of two sections; the first section was used to collect demographic data and section two was used to collect data related to the objectives of the study. Section two was broken down into the following five categories: consumer behaviour, downloadable applications to add functionality, branded products vs. cheaper brands, word of mouth, and product extensions. A questionnaire based on a 5 point Likert scale was developed to collect data for this study. Respondents were asked to respond to statements by selecting any of the following options: Strongly agree, Agree, Uncertain, Disagree, or Strongly disagree. The data collected was then analysed in the form of both descriptive and inferential statistics by using the statistical software programs SPSS and Excel. These results were then used to prove the research questions and hypotheses of this study. The Smartphone Appreciation Model was specifically created for this research to prove that the smartphone bubble had popped. This model is based on a combination of factors, including product durability, word of mouth, brand preference, product extensions, freemium vs. paid application downloads to add functionality to a smartphone, and lack of innovation. Based on this model all these factors needed to fall within the area of acceptance to prove that a pop in the smartphone bubble had occurred. When hypothesis testing was conducted the results for each factor mentioned fell within the area of acceptance, therefore indicating that the smartphone bubble had popped.

Keywords: Smartphone, consumer, brands, innovation, durability, product extensions, apps, freemium apps, downloadable apps, word of mouth.

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CHAPTER 1 - INTRODUCTION

1.1 Introduction

In recent years, smartphones have become the consumer's essential companion device due to the convergence of technology. This is primarily due to smartphone users spending more time on their devices than on other forms of traditional media. For the purpose of this research, the terms smartphone and device are used interchangeably and refer to smartphones, tablets (Wi-Fi and 3G-enabled) and phablets. In addition to applications (apps) that are pre-installed on devices, consumers also have the ability to add functionality to their devices through apps that can be downloaded directly from the Internet or from vendor app stores, such as iTunes for iPhone users, and Google play store for Android users.

Consumers generally used to discard their old smartphones when they upgraded to newer devices. However, due to newer models of smartphones being released more frequently, and failure on the part of smartphone manufacturers to foster innovation in these new devices, consumers are choosing not to purchase new smartphones. Furthermore, today's smartphones are durable (i.e., high quality, long lasting products that can withstand wear and tear) and newer high-end devices do not have anything new to wow consumers into upgrading. This has resulted in a decline in upgrade intentions towards newer devices, which has, in turn, resulted in a decline in smartphone sales and ultimately a pop in the smartphone bubble.

1.2 Background

Early players in the smartphone revolution include companies such as RIM (Research in Motion), a company renowned for their Blackberry smartphones. Blackberry handsets changed the way business individuals communicated with each other and helped streamline their communication needs (Martin, 2013). For a distinct period of time, Blackberry handsets were seen as the smartphone of choice because of their innovative product extensions, such as BIS (Blackberry Internet Service) and the BBM (Blackberry Messenger) app which allowed users to communicate in real time (Moussi, 2014). However, their lack of further innovation and shortage of apps available for their handsets ultimately led to their demise.

This demise opened the market for other industry competitors, such as Apple with its iPhone and Samsung with its Android-operated devices (Gustin, 2013). In an attempt to break away from their reliance on Android, Samsung recently launched their own operating system Tizen on their Z series handsets and Samsung gear products (Kelly, 2014). The majority of Samsung smartphones, though, still run on Android. Competition in the smartphone industry is fierce and becoming stronger (Wollenberg and Thuong, 2014) as new players enter the industry to offer consumers cheaper and more affordable products, which often mirror the functionality of high-end devices (Gustin, 2013).

The lack of innovation to wow consumers has caught up with Apple and Samsung, as both companies have now seen a decline in their smartphone sales. According to Tim Cook, Apple's chief executive officer (CEO), this decline in sales can be attributed to the longer upgrade or replacement cycles of smartphones by consumers (Dredge, 2015). This is due to versions of the operating systems commonly used on smartphones; e.g., Android and IOS are more or less the same and offer very little or only subtle differences from one version to the next (Price, 2015).

This tendency of consumers to hold onto their devices for longer is supported by research conducted by the South African telecommunications firm, Tarifica, who states that sim card only deals offer consumers the best value for money (McLeod, 2014). Guiltinan (2010) mentions that a consumer is more likely to upgrade due to enhanced technology. According to Okada (2006), if an upgrader owns an existing product, the benefits of owning a new product is not as high as when compared to a first-time buyer of a product. Sheng and Pan (2009), however, state that the bundling of one product with another product plays an important role in that product's introduction into the market. According to Khandeparkar (2014:992), "a new product is able to gain extra attention if it is associated with a popular brand". A bundle containing a well-known brand name provides a basis for "consumer preferences and attitudes toward [an] existing brand" (Simonin and Ruth, 1995:221). Furthermore, Page (2014) states that the lifespan of a durable product is increased as consumers develop emotional ties with products, extending the upgrade window for new products.

The decision by consumers to defer the purchase of a new smartphone has contributed to a pop in the smartphone bubble. Consumers have realised that their current devices are just as good as the newer devices on the market, resulting in a decline in smartphone sales for companies such as Apple and Samsung. After announcements that Apple had cut the production of their iPhone 6 handsets by 30% for the January/March 2016 quarter, the company's share price fell by 2%, contributing to the tech giant losing almost a quarter of their share value since April 2015. The iPhone accounted for more than half of the company's total product sales in 2015, an amount of $155bn of a $234bn total (Thielman, 2016). Samsung's profit for the 4th quarter to December 2015 were down 40% to $2.7bn, and revenue for 2015 declined to $165.5bn when compared to the previous year's profits (BBC, 2016).

Previous research has looked at the durability of products (Page, 2014; Liberali, Gruca and Nique, 2011) and the shortened cycles between new smartphone introductions (Boone, 2014; Shih and Schau, 2011). Numerous keyword searches (i.e., apps, paid-for apps, freemium apps, consumer behaviour, smartphones, consumer behaviour, smartphone apps, etc.) on academic catalogues, such as the libraries world catalogue (going back up to five years), indicate that there has not been research focusing on consumers' deciding not to adopt newer models of smartphones due to them learning how to add functionality onto their devices. In other words, consumers have realised that they can add functionality to their existing smartphone by downloading apps from either the Internet or an app store rather than purchasing a new device.

According to Morimoto and Nagahata (2013), smartphones can be compared to laptops in their function. One of the most important functionalities of a smartphone is that it enables people to access information easily through the use of the Internet. Since consumers use their smartphones for multiple purposes, it has become important for companies to react to this change in consumer behaviour and provide consumers with attractive services. Morimoto and Nagahata's (2013) research examined the role of features and services of smartphones by emphasising the use of a consumer behaviour model based on an online to offline situation. In this online to offline environment consumers either search for or interact with products online and then make purchase decisions. Morimoto and Nagahata (2013) recommend that in order to achieve success, companies should generate original ideas for each objective they wish to accomplish.

Wollenberg and Thuong (2014) looked at the variables that influence consumer purchasing behaviour based on brand perception, advertising, perceived quality, word of mouth, and price. Their research findings show that word of mouth influences the consumer's purchase process in the smartphone market significantly. Quality also has an influence on the consumer's purchase intention. Furthermore, pricing has a strong impact and brand perception has a substantial impact on consumer purchasing behaviour.

Shih and Schau (2011) looked at anticipated regret, whereby consumers who purchased a product today, risked missing out on a newer or updated version of that product in the future. They also looked at perceived rate of innovation, which refers to the rate at which technology advances, as perceived by consumers in response to their decision to upgrade.

Hassan, Kouser, Abbas and Azeem (2014) investigated consumer attitudes and their intention to use smartphones apps. Their study looked at the following factors with regard to the consumer's intention to adopt smartphone apps: perceived usefulness, perceived ease of use, perceived enjoyment, and social need. The results indicate that the usage of smartphone apps is influenced by perceived usefulness, ease of use and social need. Hassan *et al*. (2014) recommend that app developers and designers look at devising attractive features to captivate the user's attention.

1.3 Motivation for the study

The motivation for this study was the identification of causes that contributed to a decrease in smartphone sales, as reported by major players in the smartphone industry, such as Apple and Samsung. This decrease in sales led to a pop in the smartphone bubble. This research looked from the consumer's perspective at a series of factors that contributed to a decline in smartphone sales, rather than attributing a decline in smartphone sales to a single factor. These factors formed the basis for the research objectives within this study and include consumer behaviour/product durability, downloadable apps to add functionality, branded purchases vs. cheaper brands, word of mouth, and product extensions. The unique contribution of this study was to provide a holistic research on smartphone users/consumers, which can be valuable to smartphone manufacturers, app developers, retailers and marketers.

1.4 Focus of the study

The focus of this study is to address the change in smartphone consumer behaviour and ultimately the decline in smartphone sales due to a smarter, more techno-savvy consumer. To address this change in consumer behaviour the Smartphone Appreciation Model was developed specifically for this research. The model focused on the following factors: product durability, word of mouth, brand preference, product extensions, freemium vs. paid app downloads to add functionality to a smartphone, and lack of innovation. In this study, price was not taken into account as a factor because the assumption was made that the consumer already owned a smartphone and chose not to purchase a new one due to any of the other factors mentioned.

1.5 Problem statement

It was unknown whether a change in consumer behaviour had attributed to the smartphone bubble that popped. This pop in the smartphone bubble was due to product durability, as product introductions and lack of innovation have not enticed consumers to purchase newer devices.

It was also unknown whether freemium content provided by smartphone companies and app developers through mobile app stores such as iTunes for iPhone users and Google play store for Android users contributed to the decline in smartphone sales. In light of consumers becoming smarter and realising that rather than purchasing a new device that contains a particular functionality (excluding hardware), they can either update their devices with free software available online or download a particular app from the app store to add a particular functionality to their device. Another unknown factor was whether consumers who download freemium apps with in-app purchases actually make purchases to unlock premium features within the app.

It was uncertain whether the strategies employed by companies such as Apple and Samsung in the form of new product extensions, such as smart watches, fitness bands and other wearable products, could be used in conjunction with high-end smartphones to lure consumers into purchasing these high-end smartphones as opposed to more budget-friendly devices. Furthermore, it was unknown whether consumers have become less brand conscious and are

willing to purchase cheaper brands offering similar functionality than more expensive brands. Likewise, it was unclear if word of mouth by family and friends affected consumer behaviour, since consumers can learn how to get the most out of their smartphones through their interactions with family and friends.

1.6 Justification of the study

This research built on prior research related to smartphone usage and consumer behaviour, with particular emphasis on product durability and lack of innovation between product introductions resulting in consumers choosing not to purchase newer devices. It also provided a foundation for future research as the pop in the smartphone bubble increases/decreases and companies in an over-saturated smartphone market devise new strategies and products to regain their place at the top of the smartphone market.

The broader justification for this study was that since smartphones have become part of the consumer's daily life, this research can also be used as a basis to depict a change in consumer behaviour. It can also be used to further future research into this subject as techno-savvy consumers become smarter and companies such as Apple and Samsung foster innovation to persuade consumers to purchase their latest smartphones.

1.7 Purpose of the study

The purpose of this study was to assess whether a change in consumer behaviour has resulted in consumers realising that their present smartphones still has the same functionality as newer smartphones on the market due to product durability and a lack of innovation. Should the need arise, the consumer can simply download an app onto their device to obtain a particular additional functionality, rather than purchasing a new smartphone. Furthermore, the purpose of this research was to establish whether consumers have become less brand conscious and are leaning towards cheaper brands/models offering similar functionality to that of expensive brands. This study also wanted to determine whether word of mouth and product extensions influence the consumer's purchase behaviour.

1.8 Objectives of the study

The objectives of this study were to determine whether:

- Consumers have become smarter through the continued usage of their smartphones, since consumers have realised that rather than purchasing a new device, they can still use their current devices and download apps to add functionality to their devices.
- Consumers have become less brand conscious and are opting to purchase cheaper, relatively unknown brands offering similar functionality to well-known brands.
- Freemium content not only enabled consumers to gain added functionality on their devices but also enticed them to spend money purchasing in-app services, for the sustained usage of the apps.
- Friends and family influenced the consumer's purchase decisions.
- Product extensions lead to consumers purchasing smartphones.
- Word of mouth (family and friends) lead to consumers realising that rather than purchasing a new device to receive a particular functionality, they can download an app on their current device to get the same functionality.
- The smartphone bubble had popped as a result of the objectives above, as companies such as Apple and Samsung are reporting a decline in their net profits.

1.9 Research questions

This research aims to answer the following research questions:

i. Has a change in consumer behaviour attributed to a decline in smartphone sales due to product durability and lack of product innovation?
ii. Has freemium/paid-for content available from the app stores resulted in consumers realising that rather than purchasing a new device to gain a particular functionality, they can simply download an app to add functionality to their device?
iii. Are consumers brand conscious or are they willing to purchase cheaper brands?
iv. Does word of mouth (friends and family) influence consumer behaviour?
v. Do product extensions such as smart watches, fitness bands, etc., lead to consumers purchasing a smartphone?

1.10 Research hypotheses

The following research hypotheses will be used to test the research questions:

H1 A change in consumer behaviour has attributed to a decline in smartphone sales due to product durability and lack of product innovation.

Hypothesis 1 has been broken down into two sub hypotheses, each with a null hypothesis (Ho) and an alternative hypothesis (Ha):

Sub hypothesis 1 of H1

Ho1: A change in consumer behaviour has attributed to a decline in smartphone sales not due to product durability.

Ha1: A change in consumer behaviour has attributed to a decline in smartphone sales due to product durability.

Sub hypothesis 2 of H1

Ho2: A change in consumer behaviour has attributed to a decline in smartphone sales not due to a lack of product innovation.

Ha2: A change in consumer behaviour has attributed to a decline in smartphone sales due to a lack of product innovation.

H2 Ho: Freemium/paid-for content has not resulted in consumers realising that instead of purchasing a new device they can simply download an app to add functionality to their device.

Ha: Freemium/paid-for content has resulted in consumers realising that instead of purchasing a new device they can simply download an app to add functionality to their device.

H3 Ho: Brand-conscious consumers are not willing to purchase cheaper brands.

Ha: Brand-conscious consumers are willing to purchase cheaper brands.

H4 Ho: Word of mouth does not influence consumer behaviour.

Ha: Word of mouth influences consumer behaviour.

H5 Ho: Product extensions do not lead to a consumer purchasing a smartphone.

Ha: Product extensions lead to a consumer purchasing a smartphone.

1.11 Scope of the study

The scope of this study was limited to smartphone users located at North Beach in Durban, South Africa. Smartphone users at other locations were not included in this study.

1.12 Research methodology

The target population for this study was smartphone users in North beach. A probability sample of smartphone users was derived using Krejcie and Morgan's (1970) table. A total population size of 8000 was used to derive a sample size of 367.

The location for this study was selected because it is a public place. The public space allowed for mixed demographics, with people from different classes, backgrounds, gender, race, and age.

The research instrument used in this study was a questionnaire from which quantitative data was derived. Sekaran and Bougie (2013) state that when a survey is conducted within a local area, a self-administered questionnaire is a good research instrument to use. This is because any queries that respondents may have about answering the questionnaire can be easily cleared up on the spot. The first section of the research questionnaire was used to collect demographic data while the second section was used to collect data based on the research objectives and questions.

The questionnaire was developed based on a 5 point Likert scale. Respondents were asked to respond to statements by selecting one of the following options: Strongly agree, Agree, Uncertain, Disagree, Strongly disagree. A simple random sampling technique was used to select participants for the study to ensure that everyone present at the location had an equal opportunity to be a participant and answer the questionnaire. Marczyk, David and Fotinger (2005) are of the opinion that random selection should be used whenever possible as it ensures that the study will be reflective of the population.

As this research was conducted as part of a university project, ethical clearance had to be obtained from the University of Kwa-Zulu Natal's ethics committee prior to data collection.

Furthermore, informed consent had to be obtained from the respondents; therefore, only respondents 18 years and older were eligible to participate in this research.

Pre-testing was done by handing out two questionnaires to evaluate the respondents' understanding of the questionnaire and to determine the time required to answer the questionnaire. This technique is similar to the approach used by Mokhlis and Yaakop (2012).

Cronbach's alpha is the reliability test that was used to test the reliability of the data. The reliability scores for the various factors used in this study are as follows: consumer behaviour (0.649), downloadable apps to add functionality (0.606), branded products vs. cheaper brands (0.697), word of mouth (0.699), and product extensions (0.703). A cronbach alpha score of between 0.50 and 0.70 indicates that the reliability of the data is quite high (SPSS Tests, 2016). According to Nunnally and Berstein (cited in Lee 2013:99), "cronbach alpha values greater than 0.6 [are] the recommended threshold for exploratory research". Furthermore, since all the cronbach alpha scores were above 0.6 these scores are acceptable for research at its early stage (Wollenburg and Thuong, 2014).

The data was analysed in the form of inferential and descriptive statistics using statistical software SPSS and Excel. The demographic section of the questionnaire is represented using descriptive statistics in the form of frequency tables, percentages and pie charts. Inferential statistics were used to determine correlations between the data sets and for hypothesis testing in the form of a non-parametric chi-square test.

1.13 Theoretical framework

The theory that was used within this research is Social Judgment Theory (Social judgment involvement), developed by Muzafer Sherif in 1961. This theory states that people evaluate ideas based on their present point of view (Sherif, cited in Griffin 2012). When applied to the study of the durability of smartphones due to increased product life cycles, this theory holds true that consumers, when making a purchase or purchase replacement decision, evaluate newer smartphone models against their current smartphone.

The Social Judgment Theory holds that one would expect the independent variables (product durability, lack of innovation, word of mouth (friends and family), brand preference,

freemium/paid app content downloads to add functionality to a smartphone, and product extensions) to influence or explain the dependent variable (consumers choosing not to purchase newer smartphones contributing to a decline in smartphone sales and ultimately a pop in the smartphone bubble). This framework was then used to formulate the Smartphone Appreciation Model in which each of the independent variables were treated as a factor to prove that a combination of factors led to a decline in smartphone sales and ultimately a pop in the smartphone bubble.

1.14 Paradigm choice

A pragmatic worldview was used for this research, which "arises out of actions, situations and consequences" (Creswell, 2014:10). By using this paradigm, the research questions and research hypotheses were tested through the lived experiences of the respondents participating in the research, of their use of smartphones. Researcher bias was eliminated as the data collected was based on the respondents' experiences and usage of technology, rather than on assumptions made by the researcher. This placed the control and outcomes of the research into the hands of the participants involved in the research.

1.15 Expected outcomes

The expected outcome of this study was to ascertain whether a pop in the smartphone bubble is caused by a smarter techno-savvy consumer keeping their devices for longer due to product durability, lack of innovation, word of mouth, product extensions, brand preference, and freemium vs. paid app downloads to add functionality to a smartphone.

1.16 Delimitations of the study

- Although this research was concerned with technology in the form of smartphones, it was not concerned with the technology stacks and coding used to create smartphones and the apps that can be downloaded from the app stores.
- Smartphones require access to a network operator, Wi-Fi and data to function on the Internet. This research was not concerned with reception issues with regard to network operators, Wi-Fi and data.
- This research was not concerned with social concerns resulting from consumers spending too much time on their smartphones, and the implications thereof.

- This research was concerned with consumers learning the capabilities that their smartphones possess and how to get the most out of their devices, but it was not concerned with consumers using apps for learning purposes such as e-learning.
- This study only took into account the decline of smartphone sales from the consumer's perspective; it did not take into account perspectives from other influences such as retail, a countries' economic climate, etc.

1.17 Limitations of the study

- The sample used was not reflective of the entire smartphone population of Durban. However, this research did provide a mix of respondents from various segments of the population.
- Not all smartphone users are as techno-savvy as the next. For this reason, some users who own smartphones may not possess the knowledge required to add functionality to their devices by downloading apps from the app stores.
- Respondents not providing factual information may have affected the research findings negatively.

1.18 Assumptions made in the study

This study assumed that smartphone users would participate in this research. It also assumed that a change in consumer behaviour contributed to a smarter techno-savvy smartphone user, i.e., through using their smartphones that consumers realised they could add functionality to their devices by downloading apps from the app store due to the backwards compatibility of apps. As a result, consumers do not need to purchase a new device, because their current smartphone meets all their requirements. Another assumption was that consumers were satisfied with their current devices regarding its hardware, such as screen and camera resolution, design, memory, CPU speed, etc.

1.19 Structure of the study

Chapter 2 – Literature Review

Chapter 2 reviews the main literature presented in this study. It is broken down into various themes, namely consumer behaviour, product introductions, consumer upgrades, durable products, and paid smartphone apps. Chapter 2 discusses the research conducted by various

researchers and the methodologies used. It not only provides a summary of the literature being reviewed but also critiques and points out gaps in the research. These gaps were then used to formulate the research hypotheses for this study. This chapter also introduces the Smartphone Appreciation Model that was developed for this research to establish that the pop in the smartphone bubble is caused by multiple factors.

Chapter 3 – Research Methodology

Chapter 3 discusses the research methodology used within the study and details how the research within this study was collected. This chapter also discusses the research design, study area, target population, sampling techniques, sample size, research instruments, pre-testing, validity and reliability, data collection techniques, data analysis, and ethical considerations.

Chapter 4 – Data Analysis

Chapter 4 provides an analysis of the data collected from the research questionnaire. The reliability of the data was determined via a cronbach alpha score calculated for each research objective. A Pearson correlation coefficient test was used to determine correlations between the datasets, and a single sample non-parametric chi-squared test was used to test the research hypothesis.

Chapter 5 – Conclusions and Recommendations

Chapter 5 provides recommendations to the manufacturers of smartphones based on the data collected from smartphone consumers. It draws conclusions on the overall research and assesses whether the research questions were answered and whether the research hypotheses were supported or rejected.

1.20 Summary

This chapter introduced the research topic and provided a brief background of the research area. It provided an overview of the literature that will be discussed in Chapter 2 and presented the research questions, hypotheses, problem statement, objectives and limitations of the study.

CHAPTER 2 – LITERATURE REVIEW

2.1 Introduction

This chapter reviews the main literature used within this study. The literature reviewed has been grouped into the themes of consumer behaviour, product introductions, consumer upgrades, durable products, and paid smartphone apps. The review not only provides a summary of the literature, but also critiques and points out gaps in the research. These gaps are then summarised at the end of this literature review and are used to form the research hypothesis for this research.

2.2 Consumer behaviour

Consumer behaviour focuses on the attitudes and behavioural responses that consumers have toward certain products. This section of the literature review looks at research related to consumer behaviour in relation to smartphones and the adoption of smartphone functionality.

According to Morimoto and Nagahata (2013), the functionality contained in smartphones can be compared to that of laptops. One of the most important functions of a smartphone is that it enables consumers to access information easily by using the Internet at their leisure. Since consumers use their smartphones often, companies have had to react to this change in consumer behaviour. Therefore, companies need to provide consumers with attractive services whilst understanding their behavioural patterns.

Morimoto and Nagahata (2013) attempted to examine the role of features and services, and emphasised the use of a consumer behaviour model based on an online to offline situation. In this online to offline environment consumers either search for products online or interact with products online and then make decisions on whether to buy them or not.

Morimoto and Nagahata (2013) identified the services that can be used on smartphones and analysed changes in consumer behaviour in conjunction with the responses gained from organisations. Based on these results they compared the features available on smartphones to elements located within the consumer behaviour model and mapped the relationships identified. Morimoto and Nagahata (2013:93) believe that this map has the potential to assist organisations to “capture with certainty a consumer's motivations within the online to offline

generation". Seventy-three cases of online to offline consumer behaviour were investigated and tabulated.

The results from Morimoto and Nagahata's study were based on key online to offline technologies, i.e., market research/data analysis, payments, points of sale, in-store marketing, integrated systems, barcode scanners, digital coupons, reward cards, customer loyalty, traditional coupons, account marketing, digital commerce, eReceipts, and social media. The most popular online to offline technologies were online digital coupons with 39 occurrences, customer loyalty programmes with 32, digital commerce with 27 and social media with 21.

An issue with the above-mentioned research was that the study was very general. There was no clear indication of where the research took place and how the 73 online to offline surveys were conducted. However, the research provided valuable insight into the types of online to offline apps available on smartphones being used by consumers. Most of the online to offline technologies identified within this study were either cloud based or required an app to be downloaded so that a particular functionality (online to offline technology) could be added to a device.

Morimoto and Nagahata (2013) recommend that companies should generate original ideas for each objective they wish to accomplish if they want to achieve success. However, consumers should not rely primarily on the information that arises out of the online to offline environment because the product 'talk-up' that occurs online is often misleading. In such 'talk-up' situations, consumers should seek knowledge from consumers who have a usage history with that particular product about products they are interested in purchasing. An ideal reference point would be for consumers to ask friends and family, whose opinions they value, about their experience with a particular product and, based on that knowledge, make an informed decision on whether or not to adopt a particular product.

This research did not take into account purchases made online, as it assumed that the consumer would still make purchases in a physical store. However, due to the introduction of apps that allow in-app purchases, the consumer now is moving away from an online to offline environment to a continuous online environment. This is evident in situations where

consumers purchase physical products online, e.g., a T-shirt. Everything from the consumer's perspective is done in an online environment and the only thing that happens in an offline environment is the delivery of the product to the consumer.

Wollenberg and Thuong (2014) looked at the variables that influence consumer purchasing behaviour based on brand perception, advertising, perceived quality, word of mouth, and price. Their study focused on the smartphone market in Ho Chi Minh City, Vietnam. A questionnaire was used to collect data from the respondents, with sections on demographic data, brand perception and purchase decisions. A Pearson correlation coefficient technique was used to generate the correlations between the independent and dependent variables. They found that factors such as word of mouth, quality, price, and brand perception influenced the consumer's purchase decision in the smartphone market significantly.

The primary objective of Wollenberg and Thuong's (2014) research was to point out the key variables that influenced brand perception and purchasing decisions in the smartphone industry. These variables included advertising, perceived quality, price, word of mouth, and brand perception. Their research did not include perceived innovation as part of their conceptual development and key variables, and how it affects consumer purchasing decisions. The smartphone industry is governed by rapid advances in technology and innovations can often be attributed to the consumer's perception of a brand. Innovations also play a role in the consumer's overall decision to purchase a particular brand of smartphone or not.

In terms of word of mouth being a key variable in the research, it is not clear who the source of this information was, i.e., family, friends, conversations on social media, etc. Although demographic data such as age, gender and income level were collected from the respondents, no results were published to provide an analysis of the demographic data in relation to either the breakdown of the sample population, research questions, hypotheses and overall objectives of the study. Furthermore, although Wollenberg and Thuong (2014) discussed the population size of Vietnam, they did not indicate how the research sample was identified, what sampling method they used and the number of respondents they surveyed. Since the tabulated results indicate that there were 170 successful tests, it has to be assumed that the number of respondents surveyed were 170 since no further information was provided.

Hassan *et al*. (2014) investigated consumer attitudes and their intention to use smartphone apps. They looked at perceived usefulness, perceived ease of use, perceived enjoyment, and social need with regard to the consumer's intention to adopt smartphone apps. Research data was collected using a questionnaire; 263 business students from Bahauddin Zakoriya University were surveyed. Of the factors tested in this research, perceived ease of use had the strongest relationship to IAA (Intention to adopt apps). Social need had a relatively weak relationship with IAA, although the results were still positive. The study shows that smartphone apps usage is influenced by perceived usefulness, ease of use and social need. Hassan *et al.* (2014) recommends that app developers and designers look at devising attractive features to captivate the user's attention.

Hassan *et al.* (2014) mention that the most important factor that influences the usage of smartphones by consumers is the functionality, or, perceived usefulness of apps. However, their research does not provide enough evidence to establish a relationship between perceived enjoyment and intention to adopt apps. They also state that the "ultimate purpose of the study [was] to investigate the interrelated importance between the perceived consequences in affecting the intention of (a) initial adoption, (b) continuous usage of smartphone apps" (Hassan *et al*. 2014:769). As part of their initial adoption of apps, the researchers should have included perceived innovation and intention to adopt apps as part of their research. This is primarily because consumers are often driven to use and download apps based on the new functionality that it has to offer.

2.3 Consumer upgrade decisions

This section of the literature review focuses on research based on consumer upgrade decisions. A consumer upgrade decision is related to the decision process that a consumer undergoes when making the choice to upgrade their current smartphone to a newer smartphone. Factors that influence the consumer's upgrade decision include innovation and the consumer's adoption of new smartphones, namely early adopters vs. late adopters.

According to Huh and Kim (2008), technology is evolving and, as a result, new-generation cell phones [smartphones] are replacing their predecessors. However, consumers now need to make adoption decisions more frequently. This research also states that based on previous

research, early adopters of a product are more likely to purchase the next generation of a product. Huh and Kim (2008) questioned this notion in the hope of identifying the missing link between the first purchase of an innovation [smartphone] and the repeated purchases of a newer generation of a product [smartphone]. The objective of this research was to investigate the role that post-adoption behaviour has on upgrade purchasing decisions. Huh and Kim (2008:41) state that "usage behaviour plays a critical role in bridging the first and subsequent adoptions, based on theoretical developments in three marketing research areas: innovation adoption, post-adoption usage behaviour and repurchase behaviour".

Huh and Kim's (2008) research consisted of a survey that was conducted in Seoul, Korea. A non-probability sample of 125 adult cell phone users, aged 27 and older, was used. This particular age group was used for the survey because respondents younger than 27 would not have owned a cell phone for long enough to have upgraded (Huh and Kim, 2008). The results of this study show that early adopters were found to not be heavy users of innovative functions on a cell phone [smartphone]. Therefore, no positive conclusion could be derived between adoption duration and innovative function usage.

Furthermore, the study shows that age could be linked with basic and innovative function usage. Younger users were heavier users of basic and innovative functions than older users. Both basic and innovative function usage could be linked to purchase intentions. In other words, the high usage rate of both basic and innovative functions led to a stronger intent to purchase a new/next generation product. The study shows that early adopters of a cell phone [smartphone] were less likely to have a greater purchase intention for newer or next generation products than late adopters of a product. A person's age is not related to early adoption of a product, as young people are not necessarily early adopters of a product. There was a positive link between age and purchase intention as the research shows that purchase intention for the next generation of a product is higher in younger people than in older people.

Correlations in the analysis were made between age and the adoption duration for a new generation product, and between age and the purchase intention for a new generation product. A major limitation to this research was that it only surveyed respondents aged 27 years and older. Huh and Kim did not provide a reason for this stating that respondents younger than 27

years would most likely not have upgraded their devices. Their decision was based on an assumption as respondents younger than 27 could have purchased a new cell phone [smartphone], regardless of whether they owned a cell phone contract or not. A 27-year-old might not be as inclined to next generation purchases, basic function usage and innovation function usage when compared to someone in their late teens and early twenties, for example. Furthermore, this research did not provide the split-off age used to distinguish between old and young respondents.

2.4 Product introductions

Product introduction strategies are employed by companies in order to persuade consumers to purchase newer generations of their products. However, as consumers have become smarter, they are often able to learn and predict introduction strategies (Boone, 2014). This often confronts consumers with issues such as anticipated regret, whereby consumers feel that if they purchase a product today they run the risk of missing out on an enhanced, superior product in the future.

Boone (2014) investigated rapidly-changing technologies and questioned whether consumers were more likely to purchase a smartphone, for example, an iPad with the latest operating system at a premium, or purchase a previous generation device at a lower cost. This research also aimed at answering questions related to multiple generations of a product being offered in succession and how this affected the perception of consumers in terms of price decline due to the improvement of technology between generations of devices. Furthermore, Boone (2014) looked at the time period between generations of devices and how that affected the purchase behaviour of consumers.

Boone's (2014) research consisted of two studies. The first study investigated consumer expectation formation and looked at introductory patterns and if consumers are capable of learning introductory patterns to predict future introduction patterns. In this study, personal computers (PCs) spanning over eight generations were used. Respondents were asked to indicate in which year they believed the PCs were introduced, and what differences they perceived between the generations of PCs. The respondents were also asked when they thought the next generation of the PC would be introduced and what differences they expected

to see in the next generation. This study was conducted among 102 MBA (Masters of Business Administration) students of which 98 usable responses were returned. Boone (2014) states that MBA students were selected for this research as they reflected consumers that own and use PCs. The results of this study show that consumers are aware of previous introduction strategies and, based on their knowledge of previous introductions, are able to make predictions for future product introductions.

The second study focused on "consumer purchase decisions under asymmetrical rates of technological advance and price decline across multiple product generations and levels of technological sophistication" (Boone, 2014:99). In this study, participants were asked to assume the role of an office manager. The study was carried out among 159 MBA students of which 157 responses were returned. Hypothetical software and PCs were used to investigate perceptions of high and low technological sophistication. The products used were given fake brand names to avoid preconceived notions that consumers would have towards existing brands. These preconceived notions include "technological sophistication, product generation, rate of technological advance and price decline" (Boone, 2014:100). The respondents were informed of the introduction date for each product generation, the price of each product, and the benefits associated with each generation in terms of increased productivity based on the use of software and workstations. The notions of technological advance and price decline were then put through a series of scenarios, in which technological advancements were measured against price decline.

The results of the second study show that the latest generation of PCs always had the greatest benefit for consumers even though the price was at a premium. In addition, the benefits of products outweighed their cost, therefore making any generation of the present device the most viable choice. The newest technology was preferred when technological advancement was rapid.

Boone's (2014) research questions suggested that his research pertained to the consumer's adoption of the latest generation iPad vs. an earlier version. However, the research questions set out by Boone did not match the research that was carried out. He based his research on introduction strategies for laptops, PCs, workstations and software, spanning a few

generations. This was done in the form of simulation exercises which asked respondents to pretend they were office managers making a purchase decision in the real world. This research is not reflective of the adoption of technologies and the influence of technological generation on actual everyday consumers, since there is a vast difference between an office manager and an everyday consumer making a purchase decision.

Study 1 also looked at generations of laptops and investigated the consumer's perception of when it was introduced and what differences they expected in the new generation of the device. The devices used to assess introductory strategies and learning on the part of consumers were laptops. For study 1, it can be assumed that an MBA student might also be a consumer. However, there is a vast distinction between a laptop and an iPad even though both offer similar functionality. The adoptions of these devices would differ depending on the consumer's requirements. Furthermore, when Boone talks about technological advancement, he only refers to the actual device but not to any product extensions that might be provided with the device as part of the technological sophistication of the device generation, which leads to the purchase of the device (Boone, 2014).

Shih and Schau (2011) looked at the notion of anticipated regret of the consumer, which is if a consumer purchases a product today, they risk missing out on a newer or updated version of the product in the future. They also looked at the notion of perceived rate of innovation, which refers to the rate at which technology advances as perceived by consumers in response to an upgrade decision.

Their research consisted of two experiments. The first experiment was used to test hypothesis 1, which is "Higher (lower) PRI [perceived rate of innovation] leads to higher (lower) levels of AR [anticipated regret] associated with foregoing future technology" (Shih and Schau, 2011:244). In this study, 98 MBA students were randomly selected of which six were disqualified because they already owned a DVD (Digital video disk) player. Two units were used to measure the perceived rate of innovation - high and low. Anticipated regret was measured by using a scale and thought elicitation. Based on which perceived rate of innovation group they belonged to, respondents were asked to read a magazine article. The low perceived rate of innovation group read an article stating that DVD formats, in particular

Blu-ray technology, would remain the same over the next few years. The high perceived rate of innovation group read an article stating that DVD technology companies in China have developed their own DVD format. However, this particular DVD player would not be able to play another DVD format.

The respondents were then asked to imagine that they had just purchased a new big screen plasma television and the salesman offered to sell them a new Blu-ray DVD player. They had to decide whether to upgrade to the new DVD player or delay the upgrade until later. The results indicate that a high perceived rate of innovation leads to the anticipated regret of the consumer on the current technology available. The validity of these results, however, is questionable as the respondents were each paid $5 for their participation. According to Sekaran and Bougie (2013:179), respondents who are given incentives for their participation "may come from an environment of deprivation" and therefore their responses might be biased.

In the second experiment high and low levels of perceived rate of innovation were tested in comparison to the moderation [controlling effect] it has on a consumers purchase decision when a justification to make a purchase was either present or absent. For this study 200 respondents from local churches and libraries were identified. Their ages ranged from 19-69 years. They were given a scenario where a fictional persona named Sally needed to upgrade her cell phone because she required a higher resolution camera for her video blog. The manufacturer of the phone she was interested in purchasing planned to launch a newer model soon in the same price range as the cell phone she was interested in purchasing. However, Sally knew very little about product introduction strategies and how to compare the current phone on offer with the future phone that is yet to be released. If Sally was to take out a new contract she would not be able to purchase a new phone for the two-year duration of the contract. However, Sally was going abroad soon and wanted to capture videos on her trip for her video blog. The respondents were asked to put themselves in her situation and answer questions related to delaying upgrades and anticipated regret.

Respondents in the high perceived rate of innovation group were told that cell phones are currently undergoing rapid feature changes. The low perceived rate of innovation group were

told that technology would not be changing any time soon, and that no improvements were going to be made. The results show that perceived rate of innovation was the only factor that influenced the adoption of future technology in smartphones, and that when moderation [a controlled effect] existed and no justification to make a purchase is provided there is a difference between "low PRI and high PRI conditions in AR and delay of upgrade" (Shih and Schau, 2011:248). Therefore, when justification is absent, anticipated regret is evident and consumers will ultimately delay their upgrade. The same can be said when justification is present as there is no significant difference between high and low perceived rate of innovation in terms of anticipated regret. In other words, justification does not cause anticipated regret.

This research also only took into account the notions of justification, perceived rate of innovation and anticipated regret in terms of an actual device and its functionality. It did not take product extensions into account and whether a consumer would purchase a product today if it came with a product extension that had a high level of perceived rate of innovation. Rapid changes in technology would mean that consumers would forgo a future technology that was completely different in terms of innovation from the product extension available today.

2.5 Durable products

A durable product refers to a high quality, long lasting product that can withstand wear and tear and that can be used by consumers even though newer generations of the same or a similar product are available on the market.

According to Liberali *et al*. (2011), owning a durable product [device] often changes the manner in which consumers feel about it. Due to the prolonged exposure and usage of a durable product the consumer's interest towards a newer product may change due to habits they formed with their current product. This habitual behaviour also leads to price sensitivity of a durable product. Product performance is important to consumers when making replacement purchases. Liberali *et al*. (2011) assumed that, when making a replacement purchase, consumers will only consider a product if it out-performs the product they already own. They believe that additional functionality contained within a product often attracts consumers to the product even if the features are never used. However, some consumers feel

overwhelmed by too much functionality, which often reduces their interest in newer generation products/newer models of a product.

In this research, Liberali *et al*. (2011) model how price sensitivity and habituation on the part of consumers affect a firm's decisions across multiple generations of a product, based on price and quality. It also takes into account selling to both new and experienced customers. The researchers investigated through a series of scenarios how price sensitisation and habituation affect myopic and forward-looking firms. In the first set of scenarios it was assumed that the firms were myopic. The baseline usually set for purchases in the first generation was deviated from, whereby the analysis was run over 10 product generations rather than focusing on a single generation.

In scenario A, price sensitivity was decreased for a myopic firm. The result of this was that with each new product generation there was a decrease in the value offered when compared to the first generation of that product. This is primarily because when price sensitivity was reduced with each product, the firm's strategy was to offer a higher quality product at an even higher price. The results indicate that a consumer who purchased a product already has low price sensitivity and will make a replacement purchase even though the price is higher. With each generation the repeat sales increase and after the eighth generation of the product, sales fall. However, overall profits continue to rise due to a high number of experienced consumers purchasing products, even though the price rises faster than the quality.

The price sensitivity of the myopic firm was increased in Scenario B. In this strategy, a firm would reduce their price over time gradually but keep their quality fixed. Even though more consumers try the product there are no repeat purchases and sales fall with generation to generation.

In scenario C, "price sensitisation [is] followed by habituation" (Liberali *et al*, 2011:405). During this scenario, price sensitisation decreases with each new purchase and many repeat purchases are made until consumer habituation sets in and sales decrease eventually. However, the firm can still sell products to a narrow group of repeat and new consumers.

Scenario D looked at price sensitisation followed by habituation for a forward-thinking firm. In this scenario, the levels of quality and price start with a high discount rate and rapidly increase within three generations. After the third generation the firm then cuts its price while keeping its quality high. The firm sees a decrease in profit due to the reduced cost. However, due to the reduced cost more consumers become interested in the product.

In comparison to the myopic firm, the forward-thinking firm, which offers a discount, suffers a massive decline in profits. However, a forward-thinking firm with a discount rate, however low, builds its consumer base over time and the profits that are generated gradually are significantly higher overall. This is due to many more customers upgrading to the newest generation of the product.

The critical issue with these scenarios was that for both the myopic and the forward-thinking company, the model only focused on quality, price sensitivity and habituation and not on the innovation of the products. If the forward-thinking company were to gradually increase innovation in their products, consumers would keep coming back for the latest generation of the product. This can be incorporated into both the high and low discount rate situations. Furthermore, once habituation has set in, even in the case of the myopic firm, if the innovation of newer generations of the product is enough to impress the consumer, they will adopt the new device. All the scenarios in this model focused on quality to provide consumers with a durable product; this needs to be combined with sustained future innovations for consumers to make repeat purchases.

2.6 Paid-for smartphone apps

In this section of the literature review, research conducted on the consumer's intention to adopt a paid-for smartphone app will be considered. An app is a software program that can be downloaded from an app store or the Internet onto a smartphone that supports downloadable apps. In some cases, consumers have to purchase an app to make use of its functionality. In other cases, apps can be downloaded free of charge.

Wu, Kang and Yang (2015) conducted a study that focused on paid-for smartphone apps and the reason why consumers choose to adopt these paid-for smartphone apps. This research had three parts to it. Firstly, it looked at the characteristics of paid-for apps in the form of

perceived usefulness and perceived price. Secondly, it looked at the personal characteristics of users in the form of self-efficacy and personal efficacy. Thirdly, by taking both mass and peer influence into account, it looked at social characteristics to investigate the consumers' reason for purchasing paid-for apps. The researchers state that when a purchase decision is made consumers normally keep the product functions, brands and costs in mind. However, with regard to apps, users pay less attention to brands associated with the app and determine the value of the app through its perceived usefulness. Some smartphone apps are brands of their own, though; for example, WhatsApp that exists as either a web browser extension or mobile app. Furthermore, anything that has a logo or visual representation can be considered as a brand.

Wu *et al*. (2015) also believe that price/cost plays a role in the consumer's purchase decision. Consumers who perceive the cost of an app to be too expensive are generally hesitant to purchase paid-for apps. Furthermore, matters such as consumer attitudes and self-efficacy also played an important role in the consumer's decision to adopt paid-for apps.

Wu *et al.* (2015) believe that social characteristics in the form of mass communication and peer influence have an influence on the consumer's behaviour to adopt a paid-for smartphone app. This is because consumers are more likely to trust the judgement of someone close to them when making a decision to adopt a paid-for smartphone app. Wu *et al*. (2015:19) also looked at the relationship between the consumer's "attitude and intention to purchase paid apps" and if notions such as perceived ease of use, enjoyment and playfulness had an impact or influence on the consumer's attitude to purchase smartphone apps.

Wu *et al.*'s (2015) study was conducted among 231 undergraduate students over a one-month period. Their data collection method was a survey consisting of a two-part questionnaire. The first part of the questionnaire was used to answer questions related to the objectives of the study, while the second part of the questionnaire was used to generate demographic data. The ages of the respondents ranged from 18 – 30 years old of which 124 were males and 107 females. The overall results of the survey showed that 151 participants opted not to use paid-for apps, while 80 opted to use paid-for apps.

The research also shows that the most popular categories of paid-for apps are entertainment, lifestyle and educational. Consumers are more likely to adopt paid-for apps if they perceive them to be useful, i.e., if the apps contain functionality that consumers are willing to pay for. Furthermore, self-efficacy also led to the consumer's decision to purchase a paid-for smartphone app. Consumers were willing to adopt a paid-for smartphone app as they could use their own acquired skills, as opposed to their natural skills.

Peer influence in the form of referrals from colleagues, friends and family also has a positive influence on the consumer's adoption of paid-for apps. In addition, consumer attitudes towards paid-for apps had a positive influence on their intention to adopt a paid-for app. However, factors such as price, personal motivation, and mass influence does not support or influence the consumer's attitude and intention to purchase a paid smartphone app.

Although this research looked at the consumer's intention to purchase a paid-for app, it did not look at their ability, from a self-efficacy point of view, to download a freemium app, i.e., a free app with in-app purchases. This allows users to use certain functionality within the app for free and then purchase additional functionality within the app at a premium cost.

2.7 Summary of gaps identified in existing literature

Hassan *et al*. (2014:769) state that the "ultimate purpose of the study [was] to investigate the interrelated importance between the perceived consequences in affecting the intention of (a) initial adoption, (b) continuous usage of smartphone apps". Nonetheless, as part of the initial adoption of apps, the researchers should have included perceived innovation and intention to adopt apps as part of their research. This is primarily because consumers are often driven to use and download apps based on the new functionality that it has to offer.

The Liberali *et al*. (2011) model did not focus on the innovation contained within the products of both the myopic and the forward-thinking companies. Hence, if the forward-thinking company were to increase innovation in their products gradually, it would keep consumers coming back for the latest generation of the product. This can be incorporated into both the high and low discount rate situations. Furthermore, even once habituation set in with the myopic firm, if the innovation contained within newer generations of a product is enough to

impress the consumer they will adopt the new device. In addition, all the scenarios of this model focused on quality in terms of providing consumers with a durable product. This needs to be combined with future sustained innovations for consumers to make repeat purchases. These gaps lend themselves to research hypothesis 1 (H1): A change in consumer behaviour has attributed to a decline in smartphone sales due to product durability and lack of product innovation.

Morimoto and Nagahata (2013) did not take into account purchases made online, as they assumed that the consumer would still make a purchase in a physical store. However, due to the introduction of apps that allow in-app purchases, the consumer is now no longer moving towards an online to offline environment but rather towards a continuous online environment.

Wu *et al*. (2015) looked at the consumer's intention to purchase paid-for apps; however, they did not look at the consumer's ability from a self-efficacy point of view, to download freemium apps, i.e., a free app with in-app purchases. Freemium apps allow users to use a certain functionality within the app for free and then purchase additional functionality within the app at a premium cost. This led to research hypothesis 2 (H2): Freemium/paid-for content has resulted in consumers realising that instead of purchasing a new device they can simply download an app to add functionality to their device.

The primary objective of Wollenberg and Thuong's (2014) research was to point out the key variables (such as advertising, perceived quality, price, word of mouth and brand perception) that influence brand perception and purchasing decisions in the smartphone industry. Their research did not look at the notion of perceived innovation as part of their conceptual development and key variables and how that affects consumer purchasing decisions. The smartphone industry is governed by rapid advances in technology and these innovations are often attributable to a consumer's perception of a brand. This also plays a role in the consumer's overall decision to purchase a particular brand of smartphone or not. Research hypothesis 3 (H3) arises from this scenario: Brand-conscious consumers are willing to purchase cheaper brands.

Wollenberg and Thuong's (2014) research findings show that factors such as word of mouth significantly influence the consumer's purchase decision process in the smartphone market. However, in an online to offline environment consumers have the ability to search for products online and make purchases in the physical real world (Morimoto and Nagahata, 2013). Consumers should not rely primarily on the information that arises out of the online to offline environment since product 'talk-up' that occurs online is often misleading (Morimoto and Nagahata, 2013). In online to offline environments consumers should seek knowledge from consumers who have a usage history with a particular product about products they are interested in purchasing. An ideal reference point for this would be to ask friends and family whose opinion they value, about their experience with a particular product. Based on that knowledge they can then make an informed decision on whether or not to adopt a particular product. This gives us research hypothesis 4 (H4): Word of mouth (friends and family) influences consumer behaviour.

Boone (2014) looked at the technological advancement of products and only referred to the actual device. He did not refer to any product extensions that might be provided with the device as part of the technological sophistication of the device generation, which leads to the purchase of a device. Shih and Schau (2011) explored the notions of justification, perceived rate of innovation and anticipated regret in terms of an actual device and its functionality. However, they did not take product extensions into account and whether a consumer would purchase a product if it came with a product extension that had a high level of perceived rate of innovation. Rapid changes in technology would mean that consumers would rather get a product with its extension and forgo a future technology that was completely different in terms of innovation. This gives support to research hypothesis 5 (H5): Product extensions lead to a consumer purchasing a smartphone.

2.8 Theoretical framework

2.8.1 Social judgement theory

The theory that underpins this research is the social judgement theory devised by Muzafer Sherif in 1961. This theory works on three distinct levels; that of acceptance, rejection, and non-commitment (Sherif, cited in Griffin 2012).

2.8.2 Smartphone appreciation model (SAM)

The Smartphone Appreciation Model was developed to prove that the decline in smartphone sales and ultimately the pop in the smartphone bubble are due to a combination of factors [Figure 2.1]. The model does not include price as a factor, because it assumes the consumer already owns a smartphone. It assumes that the decline in smartphone sales is due to consumers keeping their devices for longer (that is, choosing not to purchase a new smartphone) as a result of the factors identified in Figure 2.1.

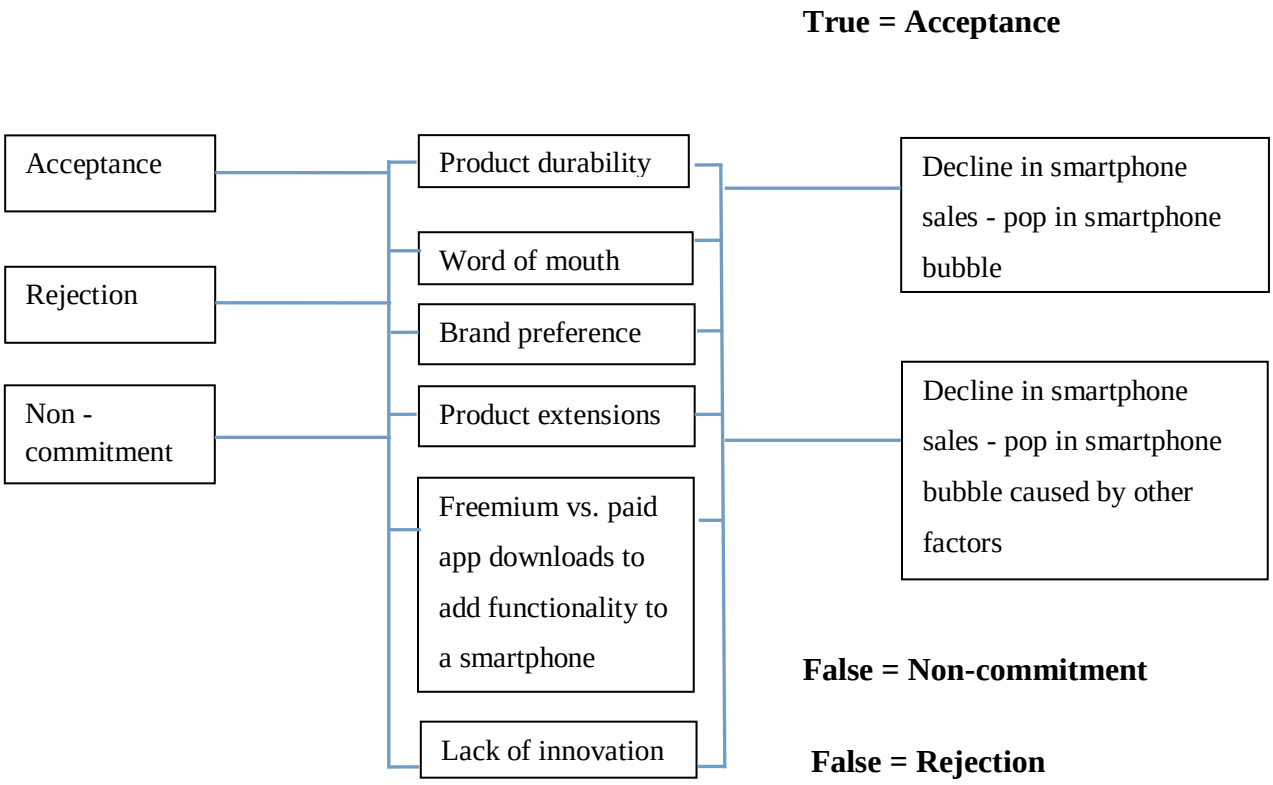


Figure 2.1 Smartphone appreciation model (SAM)

The latitude of acceptance consists of the range of ideas that a consumer sees as reasonable. The latitude of rejection consists of the range of ideas that a consumer sees as non-reasonable. The latitude of non-commitment consists of the range of ideas that a consumer is ambivalent

about (Sherif, cited in Griffin 2012). The latitude of non-commitment is treated as a false response because no definitive result can be concluded from a result of this type. For this reason, a neutral response to any of the above factors should immediately be seen as a rejection.

In order to prove that a decline in smartphone sales has resulted in a pop in the smartphone bubble, all of the factors mentioned will have to be true namely, product durability, word of mouth, brand preference, product extensions, freemium vs. paid app downloads to add functionality to a smartphone, and lack of innovation. If these factors are found to be true it will then be understood that the consumer's intent to purchase a new smartphone is directly influenced by them.

2.9 Summary

This chapter reviewed the literature surrounding the area of research. The literature was grouped into themes which offered a critique of the literature and identified gaps within the research. These gaps were then summarised and used to generate the research hypotheses which were used to generate the research findings in Chapter 4 of this dissertation. Chapter 2 also explained the Smartphone Appreciation Model, which was developed to establish that the pop in the smartphone bubble can be attributed to a combination of factors. In Chapter 3 the research methodology used within this study will be discussed.

CHAPTER 3 - RESEARCH METHODOLOGY

3.1 Introduction

Research methodology refers to the methods used by a researcher to conduct their research. Research is often governed by various research paradigms which are philosophical in nature, i.e., post-positivist, constructivist, transformative and pragmatic. Research paradigms are also referred to as world views that are based on the discipline in which the research is based, as well as the feelings and past experiences of the researcher. These views are often used to determine the approach that a researcher will take, such as a qualitative, quantitative, or mixed methods approach (Creswell, 2014).

This chapter discusses the research methodology used within this research study. It details how the research for this study was conducted and discusses the various research components used in this study. The components used in this study include the research design, study area, target population, sampling techniques, sample size, research instruments, pre-testing, validity and reliability, data collection techniques, data analysis, and ethical considerations. Each will now be discussed.

3.2 Research design and rationale

The research design refers to the framework used within a research study. This research was conducted using a quantitative study, whereby a research instrument in the form of a questionnaire was given to respondents to collect data for analysis. A pragmatic worldview was used for this research, which is based on an undertaking and the consequences that result out of that undertaking (Creswell, 2014). The rationale behind this research design is that quantitative studies use statistical figures which provide accurate data for this type of research. As qualitative data is generally open ended, the responses cannot be controlled and are difficult to measure. Therefore, a quantitative questionnaire was developed for this study as it is a very convenient research instrument that can be used to survey a large group of respondents.

3.3 Study area

The study area or location chosen for this study was North Beach, Durban. This area was selected because it is a public place, and more so because it is a popular hangout amongst

Durban citizens. Thus, one can expect to find a mixed demographic of people, differing in social class, background, gender, race and age. Surveying people belonging to different backgrounds is crucial to this study, since it will provide a mix of respondents, and not just a set of respondents belonging to the same socio-economic group or population.

Furthermore, through observation conducted at the location prior to the commencement of the research, it was identified that there were numerous smartphone users that frequent the location, therefore making it an ideal location to survey respondents for this study. Marczyk *et al.* (2005) state that when participants are aware of being observed they alter their behaviour. In order not to alter the behaviour of smartphone users at the location, unobtrusive observation was used.

Previous smartphone research conducted by Mokhlis and Yaakop (2012), whose research was conducted among university students, show that due to the homogeneity of the sample, the various parts of the population were not reflected accurately. The researchers also state that future research should extend beyond a university environment "for a more representative assessment of factors influencing consumers' choice of mobile phone in general society" (Mokhlis and Yaakop, 2012:208).

3.4 Target population

A target population refers to the total population of the area being surveyed. It is from the North Beach population group that the sample group of respondents was derived. According to statistics from the 2011 South African census, the total population of North Beach was 7296 (Firth, 2011). It is from this total that the research sample for this research was generated using Krejcie and Morgan's (1970) table. In order to perform a probability study, the population size of the location was used to determine the population sample. However, the respondents targeted for this research were a combination of visitors and residents located in public places within the vicinity and who owned smartphones.

3.5 Sampling techniques

There are various forms of sampling techniques, namely probability, quota, and convenience, among others (Sekaran and Bougie, 2013). For the purposes of this research a probability sample was used, since the total population size of the location being surveyed was known. In

this research, a simple random sample was used whereby the desired number of respondents was selected.

Researcher bias was eliminated as all potential respondents present at the location that were smartphone users and 18 years of age or older had equal opportunity to participate in this research.

3.6 Sample size

The sample size for this research was determined using Krejcie and Morgan's (1970) table, a table that is used to determine the sample size when a finite or known target population is present. The sample size for this research, as calculated per Krejcie and Morgan's (1970) table, is 367 using a population size of 8000 which catered for both visitors and residents at the location.

3.7 Research instruments

The research instrument used in this study was a questionnaire from which quantitative data was derived. The first section of the research questionnaire was used to collect demographic data and the second section was used to collect data based on the research objectives and questions that this research will answer in the subsequent chapters of this dissertation. Section 2 was broken down into the following categories: consumer behaviour, downloadable apps to add functionality, branded products vs. cheaper brands, word of mouth, and product extensions.

The questionnaire was structured in a way that would make it easy for the respondent to answer. The demographic section of the questionnaire contained questions that respondents had to tick off. The categorical section of the questionnaire consisted of questions based on a 5 point Likert scale, whereby respondents were asked to tick their response to a given question based on the following options: Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree.

3.8 Pre-testing

Pre-testing is a common practice in research whereby research instruments are tested using a sample group of people before they are sent out to the actual sample group (Sekaran and

Bougie, 2013). This is helpful in that it aids the researcher to identify flaws in a research instrument, such as the questionnaire in this study.

For this study, pre-testing was done by handing out two questionnaires. This was done to evaluate the respondents' understanding of the questionnaire, and to determine the time required to answer the questionnaire. A similar pre-testing method was used by Mokhlis and Yaakop (2012), who pre-tested their survey using a draft version to test the clarity, understanding and the respondents' ability to complete a questionnaire. Sekaran and Bougie (2013:158) state that pre-testing is important as it ensures that "there are no problems with the wording or measurement" of the research instrument. This notion is also upheld by Marczyk *et al.* (2005).

3.9 Validity and reliability

Cronbach's alpha is a reliability test that was used to test the reliability of the data. The reliability of the data was based on the following scale (SPSS Tests, 2016):

> 0.90 = very high reliability

> 0.70 to 0.90 = high reliability

> 0.50 to 0.70 = reliability is quite high

< 0.50 = low reliability

The reliability scores for the various factors used in this study are as follows: consumer behaviour (0.649), downloadable apps to add functionality (0.606), branded products vs. cheaper brands (0.697), word of mouth (0.699) and product extensions (0.703). A cronbach alpha score of 0.50 to 0.70 indicates that reliability is quite high (SPSS Tests, 2016). Furthermore, since all the values are above 0.6 they fall within the threshold for exploratory research (Nunnally and Berstein, cited in Lee 2013) and are therefore suitable for this research.

Although tests were conducted on the questionnaire before it was given to respondents, there was no guarantee that respondents who participated in the research answered the questionnaire truthfully. Therefore, in terms of reliability it had to be assumed that the data provided by the respondents was both factual and accurate. Sekaran and Bougie (2013) state that it is the

respondents' ethical responsibility to answer the questionnaire honestly and truthfully and that they should avoid providing false information.

3.10 Data collection technique

A questionnaire was used to collect primary data from respondents. The questionnaire was designed to generate quantitative data to provide answers to the research questions and to test the research hypotheses. The questionnaire comprised of two sections; the first was used to collect demographic data while the second was used to collect data related to the research questions. Each research question was linked to one of the following categories: product durability, lack of innovation, freemium/paid apps content, product extensions, less brand-conscious consumers, and word of mouth.

The questionnaire was based on a 5 point Likert scale and respondents were asked to respond to statements by selecting one of the following options: Strongly agree, Agree, Uncertain, Disagree, Strongly disagree. The questionnaire was designed in this way to make it easier and less time-consuming for the respondents to answer the questions; respondents simply had to tick off the option of their choice. The data was collected over a one-month period. Respondents were selected to participate in the research provided they owned a smartphone and were 18 years of age or older. Respondents were selected by randomly approaching people at the location in public places such as outside buildings (flats and hotels), restaurants, parks and gardens, and along the boardwalk. The issue with collecting data in a public place is that many potential respondents assumed that were about to be sold something e.g. a timeshare and declined to participate in the study. Furthermore, the data was collected at different times during the day to "reduc[e] location and timing biases" (Mokhlis and Yaakop, 2012:206). The results of the survey were then analysed using the data analysis procedure explained in the following section.

3.11 Data analysis

The data was analysed using statistical software SPSS and Excel, as described in Chapter 4. The demographic data collected from section one of the questionnaire is represented using descriptive statistics in the form of percentages and pie charts. The research questions are analysed in Chapter 4 according to the following procedure:

Each research question was analysed using data from the various sections of the research questionnaire. Individual questions were reduced to descriptive statistics in the form of percentages, frequency tables, histographs and pie charts. Inferential statistics was used to make correlations between the data sets. Hypothesis testing in the form of a non-parametric single sample chi-squared test was used to test the observed data against the research questions. Moreover, since this research was measuring the attitudes of consumers, means/averages and standard deviations were derived from the data set.

In order to prove that the smartphone bubble had popped, the null hypothesis for each research hypothesis had to be rejected. Therefore, the results needed to fall within the area of acceptance when tested against the Smartphone Appreciation Model developed for this study.

3.12 Ethical considerations

In terms of ethical considerations, ethical clearance was obtained from the University of Kwa-Zulu Natal's ethics committee prior to data collection as this research was conducted as part of a university project. Furthermore, as this research concerned smartphone users, and teens and tweens these days also have their own smartphones, they could only be approached with the consent of their parents. Therefore, it was decided that only respondents 18 years and older would participate in this research.

All respondents were asked to fill in and sign an informed consent form in which anonymity and confidentiality were promised. This was done to obtain permission to use the data generated by the respondents. According to Marczyk *et al.* (2005), informed consent is the foundation for protecting human rights. The respondents were also informed that their participation in this research was purely voluntary and that this research was being conducted as part of an MBA (Masters of Business Administration) dissertation. Furthermore, respondents were informed that they would not receive any remuneration for their participation in this research.

3.13 Summary

Chapter 3 discussed the research methodology used to conduct this research study. The research approach and design that was used for the study was explained. It also explained the target sample and how the sample size for the research was arrived at. The construction of the

research instruments and how the data was collected through them was presented. Furthermore, it also outlined how the data collected via the research instruments would be analysed in Chapter 4 of this dissertation.

CHAPTER 4 – DATA ANALYSIS

4.1 Introduction

This chapter analyses and discusses the data that was collected for this study and derives conclusions based on the research questions and hypotheses. The data was collected using a 5 point Likert scale on a questionnaire which contained two sections. The first section was used to collect demographic data, and the subsequent section was used to collect data based on the following dimensions: consumer behaviour/product durability, word of mouth, downloadable apps to add functionality, product extensions, and branded products vs. cheaper brands.

This study was conducted among smartphone users by making use of a probability, simple random sampling technique. A sample population size of 367 was derived using Krejcie and Morgan's (1970) table. A total number of 226 respondents answered the questionnaire and the survey results are discussed in the following sub-subsequent sections.

4.2 Reliability analysis

4.2.1 Cronbach alpha value

Cronbach's alpha is the reliability test that was used to test the reliability of the data. Table 4.1 illustrates the cronbach alpha scores for each of the sections in the questionnaire, based on the questions used to test each research objective.

Table 4.1: Reliability analysis

Reliability statistics		
Factor	Cronbach's Alpha	N
Consumer behaviour	0.649	3
Downloadable apps to add functionality	0.606	2
Branded products vs. cheaper brands	0.697	2
Word of mouth	0.699	2
Product extensions	0.703	2

Since all the alpha values are greater than 0.6, the reliability of the data is quite high (SPSS Tests, 2016). Since smartphone technology is constantly evolving, smartphone research is at an early stage. According to Wollenberg and Thuong (2014), an alpha value above 0.6 is

acceptable for research at an early stage. Furthermore, since all the values in this study are greater than 0.6 they are within the threshold for exploratory research (Nunnally and Berstein, cited in Lee 2013). This alpha threshold is also supported by research conducted by Hassan *et al*. (2014), whose smartphone research had a cronbach alpha value of 0.606.

DESCRIPTIVE ANALYSIS

4.3 Demographic data

The respondents' socio-economic data is summarised in Figures 4.1 to 4.3

Gender breakdown

The gender breakdown of the sample of respondents surveyed is indicated in Figure 4.1. The data shows that the sample contained an equal percentage of males and females.

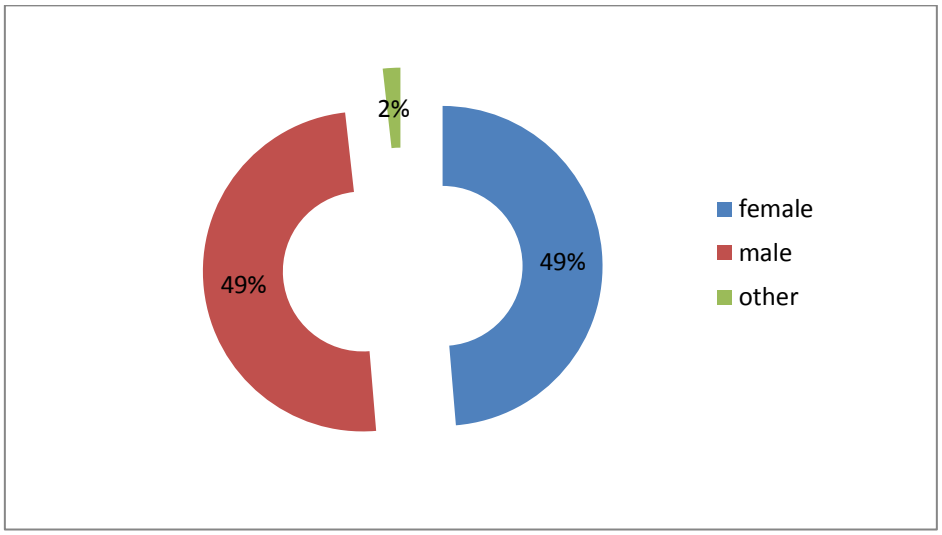


Figure 4.1: Gender breakdown

Age breakdown

The respondents surveyed were all older than 18 years of age. More than two thirds of the respondents (69%) were between the ages of 18 and 39 with the remaining 30% being 40 years or older [Figure 4.2]. This age breakdown might not truly reflect the age breakdown of the study setting as some potential respondents from all age categories declined to participate in the study.

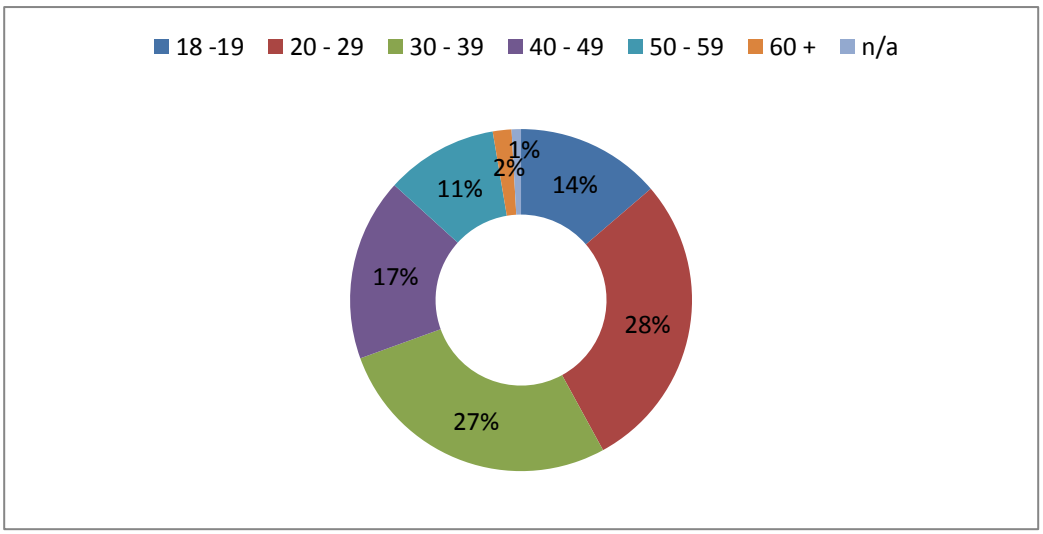


Figure 4.2: Age breakdown

Race breakdown

The racial breakdown depicted in Figure 4.3 might not depict the racial demographic at the location of the study accurately as some potential respondents from all racial categories declined to participate in the study. The results, however, show that of the respondents who participated in the study, the majority were Indian (50%), followed by Black (33%), Coloured (8%) and White (6%).

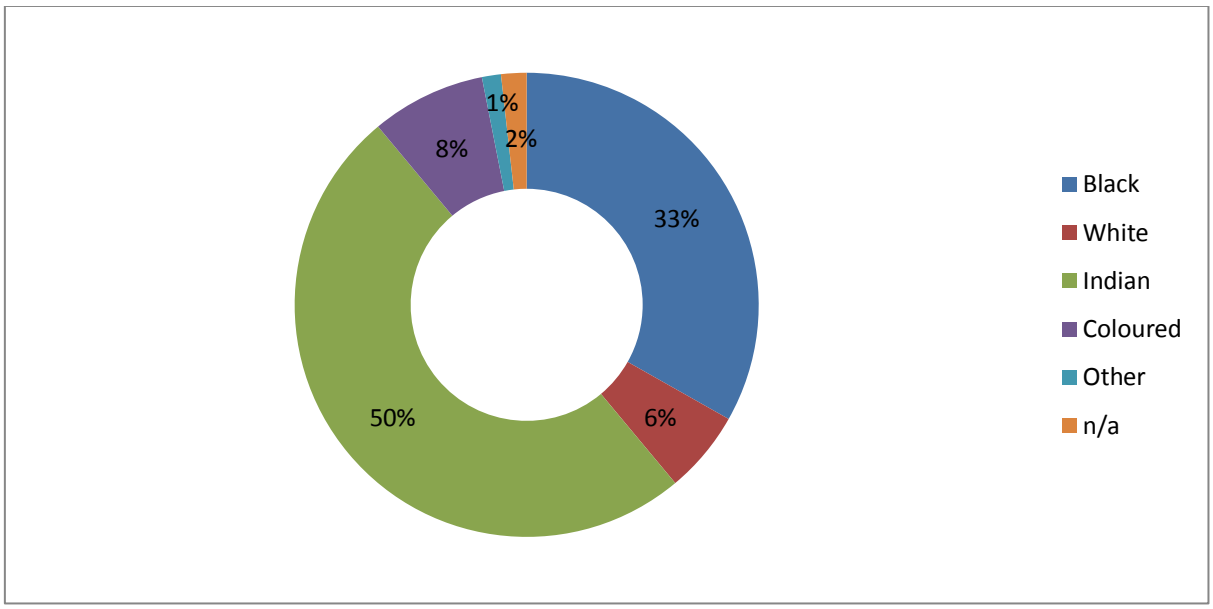


Figure 4.3: Racial breakdown

4.4 Smartphone ownership

4.4.1 Do you own a smartphone?

In order to be eligible to answer the questionnaire, respondents were first asked whether they owned a smartphone [Table 4.2].

Table: 4.2: Total number of smartphone owners

N	Valid	225
	Missing	1

Of the 226 respondents, 225 (99.6%) answered this question and 1 (0.4%) respondent left it blank [Table 4.2] and [Table 4.3].

Table: 4.3: Frequency of smartphone owners

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid responses	Yes	217	96.0	96.4	96.4
	No	8	3.5	3.6	100.0
	Total	225	99.6	100.0	
Missing	System	1	.4		
Total		226	100.0		

Of the total number of respondents, 217 (96%) indicated that they owned a smartphone and 8 (3.5%) indicated that they did not own a smartphone. Hence, the majority of the respondents (96%) owned a smartphone [Table 4.3].

4.4.2 Choice of smartphone brand

The most popular brands of smartphone were Blackberry and Huawei, each with 19%, followed by LG (14%) [Figure 4.4].

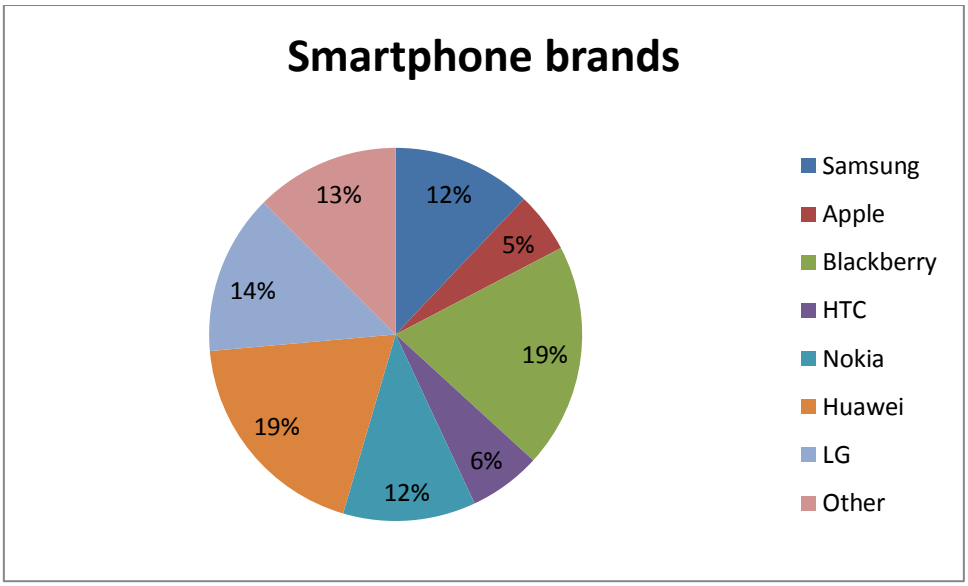


Figure 4.4: Smartphone brands

4.4.3 Duration of smartphone ownership and method of smartphone purchase

Respondents were asked how long ago they purchased their smartphones to determine whether they were keeping their smartphones for longer. The results indicate that a combined percentage of 37.39% of respondents (11.71% and 25.68%) have had their smartphones for more than two years [Figure 4.5]. These figures have an average of 1.64 and a standard deviation of 0.641, indicating an overall positive result for the data set of smartphone users.

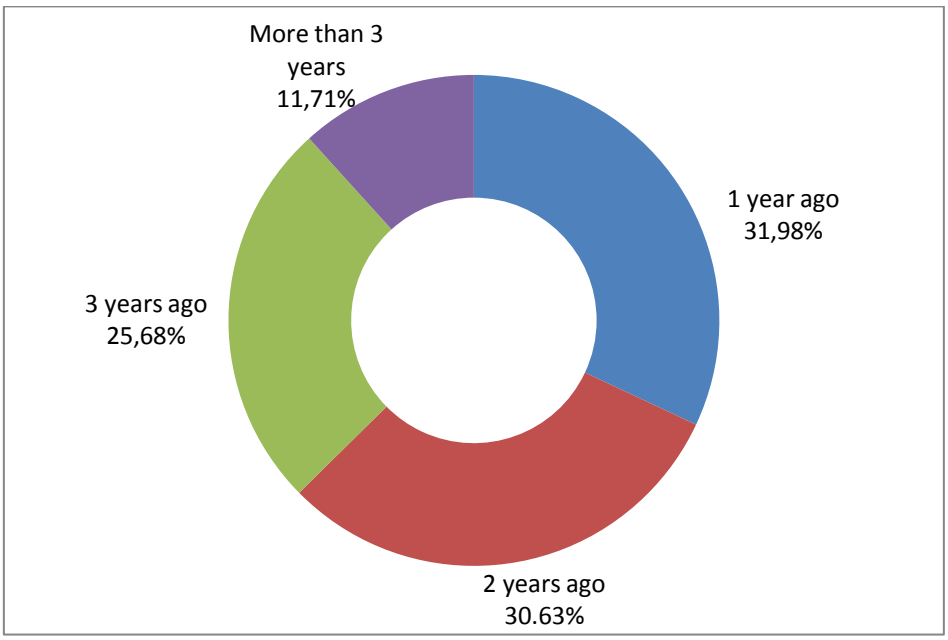


Figure 4.5: Duration of smartphone ownership

The duration of a cell phone contract in South Africa is typically 2 years. The survey findings [Figure 4.6] indicated that 44.59% of respondents were on contract, 46.40% on prepaid and 9.01% still used an older smartphone with a sim card only contract.

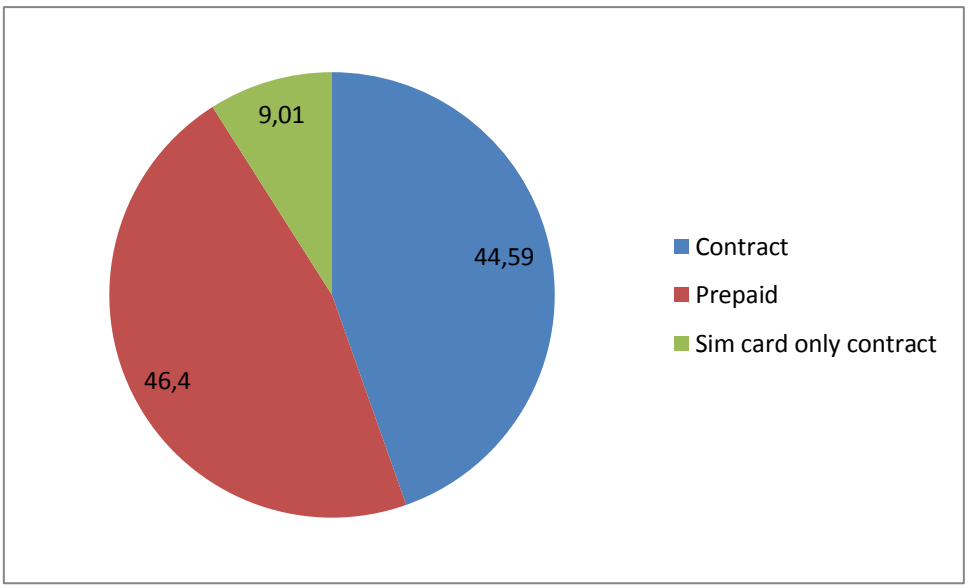


Figure 4.6: Method of smartphone purchase

4.5 Research objective 1 – Consumer behaviour/Product durability

4.5.1 Perceived rate of innovation and anticipated regret

This section of the questionnaire was used to test consumer behaviour and product durability in keeping with the following research question:

> *Has a change in consumer behaviour attributed to a decline in smartphone sales due to product durability and lack of product innovation?*

To get an understanding of the consumer's perceived rate of innovation in terms of awareness, respondents using Blackberry devices were asked if they agreed with the company's decision to use the Android operating system on their new devices. Of the 95 respondents who answered this question, a combined total of 69% agreed with the company's decision [Figure 4.7]. This indicates that the respondents have a high rate of awareness when it comes to new product innovations.

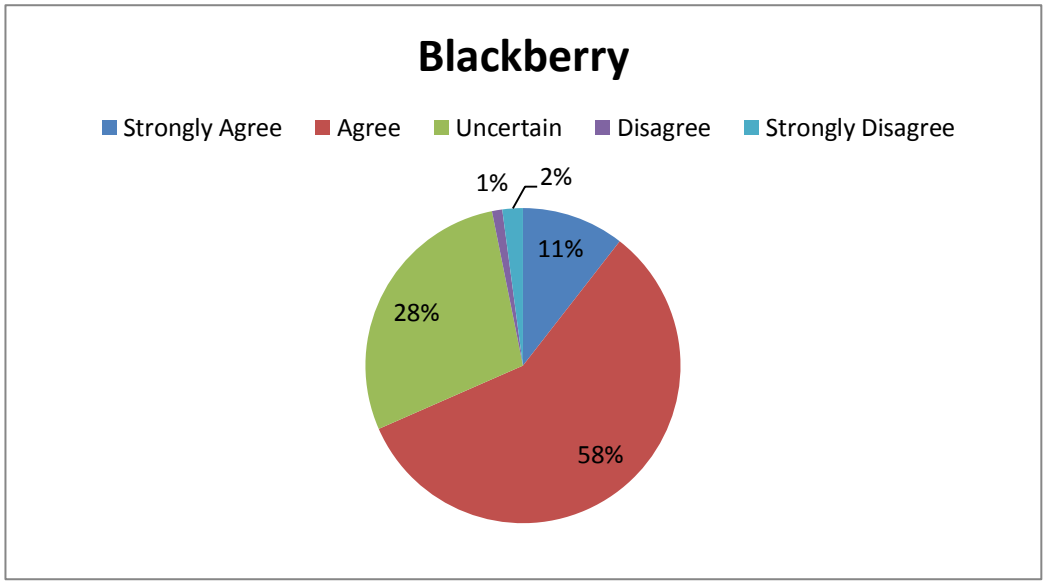


Figure 4.7: Android on new Blackberry devices

To investigate anticipated regret whereby consumers are willing to forgo a purchase today in order not to miss out on a future innovation, Samsung users were asked whether they were delaying their purchase of a Samsung device to try out Tizen, Samsung's new operating system. The results show that of the 133 respondents who answered this question, a combined total of 50% [Figure 4.8] agreed that they would rather wait a while so that they can purchase a new Samsung device that contained Tizen.

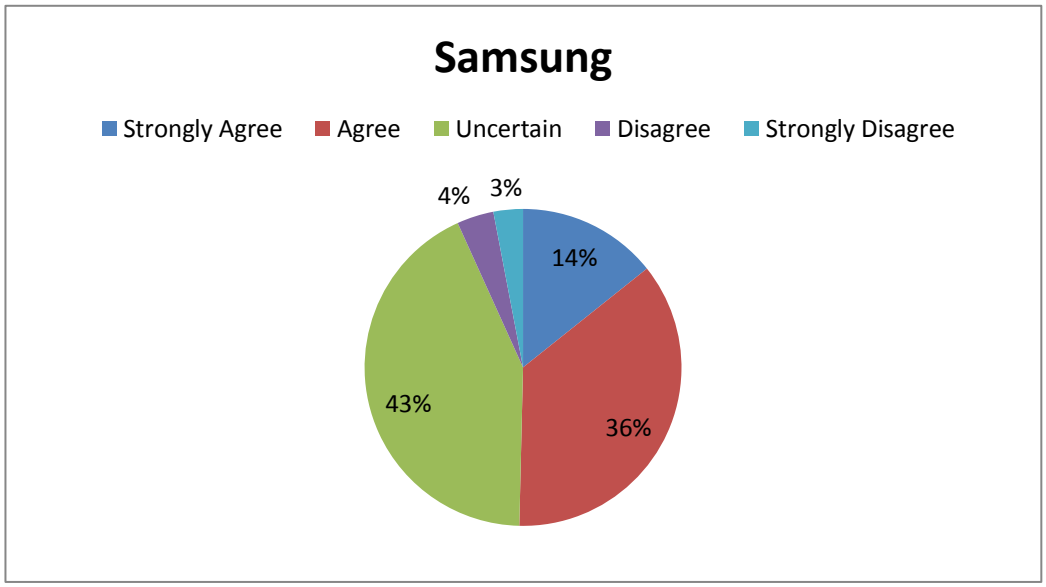


Figure 4.8: Tizen on Samsung devices

To further investigate anticipated regret, Apple iPhone users were asked if they were delaying their purchase of current models to purchase a future model. The results show that of the 81 respondents who answered this question, a combined total of 35% [Figure 4.9] agreed that they were delaying their purchase to acquire a future model. However, 54% of the respondents stated that they were uncertain.

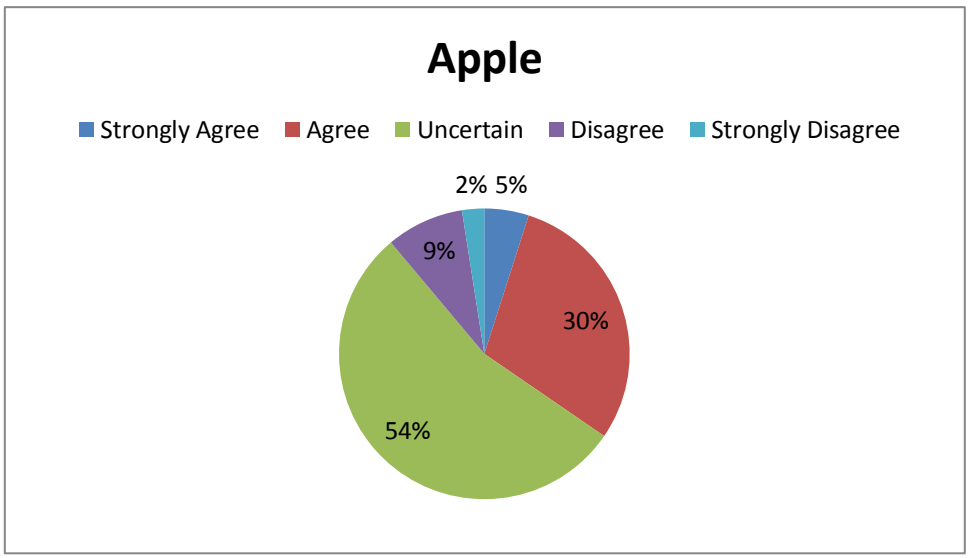


Figure 4.9: Apple consumers delaying purchases due to future models

From the above discussion it can be said that consumers, in terms of perceived rate of innovation, have an awareness of newer technologies on the market. Furthermore, consumers would rather delay their purchase of a newer smartphone than face the anticipated regret of missing out on newer technological innovations. Boone (2014:103) confirms this finding by stating that a "consumers' expectations about future product introductions were found to influence purchase behaviour".

4.5.2 Consumer behaviour

To test for a change in consumer behaviour, respondents were asked the following three questions on a 5 point Likert scale:

1. Newer models of smartphones don't appeal to me because they contain very little differences when compared to my current smartphone.
2. I don't feel that I need a new smartphone because my current smartphone meets all of my requirements.

3. I like keeping up with technology but the smartphones currently on the market don't appeal to me.

The results indicated that 97.8% of the sample answered these questions and 2.2% chose not to answer the questions.

Table 4.4: Item statistics - consumer behaviour

	Average	Std. Deviation	N
Newer models of smartphones don't appeal to me because they contain very little differences, when compared to my current smartphone.	2.21	1.032	221
I don't feel that I need a new smartphone because my current smartphone meets all of my requirements.	2.09	1.000	221
I like keeping up with technology but the smartphones currently on the market don't appeal to me.	2.46	1.089	221

Table 4.4 indicates the average and standard deviation values for the questions stated. The results indicate that the average values are positive as there is very little standard deviation from the average values.

A combined total of 167 of the respondents agreed that newer models of smartphones do not appeal to them because they contain very few differences when compared to their current smartphones. A total of 77.4% of the respondents agreed that they did not require a new smartphone because their present smartphone met all their requirements. One-hundred and thirty-two of the respondents also indicated that they like keeping up with technology, but the smartphones currently on the market do not appeal to them.

Research conducted by Okada (2006:96) supports these results as the study found that "people are willing to pay more to upgrade when the enhanced alternative is dissimilar [different] to

the existing alternative". These results are similar to research conducted by Mokhlis and Yaakop (2012), which state that factors such as innovative features influence consumers' decisions. Therefore, Boone's (2014:103) research finding that "consumer preference is highest for the latest generation of a high-tech product" is disproved.

Respondents were asked if they were delaying their purchase or upgrade to a new smartphone because they were emotionally attached to their current smartphones. The results indicate that a combined total of 61.9% of the sample disagreed with the statement. The results indicate an average of 3.44 with a standard deviation of 1.033, indicating that there is little deviation from the average. This indicates that a consumer's decision not to upgrade or purchase a new smartphone is not due to their emotional attachment to their current smartphone.

However, research conducted by Page (2014:78) that focused on product attachment and replacement indicates that the respondents felt that "there would be no need to upgrade as their existing products already met most needs and desires". The only exception to this is if a product has improved innovation. Furthermore, Page (2014) also found that emotional attachment is formed with every bruise associated with a product. For example, each crack or dent on a smartphone is associated with a particular memory. Since smartphones are often used to capture moments/memories in the form of photographs, videos, chats, sms messages, and more, this can further lead to the consumer's emotional attachment to their smartphone.

When asked if they were delaying their purchase of a new smartphone because newer models are too expensive, a combined total of 63.2% of respondents agreed with this statement. This finding is similar to that of Mokhlis and Yaakop (2012:208), who found that "besides innovative features and personal recommendation [word of mouth], price was also important". Other research findings indicate that due to habituation and products having a long shelf-life "consumers may continue to be interested in performance but are not willing to pay for higher levels [of performance]" (Liberali *et al*, 2011:408).

A further 31.98% of the sample population indicated that they purchased a new smartphone within the last year. This indicates that, regardless of the cost, consumers are still willing to purchase new smartphones. This is also consistent with research conducted by Okada (2006:96) that states that "when people already own an existing alternative, and an opportunity

arises to upgrade to a superior alternative, they are willing to pay more for the new, enhanced alternative if it is dissimilar to the existing alternative".

4.6 Research objective 2 – Downloadable apps to add functionality

4.6.1 Downloadable apps to add functionality

This section of the questionnaire was used to test whether the consumer would download an app to add functionality to their smartphone rather than purchase a new device. This section is in agreement with the following research question:

> *Has freemium/paid-for content available from the app stores resulted in consumers realising that rather than purchasing a new device to gain a particular functionality, they can simply download an app to add functionality to their device?*

This section of the questionnaire contained three questions, of which two were used to test this research objective [Table 4.5].

Table 4.5: Item statistics - Free vs. paid app downloads

	Average	Std. Deviation	N
If I downloaded a free app from the app store, that contained in app purchases, to unlock certain functionality, I would be willing to pay for these in app purchases.	3.28	1.066	224
I would rather purchase an app from the app store to add functionality to my smartphone rather than downloading a freemium app that contains in app purchases.	3.10	1.120	224

224 out of the 226 respondents answered this section of the questionnaire. Table 4.5 illustrates the average and standard deviation values. The results indicate that the standard deviation results are positive and that there is very little deviation from the average.

When asked if they would purchase an app from the app store to add functionality to their smartphones rather than downloading a free app that contained in-app purchases, a combined total of 33.04% of respondents agreed while a combined total of 41.97% disagreed [Figure 4.10]. This then stands to reason that the majority of consumers surveyed would rather download freemium apps than pay for apps to add functionality to their devices. This is in keeping with the combined total of 41% [Figure 4.10] that disagreed with the statement 'I would rather purchase an app from the app store to add functionality to my smartphone than downloading a freemium app that contains in-app purchases'. These findings are supported by research conducted by Page (2014), who found that products with upgradable parts (in this study apps that can be downloaded to smartphones), are used for longer than products that do not have upgradable parts.

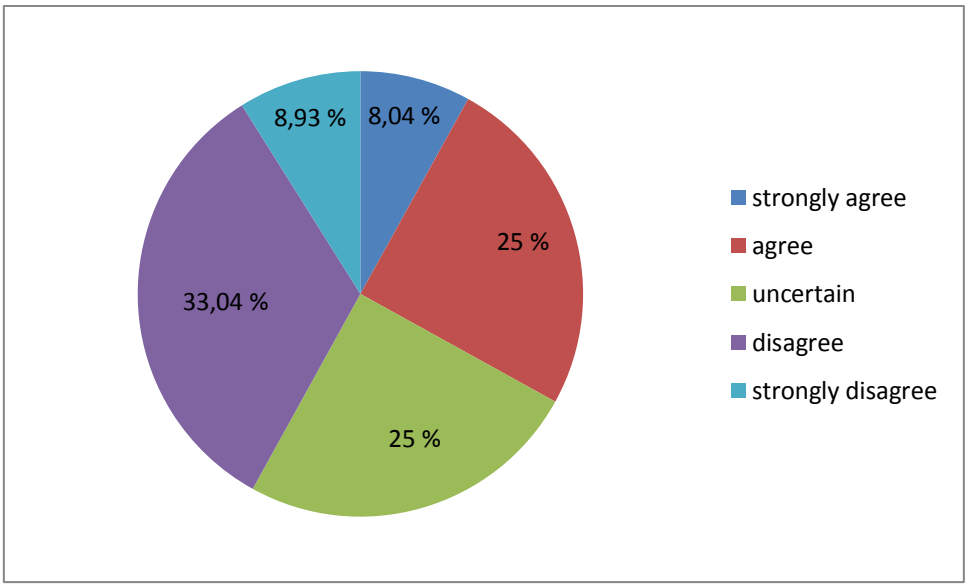


Figure 4.10: Free vs. paid app downloads

4.7. Research objective 3 – Branded products vs. cheaper brands

4.7.1 Branded products vs. cheaper brands

This section of the questionnaire was used to test whether the consumer preferred well-known branded products vs. cheaper brands. This is in keeping with the following research question:

Are consumers brand conscious or are they willing to purchase cheaper brands?

This section of the questionnaire contained 5 questions of which 2 were used to test this research objective.

Of the 226 respondents that answered the questionnaire, 224 answered this section. Table 4.6 illustrates the average and standard deviation values for this section. The results indicate that the standard deviation results are positive and that there is very little deviation from the average.

Table 4.6: Item statistics - Branded products vs. cheaper brands

	Average	Std. Deviation	N
If a cheaper brand of smartphone offered the same functionality as a branded device e.g. Samsung, Apple, etc. I would purchase it.	2.05	1.021	224
I would purchase a cheaper brand of smartphone if it was a quality product.	1.79	.988	224

When asked if they would purchase a cheaper brand of smartphone offering the same functionality compared to a more well-known brand such as Samsung or Apple, a combined total of 74.56% of the sample agreed with this statement [Figure 4.11]. This indicates that consumers are willing to purchase cheaper brands as long as they are similar in terms of functionality to more well-known brands. Furthermore, when asked if they were willing to purchase a cheaper brand of smartphone if it was a quality product, a combined total of 82.14% of the respondents agreed with this statement [Figure 4.12]. This therefore indicates that consumers are willing to purchase cheaper brands as long as they are quality products.

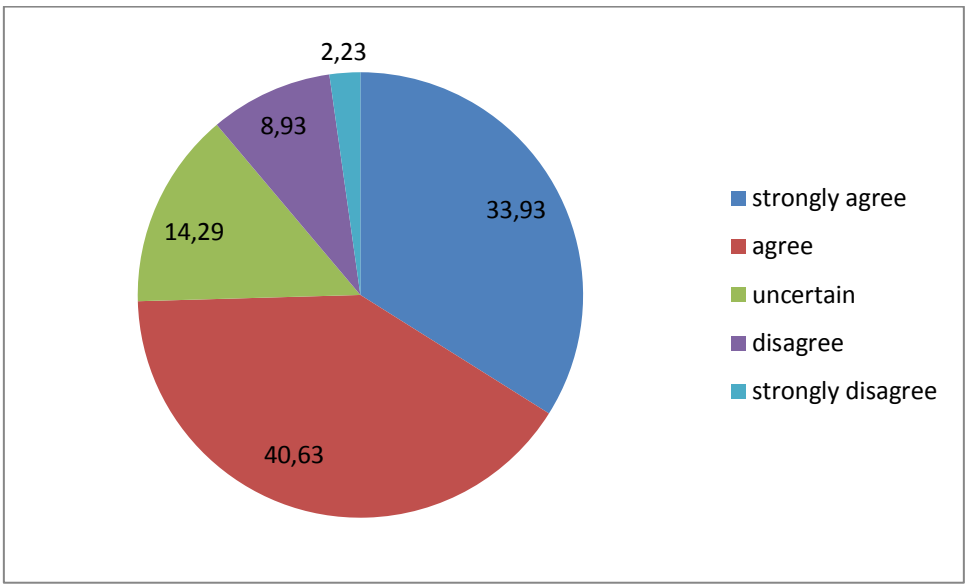


Figure 4.11 Cheaper brands vs. well-known brands

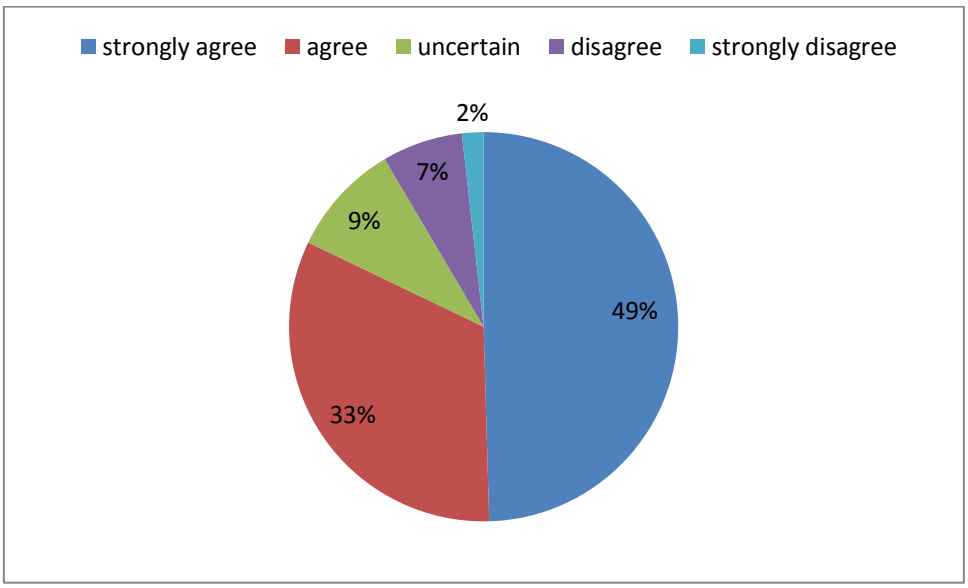


Figure 4.12: Consumers willing to purchase a cheaper brand if it was a quality product

4.8. Research objective 4 – Word of mouth

4.8.1 Word of mouth

This section of the questionnaire was used to test the consumer's response to word of mouth in keeping with the following research question:

Does word of mouth (friends and family) influence consumer behaviour?

This section of the questionnaire contained 3 questions of which 2 were used to test this research objective.

Of the 226 respondents who answered the questionnaire, 223 respondents answered this section of the questionnaire. Table 4.7 illustrates the average and standard deviation values. The results indicate that the standard deviation results were positive and that there is very little deviation from the average.

Table 4.7: Item statistics - Word of mouth vs. smartphone purchase

	Average	Std. Deviation	N
When making a smartphone purchase I rely on the opinion of my family & friends?	3.30	1.137	223
If either friends or family had a negative opinion about a smartphone I intended on purchasing, I would not purchase the smartphone.	3.23	1.034	223

When asked whether consumers obtain information from family and friends about apps that they can download to add functionality to their smartphones rather than purchasing a new device, a combined total of 75% agreed to this statement [Figure 4.13]. This indicates that word of mouth (family and friends) has an influence on the way consumers use their smartphones.

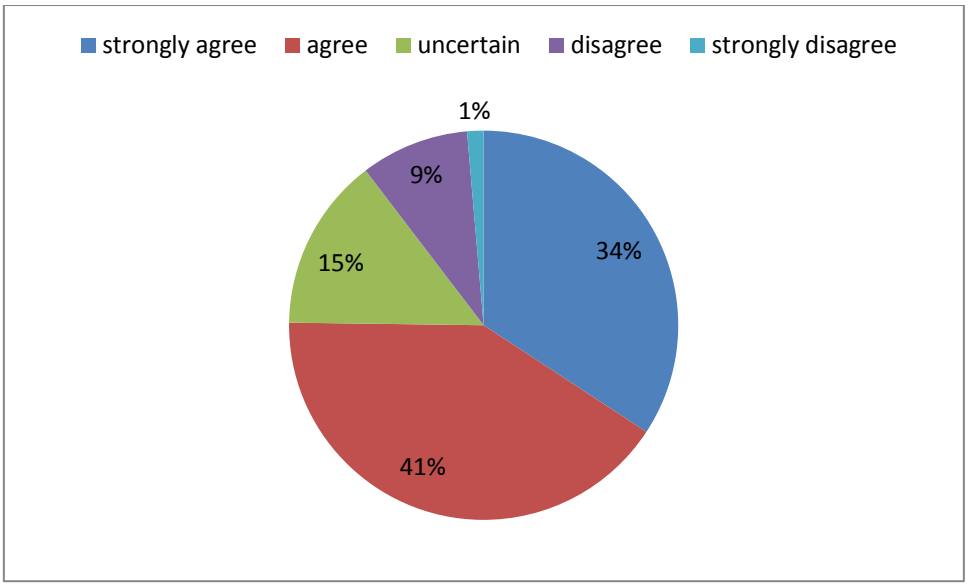


Figure 4.13: Word of mouth influencing consumer behaviour

4.9 Research objective 5 – Product extensions

4.9.1 Product extensions

This section of the questionnaire was used to test the consumer's response to product extensions. It corresponds to the following research question:

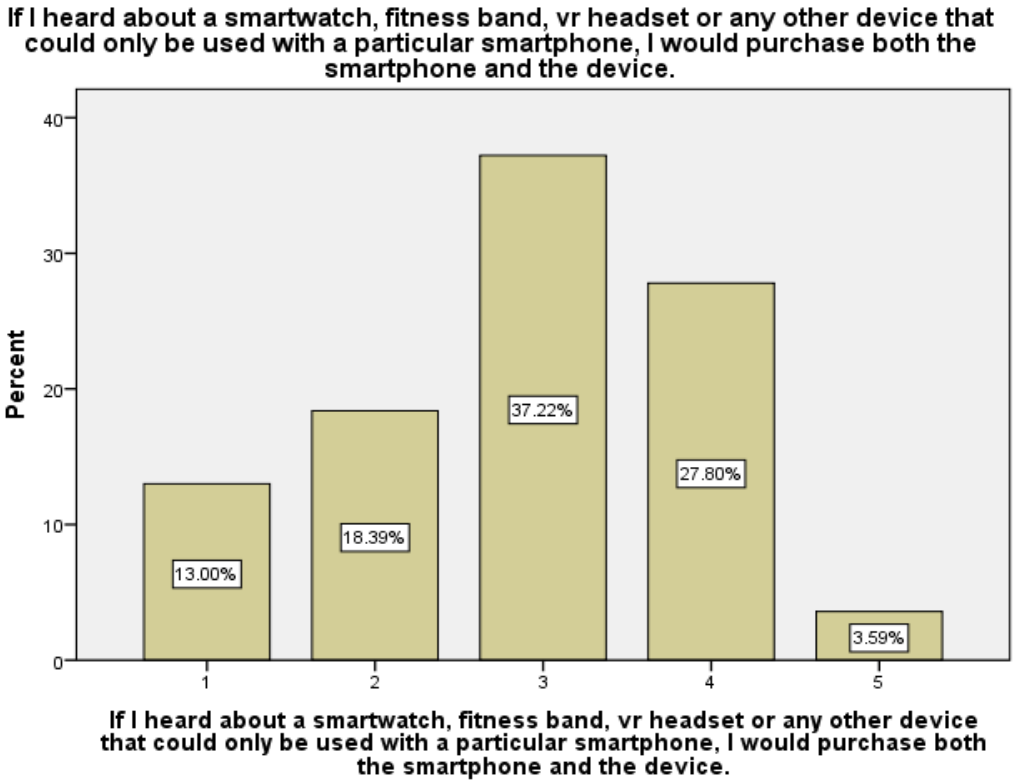
> *Do product extensions such as smart watches, fitness bands, etc., lead to consumers purchasing a smartphone?*

This section of the questionnaire contained 3 questions of which 2 were used to test this research objective.

Out of the 226 respondents who answered the questionnaire. This section of the questionnaire was answered by 223 respondents. Table 4.8 illustrates the average and standard deviation values. The standard deviation results are positive and indicate there is very little deviation from the average.

Table 4.8: Item statistics - Product extensions vs. smartphone purchase

	N	Average	Std. Deviation
If I heard about a smart watch, fitness band, vr headset or any other device that could only be used with a particular smartphone, I would purchase both the smartphone and the device.	223	2.91	1.059
I would more likely purchase a smartphone, if it came with a smartwatch, fitness band, vr headset etc.	223	2.51	1.094
Valid N (listwise)	223		



1 = Strongly Agree; 2 = Agree; 3 = Uncertain; 4 = Disagree; 5 = Strongly Disagree

Figure 4.14: Product extension and smartphone purchase

31.39% of respondents agreed that they would purchase a product extension if it could be used with their smartphones [Figure 4.14]. This indicates that almost a third of the population surveyed are willing to purchase product extensions that can be used with their smartphones. This notion is supported by Simonin and Ruth (1995), whose study focused around the idea of a consumer opting to purchase a product tie–in [product extension] on its own. The results of the study showed that consumers are likely to purchase a product extension if it was the same brand as the main product [smartphone] being sold. The results also indicated that if the tie-in belonged to a different brand, then the attitudes of the consumer towards the brand influenced their purchase decision (Simonin and Ruth, 1995). This study assumes that the product extension is the same brand as the smartphone owned by the consumer.

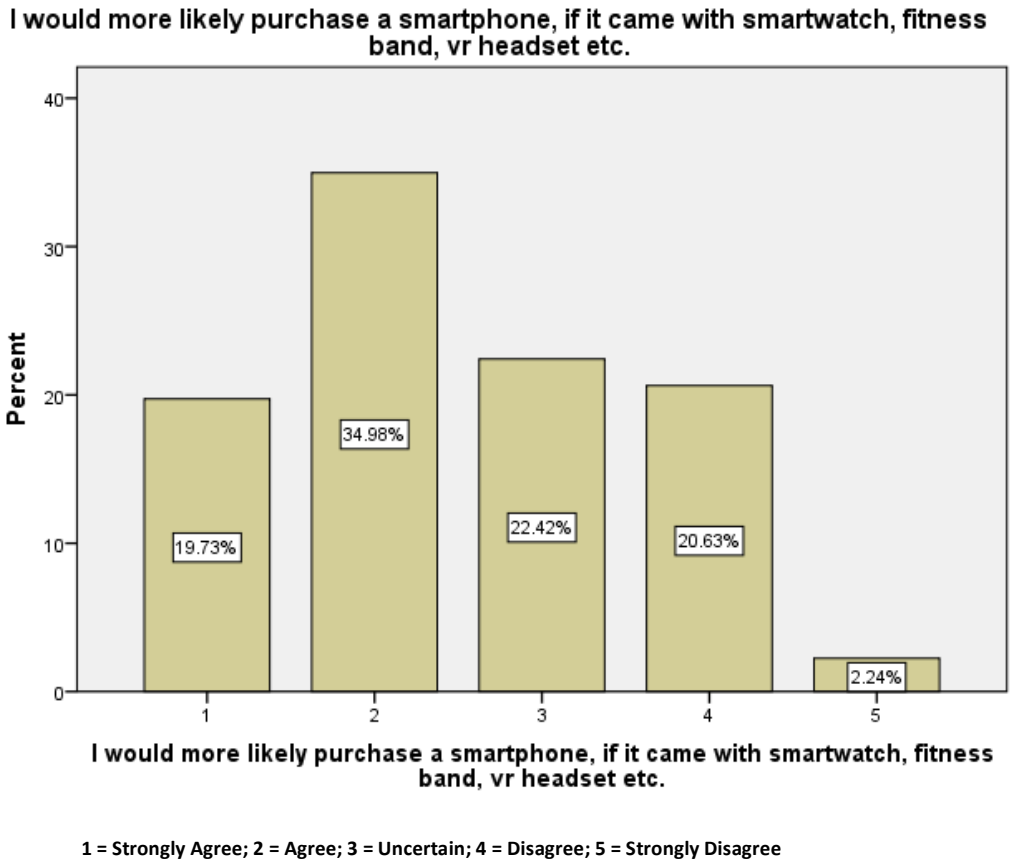


Figure 4.15: Product extension leading to smartphone purchase

Figure 4.15 indicates that 55% of respondents were more likely to purchase a smartphone if it came with a product extension. This accounts for more than half of the surveyed population, which indicates that consumers are more inclined to purchase a smartphone in conjunction

with a product extension. Research conducted by Khandeparkar (2014) shows that if a well-known brand [product] is sold or bundled with an unknown brand, the image of the well-known brand could suffer. However, if a product was bundled with a well-known brand [or a product of the same brand] there was no impact on the perceived quality of the product by the consumer (Khandeparkar, 2014). This research assumes that the product extension is the same brand as the smartphone that a consumer wishes to purchase.

Respondents were also asked if they would purchase a smartphone if it came with free minutes, data or sms messages rather than a product extension, e.g., fitness band or smart watch. 63.8% of respondents indicated that they would rather purchase a smartphone if it came with free minutes and data than with a product extension. Mokhlis and Yaakop (2012) recommend that incentives should be used to attract consumers to purchase smartphones. This research supports this recommendation as respondents indicated they would purchase a smartphone if there were incentives such as product extensions, free minutes and data.

INFERENTIAL ANALYSIS

4.10 Duration of smartphone ownership and method of smartphone purchase

Table 4.9: Correlation between duration of smartphone ownership and method of smartphone purchase

		How long ago did you purchase your current smartphone?	How did you purchase your smartphone?
How long ago did you purchase your current smartphone?	Pearson Correlation	1	.046
	Sig. (2-tailed)		.496
How did you purchase your smartphone?	Pearson Correlation	.046	1
	Sig. (2-tailed)	.496	

According to a scale devised by Evans, (cited in Stats Tutor 2016), a Pearson correlation value of 0.046 indicates a moderately positive correlation between the two variables [Table 4.9]. This indicates that there is a relationship between the duration of smartphone usage, measured in years, and the choice of purchase type, such as a contract, prepaid, or sim card only deal. A significant number of the sample (37.39%) chose to use their smartphones for longer.

4.11 Research objective 1 – Consumer behaviour/Product durability

4.11.1 Hypothesis testing

In order to test our research hypothesis (H1):

> *A change in consumer behaviour has attributed to a decline in smartphone sales due to product durability and lack of product innovation.*

To test H1 two sub-hypotheses were generated, each with a null hypothesis (Ho) and an alternative hypothesis (Ha).

Sub-hypothesis 1 of H1

Ho1: A change in consumer behaviour has attributed to a decline in smartphone sales not due to product durability.

Ha1: A change in consumer behaviour has attributed to a decline in smartphone sales due to product durability.

Hypothesis testing was done using a non-parametric chi-squared test for a single sample whereby all categorical variables were added to conduct the test in SPSS. The results are displayed in Tables 4.10 and 4.11.

Table 4.10: Product durability - single sample chi-square test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Durability occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Test Statistics

	Product Durability
Chi-Square	86.439[a]
Df	4
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 44.6.

Since the *p* value generated by SPSS equals 86.439 [Table 4.10] and is greater than the critical value of 9.49 from the chi-square table at 4 degrees of freedom we do not accept the null hypothesis. Thus the null hypothesis of sub-hypothesis 1 of H1 is rejected and alternative hypothesis of sub-hypothesis 1 of H1 is accepted. Hence, a change in consumer behaviour has attributed to a decline in smartphone sales due to product durability.

Sub-hypothesis 2 of H1

Ho2: A change in consumer behaviour has attributed to a decline in smartphone sales not due to a lack of product innovation.

Ha2: A change in consumer behaviour has attributed to a decline in smartphone sales due to a lack of product innovation.

Table 4.11: Product innovation - single sample chi-square test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Innovation occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Test Statistics

	Product Innovation
Chi-Square	216.514[a]
Df	4
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 44.4.

Since the *p* value generated by SPSS equals 216.514, [Table 4.11], which is greater than the critical value of 9.49 from the chi-square table at 4 degrees of freedom, we do not accept the null hypothesis. Thus, the null hypothesis of sub-hypothesis 2 of H1 is rejected and alternative hypothesis of sub-hypothesis 2 of H1 is accepted. Hence, a change in consumer behaviour has attributed to a decline in smartphone sales due to a lack of product innovation.

Since the alternative hypotheses for both sub-hypothesis 1 and sub-hypothesis 2 of H1 were accepted, the research hypothesis for objective 1 is supported. Therefore, it can be stated that a change in consumer behaviour has attributed to a decline in smartphone sales due to product durability and a lack of product innovation.

Guiltinan's (2010:172) research also supports this notion, stating that "intervals are shorter and consumer involvement in the replacement decision is greater when replacement is voluntary and motivated by improved or novel benefits (due to enhanced technology) or by fashion/design distinctiveness rather than by performance problems with the owned good". Huh and Kim (2008:45) also found that "innovative function usage had a significantly stronger impact on the purchase intention than basic function usage". Another view that supports a change in consumer behaviour is attributable to product durability is that of Liberali

et al. (2011:172), which states that "since [a] product has a long life, consumers need not repurchase the latest generation even though it has higher quality".

4.12 Research objective 2 – Downloadable apps to add functionality

4.12.1 Correlation between a consumer's willingness to download paid-for apps vs. freemium apps with in-app purchases

Table 4.12: Paid vs. free apps

Correlations			
		If I downloaded a free app from the app store, that contained in app purchases to unlock certain functionality. I would be willing to pay for these in app purchases.	I would rather purchase an app from the app store to add functionality to my smartphone rather than downloading a freemium app that contains in-app purchases.
If I downloaded a free app from the app store, that contained in app purchases to unlock certain functionality. I would be willing to pay for these in app purchases.	Pearson Correlation	1	.435**
	Sig. (2-tailed)		.000
I would rather purchase an app from the app store to add functionality to my smartphone rather than downloading a freemium app that contains in-app purchases.	Pearson Correlation	.435**	1
	Sig. (2-tailed)	.000	
**. Correlation is significant at the 0.01 level (2-tailed).			

According to a scale devised by Evans (cited in Stats Tutor 2016), a Pearson correlation value of 0.435 [Table 4.12] indicates a moderately positive correlation between the two variables.

This indicates that a relationship exists between the consumer's willingness to pay for in-app purchases contained within freemium apps and the consumer's intention to purchase paid-for apps.

4.12.2 Hypothesis testing

In order to test our research hypothesis (H2):

> *Freemium/paid-for content has resulted in consumers realising that instead of purchasing a new device they can simply download an app to add functionality to their device.*

The following null hypothesis (Ho) and alternative hypothesis (Ha) were derived to test H2:

Ho: Freemium/paid-for content has not resulted in consumers realising that instead of purchasing a new device they can simply download an app to add functionality to their device.

Ha: Freemium/paid-for content has resulted in consumers realising that instead of purchasing a new device they can simply download an app to add functionality to their device.

Hypothesis testing was done using a non-parametric chi-square test for a single sample whereby all categorical variables were added to conduct the test in SPSS. The results are showed in Table 4.13.

Table 4.13: Downloadable apps - single sample chi-square test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Downloadable apps occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Test Statistics

	Downloadable apps
Chi-Square	134.478[a]
Df	4
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 89.6.

Since the *p* value generated by SPSS equals 134.478 [Table 4.13], which is greater than the critical value of 9.49 from the chi-square table at 4 degrees of freedom, the null hypothesis is not accepted; the alternative hypothesis, on the other hand, is accepted. Thus, due to freemium and paid-for apps, consumers have realised that they can rather download an app from the app store/Internet than purchase a new smartphone to add functionality to their devices.

This notion is further accentuated by the research findings of Hassan *et al*. (2014:772), who found that the usage of "smartphone apps is highly influenced by aspects of perceived usefulness". Furthermore, Wu *et al*. (2015:15) also support these results, stating that "users [consumers] have a more favourable attitude toward paid apps when they […] believe that using them is useful in their daily lives". They also posit that a consumer's positive attitude towards a paid-for app often leads to their intention to purchase a paid-for app.

4.13 Research objective 3 – Branded purchases vs. cheaper brands

4.13.1 Correlation between a cheaper brand of smartphone vs. a well-known brand of smartphone

Table 4.14: Cheaper brand of smartphone vs. well-known brand of smartphone

Correlations			
		I would purchase a cheaper brand of smartphone if it was a quality product.	If a cheaper brand of smartphone offered the same functionality as a branded device e.g. Samsung, Apple, etc. I would purchase it.
I would purchase a cheaper brand of smartphone if it was a quality product.	Pearson Correlation	1	.535**
	Sig. (2-tailed)		.000
If a cheaper brand of smartphone offered the same functionality as a branded device e.g. Samsung, Apple, etc. I would purchase it.	Pearson Correlation	.535**	1
	Sig. (2-tailed)	.000	
**. Correlation is significant at the 0.01 level (2-tailed).			

According to a scale devised by Evans (cited in Stats Tutor 2016), a Pearson correlation value of 0.535 [Table 4.14] indicates a moderately positive correlation between the two variables. This indicates that there is a relationship between the consumer's willingness to purchase a cheaper brand of smartphone if it is a quality product or offered the same functionality when compared to a more well-known brand such as Apple or Samsung.

4.13.2 Hypothesis testing

In order to test our research hypothesis (H3):

Brand-conscious consumers are willing to purchase cheaper brands,

The following null hypothesis (Ho) and alternative hypothesis (Ha) are derived.

Ho: Brand-conscious consumers are not willing to purchase cheaper brands.

Ha: Brand-conscious consumers are willing to purchase cheaper brands.

Hypothesis testing was done using a non-parametric chi-squared test for a single sample, whereby all the categorical variables were added to conduct the test in SPSS. The results are shown in Table 4.15.

Table 4.15: Cheaper brands - single sample chi-square test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Cheaper brands occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Test Statistics

	Cheaper brands
Chi-Square	288.384[a]
Df	4
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 89.6.

Since the *p* value generated by SPSS equals 288.384 [Table 4.15], which is greater than the critical value of 9.49 from the chi-square table at 4 degrees of freedom, we do not accept the null hypothesis. Thus, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, consumers are willing to purchase cheaper brands and are becoming less brand-conscious. This notion is maintained by the choice of brands being used by the

respondents, as popular brands such as Apple and Samsung are not dominant, when compared to other brands such as Huawei.

This finding is also supported by research conducted by Wollenberg and Thuong (2014). Their findings show that the price factor has a strong influence on brand perception in the smartphone industry. Furthermore, their findings support the notion that brand perception has a substantial influence on consumers' purchasing decisions within the smartphone environment, with perceived quality affecting the consumer's perception of a brand.

4.14 Research objective 4 – Word of mouth

4.14.1 Correlation between consumers relying on the opinion of family and friends vs. a negative opinion from family and friends, not leading to a smartphone purchase

Table 4.16: Word of mouth vs. smartphone purchase

Correlations			
		When making a smartphone purchase, I rely on the opinion of my family & friends?	If either friends or family had a negative opinion about a smartphone I intended on purchasing, I would not purchase the smartphone.
When making a smartphone purchase, I rely on the opinion of my family & friends?	Pearson Correlation	1	.539**
	Sig. (2-tailed)		.000
If either friends or family had a negative opinion about a smartphone I intended on purchasing, I would not purchase the smartphone.	Pearson Correlation	.539**	1
	Sig. (2-tailed)	.000	
**. Correlation is significant at the 0.01 level (2-tailed).			

According to the scale devised by Evans (cited in Stats Tutor 2016), a Pearson correlation value of 0.539 indicates a moderately positive correlation between the two variables. This

indicates that there is a relationship between the consumer's reliance on the opinion of family and friends when purchasing a smartphone and a negative opinion of a smartphone held by family and friends, resulting in the consumer not purchasing a smartphone they intended to purchase.

4.14.2 Hypothesis testing

In order to test our research hypothesis (H4):

Word of mouth (friends and family) influences consumer behaviour.

The following null hypothesis (Ho) and alternative hypothesis (Ha) are derived:

Ho: Word of mouth does not influence consumer behaviour.

Ha: Word of mouth influences consumer behaviour.

Hypothesis testing was done using a non-parametric chi-square test for a single sample whereby all the categorical variables were added to conduct the test in SPSS, with the following results [Table 4.17]:

Table 4.17: Word of mouth - single sample chi-square test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Word of mouth occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Test Statistics

	Word of mouth
Chi-Square	181.422[a]
Df	4
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 89.2.

Since the *p* value generated by SPSS equals 181.422 [Table 4.17], which is greater than the critical value of 9.49 from the chi-square table at 4 degrees of freedom, we do not accept the null hypothesis. Thus we reject the null hypothesis and accept the alternative hypothesis. Hence, word of mouth influences consumer behaviour.

Wollenberg and Thuong (2014) support this finding, stating that word of mouth has a significant effect on brand perception and customers' buying decisions in the smartphone market. These results are consistent with the results of Mokhlis and Yaakop (2012), whose study found that consumers use personal recommendation (word of mouth) as a risk reduction strategy. This allows them to make informed decisions "such that when consumers receive word of mouth regarding a particular mobile phone [smartphone], they benefit from reduced perceived risk by either decreasing the probability that the purchase will fail or by reducing the severity of real/imagined loss suffered if the purchase does fail" (Mokhlis and Yaakop, 2012:208). Wu *et al*. (2015:15) also state that consumers are more likely to purchase paid apps if "people they know recommend using them".

4.15 Research objective 5 – Product extensions

4.15.1 Correlation between product extensions included with smartphone purchases vs. purchase of a product extension that can be used with a particular smartphone

Table 4.18: Product extensions vs. smartphone purchase

Correlations			
		I would more likely purchase a smartphone, if it came with smartwatch, fitness band, vr headset etc.	If I heard about a smartwatch, fitness band, vr headset or any other device that could only be used with a particular smartphone, I would purchase both the smartphone and the device.
I would more likely purchase a smartphone, if it came with smartwatch, fitness band, vr headset etc.	Pearson Correlation	1	.543**
	Sig. (2-tailed)		.000
If I heard about a smartwatch, fitness band, vr headset or any other device that could only be used with a particular smartphone, I would purchase both the smartphone and the device.	Pearson Correlation	.543**	1
	Sig. (2-tailed)	.000	
**. Correlation is significant at the 0.01 level (2-tailed).			

According to a scale devised by Evans (cited in Stats Tutor 2016), a Pearson correlation value of 0.543 [Table 4.18] indicates a moderately positive correlation between the two variables. This indicates that there is a correlation between the consumer's intention to purchase a smartphone that comes with a product extension and the consumer's willingness to purchase a product extension that can be used with their smartphone.

Table 4.19: Pearson chi-square test - product extensions

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	197.141[a]	16	.000
Likelihood Ratio	143.176	16	.000
Linear-by-Linear Association	65.416	1	.000
N of Valid Cases	223		
a. 9 cells (36.0%) have expected count less than 5. The minimum expected count is .18.			

The Pearson chi-square test indicates that a *p* value of 0.000 for asymptotic significance [Table 4.19] indicates that there is a strong association between the consumer's intention to purchase a smartphone that comes with a product extension and the consumer's willingness to purchase a product extension that can be used with their smartphone.

4.15.2 Hypothesis testing

In order to test our research hypothesis (H5):

> *Product extensions such as smart watches, fitness bands, etc., lead to a consumer purchasing a smartphone.*

The following null hypothesis (Ho) and alternative hypothesis (Ha) are derived.

> Ho: Product extensions do not lead to a consumer purchasing a smartphone.
>
> Ha: Product extensions lead to a consumer purchasing a smartphone.

Hypothesis testing was done using a non-parametric chi-square test for a single sample. All the categorical variables were added to conduct the test in SPSS, with the following results [Table 4.20].

Table 4.20: Product extensions - single sample chi-square test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Product extensions occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Test Statistics

	Product extensions
Chi-Square	103.462[a]
Df	4
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 89.2.

Since the *p* value generated by SPSS equals 103.462 [Table 4.20], which is greater than the critical value of 9.49 from the chi-square table at 4 degrees of freedom, we do not accept the null hypothesis; the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, it can be stated that product extensions lead to the consumer purchasing a smartphone, supporting the research hypothesis. This notion is supported by research conducted by Sheng and Pan (2009:374), who found that bundling a product can be very rewarding because it creates an "increased demand for both products in the bundle".

4.16 Implications for this research

This research attempted to prove that a decline in smartphone sales has contributed to a pop in the smartphone bubble, due to a smarter techno-savvy consumer. The research hypotheses formulated for this study must support the research factors of product durability, word of mouth, brand preference, product extensions; freemium vs. paid app downloads to add functionality to a smartphone, and lack of innovation. To accomplish this, each of the mentioned factors needed to fall within the area of acceptance on the Smartphone Appreciation Model discussed in Chapter 2.

4.16.1 Product durability: The test for product durability was conducted in objective 1 of this analysis through sub-hypothesis 1 of H1. The alternative hypothesis was supported, namely:

> *Ha1: A change in consumer behaviour has attributed to a decline in smartphone sales due to product durability.*

Therefore, product durability falls within the area of acceptance.

4.16.2 Word of mouth: The test for word of mouth was conducted in objective 4 of this analysis through hypothesis testing for which the alternative hypothesis was supported, namely:

Ha: Word of mouth influences consumer behaviour.

Therefore, word of mouth falls within the area of acceptance.

4.16.3 Brand preference: The test for brand preference was conducted in objective 3 of this analysis through hypothesis testing for which the alternative hypothesis was supported, namely:

Ha: Brand-conscious consumers are willing to purchase cheaper brands.

Therefore, brand preference falls within the area of acceptance.

4.16.4 Product extensions: The test for product extensions was conducted in objective 5 of this analysis through hypothesis testing for which the alternative hypothesis was supported, namely:

Ha: Product extensions lead to a consumer purchasing a smartphone.

Therefore, product extensions fall within the area of acceptance.

4.16.5 Freemium vs. paid app downloads to add functionality to a smartphone: The test for this factor was conducted in research objective 2 of this analysis through hypothesis testing for which the alternative hypothesis was supported, namely:

Ha: Freemium/paid-for content has resulted in consumers realising that instead of purchasing a new device they can simply download an app to add functionality to their device.

Therefore, freemium vs. paid app downloads to add functionality to a smartphone falls within the area of acceptance.

4.16.6 Lack of innovation: The test for lack of innovation was conducted in objective 1 of this analysis through sub-hypothesis 2 of H1 for which the alternative hypothesis was supported, namely:

Ha2: A change in consumer behaviour has attributed to a decline in smartphone sales due to a lack of product innovation.

Therefore, lack of innovation falls within the area of acceptance.

Since all the factors fall within the area of acceptance with regard to the tests conducted within this research, it can be stated that the decline in smartphone sales has resulted in a pop in the smartphone bubble due to the above-mentioned factors.

4.17 Summary

This chapter analysed the data collected from the research questionnaire. The results were analysed in accordance with the research questions and hypotheses underlying this study. The analysis was achieved through an array of statistical methods by means of the statistical programmes SPSS and Excel. The results for each research objective were then tested against the Smartphone Appreciation Model developed for this study. The overall results were positive, indicating that a decline in smartphone sales has resulted in a pop in the smartphone bubble. This is due to the factors that were mentioned in this study. Chapter 5 addresses whether the research questions were answered, discusses the benefits of this research, makes recommendations to manufacturers and future researchers, and addresses the limitations of the study.

CHAPTER 5 – CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This research set out to investigate the pop in the smartphone bubble, as companies such as Apple and Samsung reported a decline in their smartphone sales due to smarter, more techno-savvy consumers. The research was conducted from the perspective of the consumer in order to prove this phenomenon. Several factors were looked at, including product durability, word of mouth, brand preference, product extensions, freemium vs. paid app downloads to add functionality to a smartphone, and lack of innovation. The Smartphone Appreciation Model was developed to prove that a combination of factors have contributed to the pop in the smartphone bubble.

Chapter 2 provided a review of the literature by highlighting gaps in previous research. This was used as a basis to construct the research hypotheses and questions used within this research. Chapter 3 outlined the research methodology, research instruments and how the data was collected for this study. The analysis of the data that was collected was presented in Chapter 4. Hypothesis testing was done using a non-parametric single sample chi-square test. This final chapter addresses whether the research questions have been answered. It also presents the limitations of the study and makes recommendations for future researchers and smartphone manufacturers.

5.2 Has the data answered the research questions?

This research set out to answer the following research questions. A brief summary of the results discussed in chapter 4 is provided below each research question.

1. Has a change in consumer behaviour attributed to a decline in smartphone sales due to product durability and lack of product innovation?

Two sub-hypotheses were formulated to answer this question; one tested for product durability and the other for a lack of product innovation. A non-parametric single sample chi-square test was used to conduct the hypothesis testing. The results showed that the null hypothesis (Ho) for both sub-hypotheses should be rejected. This proves that a change in consumer behaviour has attributed to a decline in smartphone sales due to product durability and lack of product

innovation. These findings are also supported by Guiltinan (2010), Huh and Kim (2008) and Liberali *et al*. (2011).

2. Has freemium/paid-for content available from the app stores resulted in consumers realising that rather than purchasing a new device to gain a particular functionality, they can simply download an app to add functionality to their device?

To answer this question hypothesis testing was done via a non-parametric single sample chi-square test. The results indicated that the null hypothesis (Ho) should be rejected. Therefore, due to the availability of both paid and freemium apps, consumers have realised that rather than purchasing a new device they can simply download an app to add functionality to their smartphones. These findings are supported by Hassan *et al*. (2015) and Wu *et al*. (2015).

3. Are consumers brand conscious or are they willing to purchase cheaper brands?

This question was answered through hypothesis testing done via a non-parametric single sample chi-square test. The results showed that the null hypothesis (Ho) was rejected, indicating that consumers are willing to purchase cheaper brands. These findings are also reflective of the brands used by the sample group as popular brands such as Apple and Samsung were not dominant when compared to other brands such as Huawei. These findings are also supported by Wollenburg and Thuong (2014).

4. Does word of mouth (friends and family) influence consumer behaviour?

Hypothesis testing was conducted via a non–parametric, single sample chi-square test in order to answer this question. According to the results, the null hypothesis (Ho) should be rejected, proving that consumers are influenced by word of mouth (family and friends) when making a smartphone purchase. These results are supported by Wollenburg and Thuong (2014), Mokhlis and Yaakop (2012), and Wu *et al*. (2015).

5. Do product extensions such as smart watches, fitness bands, etc., lead to consumers purchasing a smartphone?

This question was answered through hypothesis testing done via a non-parametric single sample chi-square test. The results showed that the null hypothesis (Ho) should be rejected;

therefore, showing that product extensions lead to consumers purchasing smartphones. These results are also supported by Sheng and Pan (2009).

These results were then tested against the Smartphone Appreciation Model that was developed to establish that the pop in the smartphone bubble was caused by a combination of factors. As discussed in Chapter 4, the results for each factor needed to fall within the area of acceptance in order to prove that the pop in the smartphone bubble was caused by these factors. When tested, all of the factors fell within the area of acceptance, proving that there is indeed a pop in the smartphone bubble.

5.3 Benefits of the research

This research provides insight to the manufacturers of smartphones as to what contributed to the decline in smartphone sales. It provides valuable insight on smartphone users in terms of the brands they choose to purchase and whether they are willing to purchase cheaper brands that offer similar levels of functionality. It also provides insight into whether consumers are willing to pay for apps to add functionality to their smartphones. The notion of anticipated regret, and whether consumers are waiting to purchase a new smartphone that contained newer technology is also addressed by this research. Another benefit of this research is that it addresses whether consumers are more likely to purchase a smartphone if it came with a product extension. Lastly, this research is beneficial because it addresses a number of factors and was not limited to a single factor, thereby providing a holistic research on smartphone users.

5.4 Limitations of this study

As with most research studies, this study was also limited by a few factors:

- The sample that was used for this study is not reflective of the entire smartphone-using population of Durban. However, this research does provide a mix of respondents belonging to various segments of the population at large.
- Not all smartphone users are as techno-savvy as the next; hence, some users who own smartphones may not possess the knowledge required to add on functionality to their devices by downloading apps from the app stores.
- Respondents may have provided non-factual information that may have inhibited the research findings.

5.5 Recommendations for future research

During this study, respondents were asked if they would rather purchase a smartphone if it came with free minutes, data or sms messages than one with a product extension such as a fitness band, smart watch, etc. The outcome was that 63.8% of the respondents indicated that they would rather purchase a smartphone if it came with free minutes and data than with a product extension. Further research is required in this regard to determine whether consumers would be more likely to purchase a smartphone on prepaid if it came with free minutes or data as opposed to on contract with the same benefits since sim card only contracts are becoming more popular, providing consumers with the best value for money (McLeod, 2014). In this research it was identified that 9.01% of the sample surveyed have sim card only contracts and are choosing to use their current smartphones for longer. Further research is required to determine whether users would opt for a sim card only contract if it came with free minutes, data and other benefits.

5.6 Recommendations to smartphone manufacturers

In light of the research findings, the following recommendations are made to smartphone manufacturers.

- Respondents in the sample indicated that they were delaying their purchase of a new Samsung device to try out Tizen, Samsung's new operating system. Samsung should look at releasing handsets with the new operating system in South Africa.
- Since respondents in the sample indicated that they agreed with Blackberry's decision to use Android on their new handsets. Blackberry should look at releasing more devices with this operating system.
- Since consumers in this study indicated that they are willing to purchase cheaper brands that are quality products and offer similar functionality to more high-end devices, companies should look at introducing budget devices that offer high-end functionality to meet this demand.
- Although the majority of Apple users indicated that they were uncertain about whether they were delaying their purchase of a new device for a future model, 30% of the respondents agreed that they would. Since this research found that consumers were willing to purchase smartphones with product extensions, perhaps Apple should look

at bundling their devices with innovative product extensions to entice consumers to make a purchase.

- Due to consumers forming emotional attachments with their smartphones, manufacturers should ensure that replacement parts/accessories are more readily available.
- Since this research found that potential consumers are influenced by word of mouth (family and friends), manufacturers/brands should strive to ensure that all consumers have a pleasant brand experience, both in terms of quality and service. This will ensure that consumers do not badmouth the brand to their families and friends and, in the process, deter them from purchasing a particular brand.
- Manufacturers should look at increasing their research and development spend and conduct proper market research to ensure that the smartphones developed are something that consumers would be willing to purchase.
- Since 30% of the population surveyed were older than 40 and this research found that consumers were willing to download apps to their smartphones to add functionality, perhaps manufacturers should look at developing apps exclusively for this older target group. However, manufacturers should be careful as to what kind of apps they allow to be added to their app stores and installed on devices. This is because if consumers can download a particular app to add a certain functionality to their device, they might be deterred from purchasing a newer device with similar functionality provided by apps.
- As part of their research and development (R&D) efforts manufacturers should try to develop new and innovative product extensions to entice consumers to purchase their smartphones.
- Furthermore, the results of this study suggest that manufacturers require new ideas to create innovative smartphones. To help overcome this lack of new ideas, manufacturers should look constantly at either adding new people to their R&D teams who bring new ideas to the table, or rotating R&D teams so that new ideas can be generated.

5.7 Summary

This final chapter concludes by explaining that the research questions have been answered and that there is indeed a pop in the smartphone bubble. It also discussed the benefits of this research and what research of this nature has to offer smartphone manufacturers. The limitations of the study were also discussed and recommendations were made for future research. It ended with recommendations to smartphone manufacturers, where suggestions were made in light of consumers choosing not to purchase new smartphones due to the series of factors discussed within this research.

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UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Dear Respondent,

MBA Research Project
Researcher: Samantha Partab (+27738116172)
Supervisor: Dr Vannie Naidoo (+27312608080)
Research Office: Ms P Ximba (+27312603587)

My name is Samantha Partab. I am a MBA (Master's of Business Administration) student, at the Graduate School of Business and Leadership, at the University of KwaZulu Natal. You are invited to participate in a research survey. Ethics committee ref number: HSS/0212/016M.

The aim of this research is to investigate smartphone usage.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey. Confidentiality and anonymity of records identifying you as a participant will be maintained by the researcher.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact my supervisor or myself at the numbers listed above.

The survey should take you about 10 - 15 minutes to complete. I hope you will take the time to complete this survey.

Samantha Partab

Investigator's signature:  Date: 1 APRIL 2016

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

MBA Research Project
Researcher: Samantha Partab (+27738116172)
Supervisor: Dr Vannie Naidoo (+27312608080)
Research Office: Ms P Ximba (+27312603587)

CONSENT

I……(full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that my participation in this study is purely voluntary, and that I can withdraw from this research at any time by notifying either the researcher or her supervisor at the above mentioned number.

I understand that I will not receive any compensation for my participation in this study.

I understand that neither the researcher or her supervisor is responsible for any damage/loss that I may incur as a result of my participation in this research.

I understand that all information disclosed by me for the purposes of this research, shall be held by the researcher for a period of 5 years and then disposed of as per UKZN ethics policy.

SIGNATURE OF PARTICIPANT DATE

…… ……

This questionnaire comprises of 2 sections:

Section 1: Demographic data

Section 2: The aim of this section is to collect quantitative data

Please remember to answer all questions

Section 1

Instructions to respondents

Please tick the relevant block

The objective of this section of the questionnaire is to generate demographic data.

Demographic data

The purpose of this section is to gather general data from smartphone users.

Do you own a smartphone (i.e. Smartphone, tablet, phablet etc.)?

☐ 1. Yes ☐ 2. No

How long ago did you purchase your current smartphone (i.e. Smartphone, tablet, phablet etc)?

☐ 1. 1 year ago ☐ 2. 2 years ago ☐ 3. 3 years ago ☐ 4.More than 3 years

How old are you?

☐ 1. 18 - 19 ☐ 2. 20 - 29 ☐ 3. 30 - 39 ☐ 4. 40 - 49 ☐ 5. 50 - 59 ☐ 6. 60 and older

Sex

☐ 1. Female ☐ 2. Male

Race

☐ 1. Black ☐ 2. White ☐ 3. Indian ☐ 4. Coloured ☐ 5. Other

Which brand of smartphone do you use?

☐ 1. Samsung

☐ 2. Apple iOS (Apple iphone)

☐ 3. Blackberry

☐ 4. HTC

☐ 5. Nokia

☐ 6. Huawei

☐ 7. LG

☐ 8.Other

How did you purchase your smartphone?

1. ☐ Contract 2. ☐ Prepaid 3. ☐ Simcard only contract (still using my old phone)

Section 2

The objective of this section of the questionnaire is to generate quantitative data.

Research objective 1 - Consumer behaviour

This section of the questionnaire relates to the objectives being investigated

Instructions to respondents

Please choose an answer on a scale from 1 to 5 based on the question set for each research objective. Tick only one answer, with 1 being a statement you strongly agree with and 5 being a statement you strongly disagree with.

The measures used for this section are as follows:
1 = Strongly agree
2 = Agree
3 = Uncertain
4 = Disagree
5 = Strongly Disagree

Question	**1 = Strongly Agree**	**2 = Agree**	**3 = Uncertain**	**4 = Disagree**	**5 = Strongly Disagree**
1. If a Blackberry user. Do you agree with Blackberry's decision to use android on their new devices?	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
2. If a Samsung user. Are you delaying your purchase of a new device, to try out Tizen Samsung's new operating system?	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
3. If an Apple user. Are you delaying your purchase of a new device, to purchase a newer future model?	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**

Question	**1 = Strongly Agree**	**2 = Agree**	**3 = Uncertain**	**4 = Disagree**	**5 = Strongly Disagree**
1. Newer models of smartphones don't appeal to me because they contain very little differences, when compared to my current smartphone.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
2. I don't feel that I need a new smartphone because my current smartphone meets all of my requirements.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
3. I like keeping up with technology but the smartphones currently on the market don't appeal to me.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
4. For me to purchase a new smartphone, manufactures have to come up with new and exciting functionality.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
5. For me to purchase a new smartphone, my current smartphone would have to show signs of wear and tear e.g. cracks.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**

6. I won't purchase or upgrade a new smartphone because I am emotionally attached to my current smartphone	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
7. I won't purchase a new smartphone because newer models are too expensive.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**

Research objective 2 - Downloadable apps to add functionality

This section of the questionnaire relates to the objectives being investigated

Question	**1 = Strongly Agree**	**2 = Agree**	**3 = Uncertain**	**4 = Disagree**	**5 = Strongly Disagree**
1. I would download an app from the app store to add a particular functionality (e.g. games, banking, shopping, social media, news/entertainment/sports) to my smartphone rather than purchasing a new smartphone.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
2. If I downloaded a free app from the app store, that contained in app purchases to unlock certain functionality, I would be willing to pay for these in app purchases.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
3. I with rather purchase an app from the app store to add functionality to my smartphone rather than downloading a freemium app that contains in app purchases.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**

Research objective 3 - Branded products vs cheaper brands

This section of the questionnaire relates to the objectives being investigated

Question	**1 = Strongly Agree**	**2 = Agree**	**3 = Uncertain**	**4 = Disagree**	**5 = Strongly Disagree**
1.When purchasing a smartphone I generally look for branded devices such as Samsung, Apple, HTC etc.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
2. If a cheaper brand of smartphone offered the same functionality as a branded device eg. Samsung, Apple, I would purchase it.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
3. I would purchase a cheaper brand of smartphone if it was a quality product.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
4. I won't purchase a brand of smartphone that I am not familiar with, even if it was identical to a more expensive brand eg. Samsung, Apple etc.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**

Research objective 4 - Word of Mouth

This section of the questionnaire relates to the objectives being investigated

Question	**1 = Strongly Agree**	**2 = Agree**	**3 = Uncertain**	**4 = Disagree**	**5 = Strongly Disagree**
1. When making a smartphone purchase I rely on the opinion of my family & friends?	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
2. If either friends or family had a negative opinion about a smartphone I intended on purchasing, I would not purchase the smartphone?	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
3. On occasion I find out about apps that can be added to my smartphone from friends and family, so I can add functionality to my device, rather than purchasing a new device.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**

Research objective 5 - Product Extensions

This section of the questionnaire relates to the objectives being investigated

Question	**1 = Strongly Agree**	**2 = Agree**	**3 = Uncertain**	**4 = Disagree**	**5 = Strongly Disagree**
1. I would more likely purchase a smartphone, if it came with smart watch, fitness band, vr headset etc.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
2. If I heard about a smart watch, fitness band, vr headset or any other device that could only be used with a particular smartphone, I would purchase both the smartphone and the device.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
4. I would more likely purchase a smartphone, if it came with free minutes, data & smses rather than product extensions such as smart watch, fitness band or vr headset.	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**

THANK YOU!

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

6 June 2016

Ms Samantha Partab (204500750)
Graduate School of Business & Leadership
Westville Campus

Dear Ms Partab,

Protocol reference number: HSS/0212/016M
Project title: "The smartphone bubble that popped – A smarter techno savvy consumer"

Full Approval – Expedited Application

In response to your application received on 02 March 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL.**

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

Please note: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

[redacted]

.....
Dr Shenuka Singh (Chair)

/ms

Cc Supervisor: Dr Vannie Naidoo
Cc Adademic Leader Research: Dr Muhammad Hoque
Cc School Administrator: Ms Zarina Bullyraj

Humanities & Social Sciences Research Ethics Committee
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