Antecedents of smartphone purchasing behaviour amongst South African Generation Y students

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Mini-dissertation submitted in partial fulfilment of the requirements for the degree
Master of Commerce in Marketing Management
at the North-West University

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Graduation ceremony: April 2019

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DECLARATION

I, **Lesego Olivia Thebyane**, declare that the dissertation titled **Antecedents of smartphone purchasing behaviour amongst Generation Y students** is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

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ACKNOWLEDGEMENTS

I want to express my gratitude to everyone who helped make this study possible:

- The Almighty Heavenly Father, thank you for granting this opportunity and seeing me through.
- My family, my mother Grace Thebyane and sisters Rorisang and Nthabiseng Thebyane, thank you for the love and support.
- My grandparents, thank you for the words of wisdom, prayers, and continuous support in many ways. I thank you and thank God for your life.
- My partner Mr Chili, thank you for the continuous support, understanding, patience, I will forever be grateful.
- My family, friends and colleagues, thank you for always being there to offer emotional support and for all the best wishes, I truly appreciate.
- My supervisor Dr Re-an Müller, a special thank you for all the help, support and guidance throughout. Thank you for the words of encouragement to motivate and empower me. Thank you for your tireless assistance and always being on call. I truly appreciate your role in my research study.
- Prof. Ayesha, thank you for always being available to assist and give guidance where needed.
- Lastly, a special thank you to all the Generation Y students who partook in the study.

ABSTRACT

Keywords: Generation Y, Smartphones, South Africa, Purchasing Behaviour. Purchase Intention.

Mobile phones have been around for years, with rapid developments leading to the current generation of smartphones. Smartphones have been the latest technological addition to our daily lives. Several studies have proven a rapid growth in the industry with an increased need to own these devices as a modification to our daily connection and convenience in life. The smartphone industry is very competitive with its common focus being to keep existing customers and convert new ones to their brand. It is vital for each manufacturer to stay ahead or in line with its competitors by providing customers with a range of products that will cater for different needs with the latest technology and competitive pricing.

Technology adoption remains one of the defining factors of human progress as the world is becoming increasingly interconnected, both economically and socially, due to the high number of smartphone owners (Poushter, 2016:3). The increase in smartphone usage has amplified research interest in this phenomenon (Mohan, 2014:9). The rapid advance in technology causes firms to operate in increasingly competitive environments full of gradual and radical innovations (Eisdorfer & Hsu, 2011:2). Consequently, smartphone brands have to find ways to gain a competitive advantage.

This study focussed specifically on Generation Y students as they are present in the marketplace in great numbers and their purchasing power has an unprecedented effect on the economy (Noble *et al*., 2009:617). This generation is poised to take over as the largest and most lucrative consumer group for marketers (Hughes, 2008:74). Generation Y understand the power they possess as consumers of digital technologies and they are ready to share their opinions and experiences across various platforms, as they rely on each other to make informed purchase decisions (Gailewicz, 2014).

The primary objective of this study was to determine which factors influence South African Generation Y students' smartphone purchasing behaviour. Adopted scales were used to meet this goal, which measured product features, brand loyalty, brand personality, purchase intention, social influence and dependency. The sampling frame

comprised a list of the 26 South African registered HEIs, from which a convenience sample of three HEIs situated in Gauteng province was selected. A non-probability convenience sample of 450 Generation Y students between the ages of 18 and 24 was selected for this study. A self-administered questionnaire was used to gather the required data. After the cleaning process, 429 questionnaires were deemed viable. The collected data was analysed using exploratory factor analyses, a descriptive statistical analysis, a correlation analysis, regression analysis and a two independent-sample t-test.

Results showed that the students' most preferred brand was Apple, followed by Samsung. Respondents also indicated that most of them (32.6%) spend more than 8 hours a day on their smartphones. The regression analysis suggests that smart phone purchasing intention is influenced by product features, brand personality, brand loyalty, social influence and dependency. It is therefore important for brands to find a way to connect with Generation Y consumers. Generation Y students' have preferences for specific smartphones and they show high intentions of better purchasing decision in the near future. Students are very dependent on these devices for both work and personal use. Furthermore, two independent-sample t-test show that females are more dependent on their smartphones than their male counterparts.

The data collected in this study can be used by producers, marketers and mobile operators of smartphone brands. The results will help to better understand the Generation Y cohort and what influences their purchasing decisions of smartphone brands. Consequently, marketing efforts can be altered to influence the buying behaviour of this cohort. Furthermore, researchers conducting similar studies could use these results as a point of reference and for comparison.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Beal (2016) defines a smartphone as a handheld device that integrates mobile phone capabilities with the more common features of a handheld computer. A smartphone allows users to store information, send and receive e-mail, and install applications. It essentially combines many useful resources in the palm of the user's hands, and more recently, at the tips of their fingers. Lay-Yee *et al*. (2013:2427) points out that smartphones are more than merely a means to make and receive phone calls, text messages, and voice mails. They are becoming a more integrated and prominent part of people's daily lives due to highly powerful computational advancements, such as e-mail applications, online shopping, and online banking (Falayi & Adedokan, 2014).

Smartphones are no longer perceived as a luxury, they have become a necessity in people's daily lives (Falayi & Adedokun, 2014:31). The use of smartphones has triggered consumer market demand as it has formed a new dimension of virtual mobility by creating a trend of geographically extended, faster and more personalized social interactions (Hooi Ting *et al*., 2011:193). Theoharidou *et al*. (2012:443) ascribes the popularity of smartphones to its size, the capacity of improved processing and connectivity, low cost and the ability to perform multiple functions on third party applications. The evolution of smartphone technologies has stimulated the development of countless mobile applications for banking, shopping, gaming, news highlights, educational use, health and fitness, travel, calendars, social media, social networks and the like (Rajput, 2015). These apps can now be used to communicate, entertain, inform and manage a scope of tasks anywhere and everywhere and across geographical boundaries (Bevan-Dye, 2016:13).

There has been a noticeable rise of 9% from a median of 45% in 2013 to 54% in 2015 in the number of people in both emerging and developing nations who claim to use the internet and own a smartphone (Poushter, 2016:3). The increase is mostly from large emerging economies such as Malaysia, Brazil and China (Poushter, 2016:3). This proves that smartphone ownership rates in emerging and

developing nations are rising at an extraordinary rate. Yaman and Senel (2015) reports that the number of smartphone users around the world is rapidly increasing due to the technological developments within the telecommunications sector. Smartphones are now classified by their attributes, especially by the Generation Y market, who are very much known as the next generation of well-informed consumers (Lobo, 2014). This generation was raised with ease of access to a global database of excessive information on consumption-related topics through online product reviews, product comparison sites and online product demonstration videos. This makes them the most informed consumers in history (Bevan-Dye, 2016:13).

Researchers have introduced many ways to define Generation Y. This study uses Markert's (2004:21) definition of this cohort as a generation of people born between 1986 and 2005. Generation Y have a strong need to engage with others through digital connections and in person (Wiese *et al.,* 2017:36). Recent studies prove that Generation Y's are a marketer's biggest nightmare as they grew up with the worldwide web, the latest technology and numerous communication channels ranging from Facebook and Twitter to Instagram (Qader & Omar, 2013:336).

Generation Y are present in the marketplace in great numbers and their purchasing power has an unprecedented effect on the economy (Noble *et al.,* 2009:617). This generation is poised to take over as the largest and most lucrative consumer group for marketers (Hughes, 2008:74) as they are identified within the marketplace in great numbers and have purchasing power that surpasses that of any other group of consumers (Mafini *et al.,* 2014:1). Generation Y understand the power they possess as consumers of digital technologies and they are ready to share their opinions and experiences across various platforms, as they rely on each other to make informed purchase decisions (Gailewicz, 2014). They have a need to be accepted, constantly connected to their peers, to fit in, which all results in social networking (Qader & Omar, 2013:336). Smartphone manufacturers should aim to achieve customer satisfaction, generate loyalty and build meaningful long-lasting relationships with Generation Y consumers (Weideman, 2014:3).

1.2 PROBLEM STATEMENT

Technology adoption remains one of the defining factors of human progress as the world is becoming increasingly interconnected, both economically and socially, due to the high number of smartphone owners (Poushter, 2016:3). The increase in smartphone usage has amplified research interest in this phenomenon (Mohan, 2014:9). The rapid advance in technology causes firms to operate in increasingly competitive environments full of gradual and radical innovations (Eisdorfer & Hsu, 2011:2). Consequently, smartphone brands have to find ways to gain a competitive advantage by understanding the factors that influence smartphone purchasing behaviour, marketers and manufacturers could alter their marketing strategies and devices to attract their target market more effectively and by doing so, could gain a competitive advantage.

According to cellular statistics for Africa (2016), South Africa is the leading country in telecommunications on the African continent, with a third of all main lines and three-quarters of all mobile subscribers. Statista (2017) estimates the number of South African smartphone users at 16.1 million, and this is expected to rise to 22 million by the end of 2021. In 2015, members of the Generation Y cohort accounted for 38 per cent of South Africa's population of about 55 million (Stats SA, 2018:9). Teenagers to early adults (aged 14'25') which are likely to be students are usually smartphone target consumers as they are mostly technology savvy and recently have more spending power than previously (Essay UK, 2018). This study focused on the student segment of this cohort. The student segment has the potential to be high-income earners as result of obtaining a tertiary qualification making this a very lucrative future market (Bevan-Dye *et al*. 2009:174).

Mei Min *et al*. (2012:1) suggest that there is a gap in the understanding of factors affecting smartphone demand among young adults. Limited published research is available on Generation Y students' purchasing behaviour and a dearth of research on smartphones relevant to the Generation Y cohort, although this topic has been researched in countries like Malaysia (Chow *et al.,* 2012) and Turkey (Öztürk & Karakaş, 2016). Nainkin (2014) conducted a similar study in South Africa, but did not

test all the prescribed factors listed in this study. Furthermore, the research was not focused on Generation Y consumers. Consequently, there is still a shortage of research on the topic worldwide and specifically regarding Generation Y South African consumers.

This study was conducted to assist smartphone brands by giving recommendations to improve their marketing strategy aimed at South African Generation Y consumers.

Rempel (2009:34) submits that since generations differ, it is important for marketers to treat individuals and groups of different age cohorts accordingly. This highlights the importance of providing guidelines for smartphone producers to gain a more competitive advantage.

1.3 OBJECTIVES OF THE STUDY

The following objectives were formulated for the study:

1.3.1 Primary objective

The main purpose of this study was to determine which factors influence South African Generation Y students' smartphone purchasing behaviour.

1.3.2 Theoretical objective

The primary objective gave rise to the following theoretical objectives for the study:

- Provide a review of the literature on the historical background of smartphones.
- Conduct a literature review of the definition and importance of a smartphone.
- Review the literature on the development and growth of the smartphone industry.
- Outline the consumer decision making process.
- Conduct a literature review on factors that affect smartphone purchases.

- Conduct a literature review of the marketing mix elements and their influence on smartphone brands.
- Conduct a review on the literature regarding Generation Y, the characteristics of this cohort and their importance as the target market for smartphones.

1.3.3 Empirical objectives

In a manner conforming to the primary objective of the study, the following empirical objectives were pursued:

- Determine Generation Y students' smartphone usage and brand preference.
- Determine the product features that Generation Y students look for when purchasing a smartphone to ascertain whether it influences their intention to purchase their preferred smartphone brand.
- Investigate Generation Y students' brand personality perceptions of their preferred smartphone brand to determine if it influences purchasing intention.
- Determine if brand name has an influence on Generation Y students' purchasing decision of a smartphone.
- Determine Generation Y students brand loyalty towards their preferred smartphone and how it influences their purchasing decision.
- Determine how price affects Generation Y students' purchasing decisions with respect to smartphones.
- Investigate Generation Y students' purchase intention with respect to their preferred smartphone brand.
- Determine Generation Y students' social influence when it comes to smartphone brands and its influence on purchase intention.
- Investigate Generation Y students' level of dependency on smartphones to see if it influences their intention to purchase their preferred smartphone brand.
- Determine how Generation Y male and female students differ in their perceptions of product features, brand personality, brand name, brand

loyalty, price, purchase intention, social influence and dependency regarding smartphones.

1.4 HYPOTHESES TESTING

In accordance with the empirical objectives, the following hypotheses were formulated.

Ha1 – Generation Y students' smartphone purchasing behaviour is influenced by the product features, brand personality, relative advantage, brand name, brand loyalty, price, purchase intention, social influence and dependence on smartphones.

H01 – Generation Y students' smartphone purchasing behaviour is not influenced by the product features, brand personality, relative advantage, brand name, brand loyalty, price, purchase intention, social influence and dependence on smartphones.

Ha2 – Male and female Generation Y students differ in their perceptions of product features, brand personality, relative advantage, brand name, brand loyalty, price, purchase intention, social influence and dependence on smartphones.

H02 – Male and female Generation Y students do not differ in their perceptions of product features, brand personality, relative advantage, brand name, brand loyalty, price, purchase intention, social influence and dependence on smartphones.

This next section discusses the research design and methodology used in the study.

1.5 RESEARCH DESIGN AND METHODOLOGY

This study compromised a literature review and empirical research using a quantitative research design with a single cross-sectional sample.

1.5.1 Literature Review

The first part of the study includes a review of the available South African and international literature based on secondary data sources such as the internet, textbooks, business journals, academic journals, and online academic databases.

1.5.2 Empirical Study

The empirical part of this study involved the following elements:

1.5.2.1 Target population

The target population of this study was full-time Generation Y students aged between 18 and 24 and enrolled at South African higher education institutions (HEIs). The target population was defined as follows:

- Element: Generation Y full-time students aged between 18 and 24
- Sampling unit: Registered South African public HEIs
- Extent: Gauteng, South Africa
- Time: 2018

1.5.2.2 Sampling frame

The sampling frame consisted of a list of 26 registered South African public HEIs (Universities South Africa, 2017). From the sampling frame, a judgemental sample of the three HEI campuses was selected, one being a traditional university, one a university of technology and one a comprehensive university, all located in the Gauteng province. The Gauteng province was chosen as the main sample of this study because the province boasts the largest share of the South African population (Stats SA, 2017). A convenience sample of students registered for full-time studies was selected from the three HEIs.

1.5.2.3 Sample method

This study made use of a non-probability, convenience sample of Generation Y full-time students between the ages of 18 and 24. The self-administered questionnaire

was hand-delivered to those lecturers who had indicated that they would avail their students to participate in the study at each of the three HEIs. Permission was requested from the lecturers to distribute the questionnaire to their students either during class or after class.

1.5.2.4 Sample Size

This study selected a sample of 450 full-time undergraduate Generation Y students. This sample size was similar to other research on smartphone purchasing intentions, such as the studies conducted by Lim *et al.* (2012:24) and Akarte and Arora (2012). Both these studies made use of a sample size of 400 respondents, which was deemed large enough. The sample of 450 full-time undergraduate students was split evenly between the three selected HEIs, which resulted in a sample size of 150 full-time undergraduate students per HEI.

1.5.2.5 Measuring instrument and data collection method

This study made use of a self-administered questionnaire to gather data. The questionnaire comprised three sections. The first section (Section A) was structured to gather demographic data. The second section (Section B) determined Generation Y students' smartphone preferences (Mohan, 2014). The third section (Section C) determined the factors that affect smartphone purchases, such as product features (PF) (Nainkin, 2014), brand personality (BP)(Müller, 2017), relative advantage (RA) (Lim et al. 2012), brand name (BN) (Rio *et al*., 2001), brand loyalty (BL) (Al-Azzawi & Anthony, 2012), price (P)(Sinha & Batra,1999; Grewal *et al.,* 1998; Cheong & Park, 2005), purchase intension (PI) (Ling *et al*., 2011), the perception of social influence (SI)(Pedersen, 2005; Bouwman *et al*., 2011) and dependence on smartphone (DOS) (Ting *et al.,* 2011). All scaled responses (Section B and C) were measured using a six-point Likert scale (1= strongly disagree, 2= disagree, 3= slightly disagree, 4= slightly agree, 5= agree, 6= strongly disagree).

The questionnaire was accompanied by a cover letter that thoroughly explained the purpose of the study and requested the students to partake. A pilot study was conducted where the questionnaire was administered to a convenience sample of 50

students at one of the South African HEI campuses. These students were excluded from the sampling frame of the main study to ensure reliability. The results from the pilot study were coded and tabulated for further consideration when administering the final questionnaire.

The research adhered to a structured format where the lecturers of the respective groups were contacted and asked for permission to administer the survey. The lecturers were informed that the questionnaire was voluntary and students were not obligated to complete the questionnaire. The necessary arrangements were made and during the scheduled class times of the full-time undergraduate students, the self-administered questionnaire was distributed and collected after completion.

1.5.3 Statistical analysis

The captured data were analysed using the Statistical Package for Social Sciences (SPSS), Version 25.0 for Microsoft Windows. The following statistical tests were performed on the empirical data sets:

- Reliability and validity analysis
- Descriptive analysis
- Factor analysis
- Regression analysis
- Significance test
- Two independent sample t-test

1.6 ETHICAL CONSIDERATIONS

The research study adhered to the ethics standard commonly proposed for academic research. The researcher guaranteed the confidentiality of the information provided by the respondents to protect the identities and interests of the participants. The researcher used the correct methods to obtain information from Generation Y students. The directors and deans of the various higher education institutions approved the research before the study started. Participation was voluntary with no pressure on anyone to partake in the study.

The final questionnaire and research proposal were submitted jointly to the North-West University's Research Ethics Committee to ensure that all participants who could be classified as vulnerable would be excluded from the sample frame. The measuring instruments were evaluated by the committee to ensure that information of a sensitive nature was not requested. An ethics clearance number (ECONIT-2017-059) was granted after the study withstood the committee's scrutiny.

1.7 CHAPTER CLASSIFICATION

Chapter 1: Introduction and background to the study

This chapter provides a detailed introduction and background to the research study. It also includes an outline of the problem statement, the research objectives and the research methodology used. The chapter concludes by providing an outline of the research study.

Chapter 2: Literature review

This chapter offers a detailed discussion of the available literature on the historical background of smartphones, as well as the definition and importance of a smartphone. The literature review also considers the development and growth of the smartphone industry, after which it provides an outline of the consumer decision making process and factors that affect smartphone purchases. The elements of the marketing mix and their influence on smartphone brands receive cursory attention. In the last instance, the chapter focuses on the literature on Generation Y, the characteristics of this cohort and their importance as the target market for smartphones.

Chapter 3: Research design and methodology

The population, sampling method, sample frame and data collection method are discussed in this chapter. The chapter outlines the data analysis and statistical techniques, and discusses the problems experienced and the response rate to the questionnaire. The chapter also outlines the data analysis and statistical procedures used in the study.

Chapter 4: Results and findings

This chapter presents, analyses, interprets and evaluate the research findings.

Chapter 5: Conclusions and recommendations

This chapter draws conclusions from the study. It also offers recommendations emanating from the study and givers suggestions for further research.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The literature review section of this study focuses on the theoretical objectives mentioned in Chapter 1 (Section 1.3.2), which aim to achieve the primary objectives. The main purpose of the primary objective is to investigate the factors that influence Generation Y students' purchasing behaviour with respect to smartphones.

Section 2.2 introduces the smartphone industry by briefly highlighting the historical background of mobile phones, smartphones and the industry at large (Section 2.4). The factors that influence smartphone purchases (Section 2.6) are explained in conjunction with the questionnaire.

Section 2.5 defines and outlines the decision making process and all the steps involved in making that final purchase, followed by the aspects of consumer behaviour that come into play in the marketing mix. In closing, the chapter concludes with a brief discussion in Section 2.8 on the Generation Y cohort as an important feature of this study.

2.2 HISTORICAL BACKGROUND

Docevski (2016) reminds us that the human need for communication over long distances has existed since the beginning of civilization, and there was no efficient, quick and convenient way to do this until the creation of the mobile phone. The foundation of mobile phones can be traced back to the invention of the telephone by Graham Bel in the 1870s and success with the capture of radio message (Lifestyle Lounge, 2015). According to uSwitch (2018), the history of mobile phones dates back to the 1908 when a US patent was issued for a wireless telephone in Kentucky in the United States.

Mobile phone technology has a long history that starts with experiments with communication from and to moving vehicles rather than handheld devices in the 1920s (uSwitch, 2018). Protin (2017) states that car phones quickly became popular, as only a few people were able to utilise the service at a time, meaning that waiting

lists began to form, leading existing customers to a waiting period of about 30 minutes to place a call.

Mobile phones developed over five different generations with the latest still in the roll-out phase (Brookes, 2012). The first generation (1 G) of mobile networks was developed by Bell Labs in Australia and was referred to as the advanced mobile phone system (AMPS). It used analogue communication techniques that were simple to produce, but more open to interference and power hungry (Branch, 2016). The second generation introduced the first digital cell phones, with technology that enabled various mobile phone networks provision of services such as text messages, picture messages, and multimedia messages (MMS) (Dan, 2014). According to Vora (2015) 3G was launched in 2000 and is based on GM, with technology aimed at offering high speed data of up to 14Mbps and more using packet switching. The 4G mobile network has increased speed of tens of megabits per second with the main development being an all internet protocol (IP) core (Branch, 2016). 5G technology is the next phase of mobile communication, which aims on meeting the requirements beyond 2020 of a complete wireless communication with almost no limitations (Singh, 2015).

Mobile phone technology made many advances during the Second World War (Docevski, 2016). Wang (2015) refers to a mobile phone as a communication device that connects to a wireless communications network through radio waves or satellite transmissions that provide voice communications, a short message service (SMS), or a multi-message service (MMS).

Smartphones have been commercially available in one form or another since 1993, but generally emerged around 2000 with a consistent increase in sales every year (Sarwar & Soomro, 2013:217). The world’s first true smartphone made its debut in 1992, and it was called Simon Personal Communicator, created by IBM more than 15 years before Apple released the iPhone (Tweedie, 2015). Table 2-1 indicates some of the highlights in the history of mobile phones.

Table 2-1: The history of mobile phones (Goodwin, 2017)

Date	Activity
1973	Dr Martin Cooper, who was a senior engineer at Motorola, made the first public mobile phone call using a device weighing 1.1 kg and measuring at 228.6x127x44,4 mm
1983	Motorola released its first commercial mobile phone, which was known as the Motorola DynaTac 8000X
1989	Nokia launched its first handheld mobile phone, which was known as the Mobira Cityman 900 with a weight of 800 g
1992	The world's first smartphone, called Simon Personal Communicator, created by IBM.
1997	The release of the Nokia 6110 and Motorola StarTAC.
1998	The release of the Nokia 5110.
1999	Blackberry releases its first handset known as the Blackberry 850.
2000	Nokia releases the famous 3310.
2002	Samsung releases the SGH-T100, which was the first phone that used a thin film active matrix LCD display.
2003	Blackberry releases the 5810 with e-mail and QWERTY keyboard.
2004	Motorola released the Razer V3, which was the best –selling clamshell handset in history
2005	Blackberry releases their first handset to feature Wi-Fi, Blackberry 7270.
2006	Nokia released the N95.
2007	LG released the LG Shine, while Apple released its very first *iPhone.*
2008	Apple released iPhone 3G and *HTC* launched the first Android phone known as *HTC* Dream or rather T-Mobile G1. Apples also introduced the App store July 10
2009	Samsung released its first Galaxy phone, the GT-I7500.
2010	Nokia and Microsoft released the new Windows phone operation system, which failed miserably.
2012	Google made a difference to android by consolidating all the operation system's content stores into one platform named Google Play Store.
2016	Google released the Pixel, which was the first phone designed completely by Google.

2.3 SMARTPHONES: DEFINITION AND IMPORTANCE

A smartphone is defined as a programmable mobile phone with an offering of advanced capabilities and features that help individuals manage their daily work and personal life activities (Mohd Suki & Mohd Suki, 2013:49). Rice and Katz (2008) refer to a smartphone as a social medium that developed into a multimedia digital platform with the ability to provide, obtain, and share personal and social information.

Smartphones today control most of our daily lives, as the technology's effects are easily assessable from the streets to a classroom environment (Yaman *et al*., 2015:7). The technology is reliant on approximately 250,000 separate patents (Goodwin, 2017). Many industries have quickly adopted making use of mobile devices, which are equipped with integrated wireless connections that continue to push the demand in every industry; such as the retail industry through online shopping, the recruitment industry through job searching, the gaming industry through apps, and many more (Masud, 2013). The basic function of a smartphone device among many other features is to allow users to make and receive phone calls and send text messages (Technopedia, 2018). Smartphones need to be able to use small computer programs called applications or app (Weinberg, 2012). These devices can store many apps for different purposes (Yaman *et al.,* 2015).

2.3.1 Dependency

The use of smartphones goes beyond just calling, messaging, and internet connectivity but can also perform many other functions such as online shopping and electronic fund transfer, which were previously not feasible with an ordinary mobile phone (Kaushal & Kumar, 2016). South University (2013) warns that instant access to text messages, e-mails, social media, games and all other technological advancements relevant to smartphones are starting to resemble addiction behaviour. For many younger people, the last thing they do before going to bed is check their smartphones, and often also the first thing they reach for in the morning (Freeman, 2012).

Consumers nowadays have become so dependent on mobile phones that it has become common sight to see people in a queue or while waiting for a train, bus, and airplane to have a smartphone in their hand as a way to pass time (Harun *et al*., 2015:196). Hussung (2017a) affirms that research shows that people tap, swipe, and click their phones an average of 2 617 times per day, which rises to 5 427 touches per day for the top 10 per cent of users, resulting to about a million touches per year and 2,42 hours of phone screen time per day on average. Wurmser (2018) claims that the average time spent on mobile devices by US adults in 2018 will amount to 3 hours, 35 minutes per day, with an annual increase of more than 11 minutes; smartphones account for nearly most of this additional time spent on mobile devices.

Morocco World News (2018), states that a study has confirmed that students who are a multitask community of smartphone users; use the device for a variety of features (access different social media sites, receive and send calls and texts, play games, share videos, read news and retrieve scientific documents). It is undeniable that the internet has become an integral part of our lives, and the smartphone industry is one of the major driving forces behind this revolution (Joseph, 2016). Mobile phones seem to be popular among the student cohort of the South African population, mainly for communication reasons (Shava *et al*., 2016). South African teenagers are addicted to their cell phones so much that they experience withdrawal symptoms similar to quitting drugs without them (Rondganger, 2016). Consumers recommend that the user-empowering feature of smartphones should allow them the freedom of customizing their preferred mobile devices, by aligning them to the perception they have of these mobiles as a necessity, which will result continuous high usage and purchase (Arif & Aslam, 2014:4–5).

2.4 THE SMARTPHONE INDUSTRY

The smartphones industry continues to be a leader in the technology platform, (Kenny & Pon, 2011:240). The smartphone industry will continue to grow drastically as this device is becoming more of a necessity. A smartphone can be considered as the most ubiquitous technology among the youth as it allows users to connect to one another socially (Elogie, 2015:3).The mobile phone industry is a segment that

involves a lot of innovation within the Information and Communication Technology (ICT) sector with the smartphone dominating among the various mobile devices (Cecere *et al.,* 2014:162). Apple achieved 79.2 per cent of the overall profit within the smartphone industry globally in 2017 (Lovejoy, 2017). Kharpal (2017) reports that a new study claims that the global smartphone industry is projected to grow 50 per cent in the next four years, to 6 billion devices with a total revenue of $355 billion. Below is a table that indicates the global smartphone shipments in the 2nd quarter of 2017 as well as 2018.

Table 2-2: Global smartphone shipments (BusinessTech, 2018)

Global smartphone shipments (Millions Units)	2017 Q2 Units	2017 Q2 % Share	2018 Q2 Units	2018 Q2 % Share	YoY % Growth
Samsung	80.4	22%	71.6	20%	-11%
Huawei	38.5	11%	54.2	15%	41%
Apple	41.0	11%	41.3	11%	1%
Xiaomi	23.1	6%	33.0	9%	43%
Oppo	30.5	8%	29.6	8%	-3%
Vivo	25.8	7%	26.0	7%	1%
LG	13.3	4%	10.2	3%	-23%
Lenovo	10.8	3%	9.9	3%	-8%
HMD	0.5	0%	4.5	1%	782%
Tecno	2.8	1%	4.4	1%	59%
Others	98.9	27%	75.3	22%	-24%
Total	365.5	100%	360.0	100%	-2%

According to Gadgets Now (2017), global smartphones market seem to be in “awe” of Chinese brands (like Huawei, Xiaomi, Oppo etc.), as they now hold a record of 48 per cent smartphone market share worldwide. This is also visible in the above table with an noticeable growth of the sales of these brands. The smartphone industry is dominated by two giant companies, Apple leading by profits, and Samsung by market share (Al Mkahmari, 2015).

Nearly every South African now has a mobile phone, which makes it the most influential platform for marketing and communications currently available (ITWeb, 2017). Dicey (2018) considers that the South African telecommunications sector has advanced from the introduction of the free social media usage on Facebook, Twitter, WhatsApp and others to the launch of entertainment streaming platforms such as Black, which was launched by Cell C in 2017 as a game changer.

According to BusinessTech (2018), South Africa's smartphone sales climbed from 10 million in 2016 to over 12 million in 2017, with much of this growth driven by entry-level smartphones from second-tier brands and the value of the smartphone market increasing by 22%. Below is a table showing the key performance indicators for the South African telecommunications industry (Africa Telecom News, 2017). The South African smartphone sales grew by 12.4 per cent over the previous year's first quarter, with 3.2 million devices sold within the first three months of 2018.

Table 2-3: Key performance indicators on the South African telecommunications industry (Walker, 2018)

South African population	54.8 million
Total mobile cellular subscriptions	81 314 463
Prepaid mobile cellular subscriptions	68 710 864
Post-paid mobile cellular subscriptions	12 603 599
M2M mobile network subscriptions	4 971 928
Mobile data subscriptions	50 270 969
Mobile subscribers	91.7 million

Myers (2015) explains that many people have multiple active or inactive subscriptions that make up for those who do not own a mobile phone. BusinessTech (2017) reveals that mobile connections exceed the South African population by far as many people have more than one SIM on more than one network provider for various reasons (an example would be data-only SIM). The dual-SIM smartphones are designed to cater for the high volume of customers with multiple SIM cards (Telecoms, 2015). Rapid transformation continues to take place while competition to

control the lucrative market is constantly increasing (Rodrigo, 2017). Based on the value of the market, it is crucial to understand consumers' decision making process when purchasing a smartphone.

2.5 DECISION MAKING PROCESS

The idea of purchasing a product or service does not come arbitrarily, but carries a long process of thinking, analysing options, and taking other factors into consideration to reach a conclusion (Mudassar, 2017:7). Consumer decision making is always a central theme in marketing research (Stankevich, 2017). Kotler and Keller (2012:2428) declare that the consumer behaviourism model suggests that consumers' purchase behaviour before and after an actual purchase generally passes through five stages, namely needs recognition, information search, evaluation of alternatives, purchase decision and post-purchase behaviour.

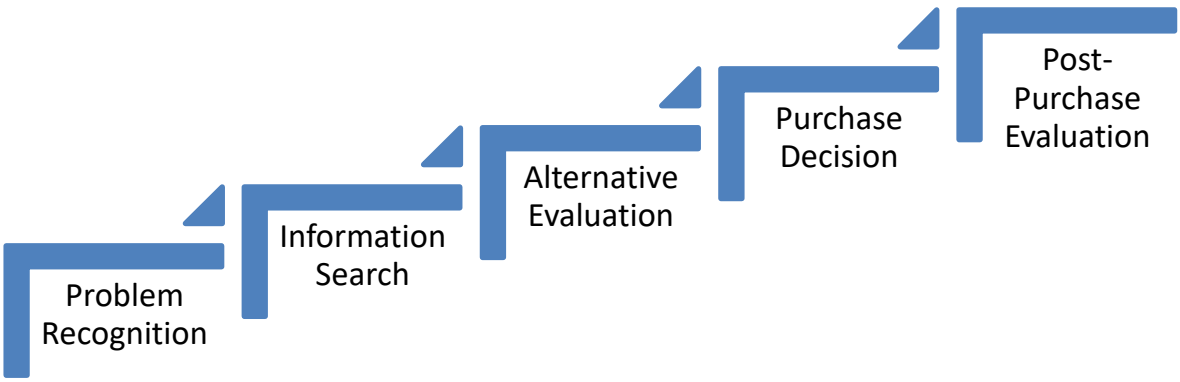

Figure 2-1: The Consumer Decision Making Process

The illustration above outlines the basic steps of the consumer decision making process consumers follow when making a purchase decision to determine what products or services will best fit their needs (Lucidchart Content Team, 2017).

2.5.1 Problem Recognition

The first step is recognizing the need, as the need is the most important element that leads towards the actual buying of the product or services (Zkjadoon, 2016). Problem recognition occurs when the consumer experiences a difference between his or her desired (ideal) state of affairs and actual (current) state of affairs (Lantos, 2011:66). During this stage the consumer identifies a need or want that they would like to satisfy, which is an ideal time for advertising to your target market (Flekel, 2013). Marketers have to create a need and find a way to inform potential consumers of the benefits of purchasing a smartphone. Marketers see consumers as “a man with a problem” and they try to identify the consumer purchase as a response to the problem (Nagarkoti, 2009:8). A consumer may recognize a need for a smartphone and gather information from internal sources such as family and friends, and external sources such as online reviews on the products and marketing communication (Shrestha, 2016:16). Consumers have various reasons for identifying their need as a problem, for example simple physical factors such as a damaged mobile screen can affect and motivate their purchase decision (Kemppi, 2016:26). After the need has been recognized, consumers then move onto the information search step.

2.5.2 Information Search

Information search refers to a stage where the consumer is motivated to seek information or shifts attention to sales advertisements (Kemppi, 2016:29). Rust (2012) is of the opinion that information gathering will help the consumer gain a better understanding of what is needed to solve the problem and also inspires ideas for a possible solution. The amount of time spent on the information search stage is dependent on many factors, such as consumer’s personal past experiences, perceived risk and level of interest. Furthermore, the evolving mobile technology and mobile marketing is a powerful tool for marketers to affect information search as it offers consumers the convenience of accessing and sharing information (Kocyigit, 2016).

Smartphones have become the biggest driver of the digital revolution on the purchasing process today, as consumers will often reach for the smartphone to obtain extensive information, access price comparisons and find the nearest store to meet their purchase needs (Öster, 2016). South African consumers (76%) are relying on information from online sources through their mobile phones to make purchase decisions, even while in store (Digital Economy, 2017). After the consumer has gathered enough information they evaluate all the alternatives.

2.5.3 Alternative Evaluation

The third step involves an evaluation of alternatives on the basis of the consumer's criteria and the relative importance of this criterion (Bhasin, 2017). The consumers' evaluation is based on information gathered from the information search, which is narrowed down to the following: the total number of brands available in the market, the number of brands the consumer knows about, brands that meet the initial buying criteria, and the preferred set of brands, which leads to the final decision (Albarasin, 2013). Consumers look for alternatives like products from competitive brands and compare them, then choose one that best meets their required needs (Sagarjb, 2016). Shrestha (2016:17) asserts that smartphones are introduced in the market as new models that are updated with the latest features and technology, which appeal more to customers based on purchase motives that match their characteristics or attributes of brands under-priced consideration. The evaluation then takes place based on certain criteria. An example is the GSMArena (2018), an online review site that also offers a phone feature compare function. Online customer reviews and testimonials play an integral role in influencing other consumers' purchasing decisions (Harel, 2018). Consumers' use of online reviews continues to increase as a powerful tool to conduct research on product information during the alternative evaluation step when buying a smartphone (Lindmark, 2015). There are a few product features in each phone that weigh more than others, depending on whether the review is good or not (Haselton, 2018).

A customer's attitude is a factor that influences their level of involvement during this stage, for example a positive attitude will result in positive involvement in evaluating

a number of brands, while a customer with a negative attitude will choose one brand (Johnston, 2016).

2.5.4 Purchase Decision

A purchase decision is defined as the thought process that takes the consumer from identifying a need to generating options and reaching a decision to choose a specific product or brand (KWHS, 2017) After tallying up all the criteria mentioned, the customer now concludes as to what they will purchase and where. In case of smartphones, consumers make their purchase decision by analysing newly introduced smartphones on the market (Mohan, 2014:29). This process is usually influenced by reference groups, like family or acquaintances (Yu-Jui, 2012:8). Choosing a smartphone is not as simple as deciding which brand or features you want or need most. Consumers have to choose the right network provider for their needs and decide on whether to sign a contract or rather a prepaid option (Petersen. 2017b). McKane (2018b) posits that 65.2 per cent of consumers prefer purchasing a smartphone on prepaid, while 34.8 per cent prefer the contract option.

2.5.5 Post-Purchase Evaluation

Lastly, the consumer concludes the process with a post-purchase evaluation to determine if the purchase decision was the right one by asking themselves what they did well and what they could improve (Hussung, 2017b). This stage can be the most important one as it forms the experience of the customer and determines whether the customer will become brand loyal or switch brands depending on their satisfaction during the decision making process (Dudovskiy, 2013). Many purchase decisions come from brand ambassadors (reviewer) as these customers often share their experience in a way that initiates engagement. This can draw new customers and inform them about previous customers' purchase decision (Ramirez, 2014). Marketers should always ask customers for reviews about their experience through a post-purchase e-mail or SMS, as it will give an indication of their performance and allow for evaluation on what to improve (Millwood. 2016).

2.6 FACTORS AFFECTING SMARTPHONE PURCHASES

Various factors influence the mobile phone purchase decisions of consumers (Guleria, 2015:193). Lay-Yee *et al.* (2013:2427) mention that the key motivating factors for future smartphone users are internet surfing (39%), trends in communities (35.6%), needs (34.4%), device upgrades (34%), software (33.1%) and applications (29%), Purchasing a smartphone takes more thought these days due to the variety of features and brands available in this competitive market. When shopping for a smartphone, consumers should consider the following guidelines on selection: an operating system (Android or IOS), the preferred features or specifications, price considerations, and timing to determine the right purchase decision (Nield, 2017).

This section outlines some of the most important aspects influencing consumers' purchasing behaviour with respect to smartphones.

2.6.1 Product Features

A feature is an attribute that satisfies the consumer's need or want for a product through ownership and utilization of the product (Lay-Yee *et al.,* 2013:2430). Product features constitute both hardware and software components. Lay-Yee *et al*. (2013:2430) explain that hardware is the body of the device that can be touched and distinguished by size, weight, colour and design, while the software is a series of programmes, procedures and documentation. The anatomy of a smartphone involves two components, hardware and software.

2.6.1.1 Hardware

The hardware includes all the physical aspects of the phone, including the processor that executes the end user's application software (Chaudhuri, 2013). Cecere *et al.* (2014:7) insist that the most important hardware features in a modern smartphone are determined by its connectivity (2 G, 3G,4G, wi-fi, bluetooth), chipset, body specifics (length, height, width, and weight), writing solution tools (Keyboard versus touchscreen), display particulars (display type, internal and external memory), USB port, cameras, GPS system, and battery. The hardware specifications of a

smartphone determine everything from application performance to signal strength (McKane, 2018a). These are the hardware items designers have to consider or take advantage of when developing smartphone user experience. Smartphone processors are built with a system-on-a-chip architecture that integrates other functions into a single piece of silicon (Smith, 2014). Singh (2017) suggests that in the world of computing, a processor can be referred to as the "'engine of the car" as it basically runs everything, and the more powerful it is, the faster it performs. A powerful processor allows your phone to function at the same speed as when brand new even after you have loaded it with apps, videos, games, and songs (Vador, 2013). The role of processors in smartphones is to balance performance, power consumption, and cost with advanced RISC machine-based (ARM) processors being very common (Chaudhuri, 2013). In 2018, chips offer improved LTE connectivity, better security and the ability to record video at 4k resolutions (Nield, 2018). Over the past 10 years consumers based their smartphone preference on various hardware aspects like size, quality of camera, screen resolution and storage (Forbes, 2018).

Screen size became a key feature in the first waves when 4.0 and 4.3 inches were introduced in late 2009 and early 2010. This made the ideal screen size between 4.0 to 5.0 inches to maximise versatility and functionality (Gadget Review, 2016). Gikas (2016) points out that smartphones today have high-resolution cameras that capture life in a big way. This goes for file size as well as drama, leaving you with the option to either go for a smartphone with bigger storage or an additional micro-SD card. Most people have had an encounter where they dropped their smartphone with a large glass display and damaged it. A more durable device is much more reliable and is now sought after (Versace, 2016).

Komando (2013) proposes that a long-lasting battery is one of the most important features of a smartphone, even though there are ways to boost the battery life. In the end, a larger battery will last longer. High usage of public transportation and lack of charging stations in most public places makes battery life the most important factor when choosing a smartphone for many consumers (Lu, 2018). The diversity in hardware is decreasing, which is the reason why companies have started to differentiate themselves with the software they bring with each device (Savov, 2012).

2.6.1.2 Software

Software is a set of instructions or programmes that notifies a computer to perform specific tasks (Technopedia, 2018). The software allows the smartphone to handle phone calls, run applications, and provide configuration options for users (Christensson, 2010). The mobile landscape has two dominating operating systems, namely Google Android and iOS. However, there are other operating systems to consider, such as Windows, Blackberry, Firefox OS, and Sailish OS (Fingas, 2017). An operating system is a key feature that influences the consumer's smartphone preference, with android dominating worldwide smartphone sales for many good reasons, such as a range of options (Spoonauer, 2017). Most mobile operating systems are linked to specific hardware (Rouse, 2011). The mobile operating system also determines which mobile applications (third party) can be downloaded on the device (Beal, 2018). The two biggest distribution channels for mobile apps with global coverage to a huge potential audience are the Google Play Store for Android and the Apple App Store for iOS (Dogtiev, 2018).

Artificial intelligence is slowly entering the world of smartphones and may be a basic feature on devices in the near future (Agomouh, 2018).Product features carry a lot of weight in the decision making process when purchasing a smartphone, as it all comes down to what the product can offer. Product features are a key component of relative advantage as they inspire and drive innovation for manufacturers to sustain competitive advantage.

2.6.2 Relative advantage

Tidd (2010) describes relative advantage as the degree to which an innovation is perceived as better than the product it supersedes or competing products. Spacey (2017) points to relative advantage as one's strength compared to the competition. This could furthermore be a product that is viewed as superior by customers so that it commands a premium price and high market share. Relative advantage has been proven to have a positive relationship with adoption of innovation (Tornatzky & Klein, 2012:35).

Often consumers who are planning to adopt new technology would likely want to know whether the new idea is better than the old one (Elogie, 2015:5). The four most popular sections that smartphone brands compete in to gain relative advantage are price, design, operating systems and patents (Anh, 2016:10). Marketers have to be explicit about the relative advantage of their products and ensure that their marketing material clearly indicates how their products give users an edge over competing products (Yocco, 2015). New models of smartphones are launched to the market every now and then to gain a competitive advantage in the market (Rahim *et al*., 2015:245).

The latest Apple iPhone X is not just the most interesting, it is by far the best smartphone ever made due to it is fast performance, a beautiful display, top-of-the-class camera resolution, loud speakers, reliable battery life, a rechargeable wireless pad, and an extensive support service that no other company can provide post-purchase of a smartphone (Bareham, 2018). The iPhone X or iPhone XS are the fastest and most powerful devices on the market (Field & Rear, 2018). The best reasons to choose an iPhone is the ecosystem factor that results in the integration of the hardware and software and the ability to work seamlessly with other Apple gadgets such as Macs, the Apple watch, and Apple TV (Spoonauer, 2018).

Samsung's relative advantage is the size of their screen. Once consumers have opened their eyes to a bigger, brighter HD super AMOLD screen, they would not want to go back (Anstice, 2014). Samsung's Galaxy Note9 is the most productive smartphone offered by giant techs, with its delivery of an industry-leading, ultra-sharp 6.4 inch infinity super AMOLED display, a massive battery with remarkable endurance, an S Pen stylus with Bluetooth connectivity and a powerful software suite (Vazharov & Carte, 2018). Samsung is the most preferred brand for Android users as it offers a wide range of smartphones that can fit each customer irrespective of their needs or affordability (Rogerson, 2018). Williams (2018) highlights that Samsung is the biggest competitor of Apple's iPhone, though its main focus is to deliver smartphones that set a standard of affordable price points, a large size, high-definition displays and ultra-fast PU processing speed that allows for multitasking.

Huawei knocked it out of the park with the P20 Pro, Mate 20 and Mate 20 Pro with its newest in-house processor, the Kirin 980 chipset, which will be the first commercially available 7 nm smartphones chipsets (Callaham, 2018). Huawei's relative advantage is the camera. The P20 Pro's biggest winning card is its massive main camera, with an additional three cameras at the back, a 40-megapixel main RGB sensor (Hayward, 2018). The smartphone market is highly competitive and companies have to find a way to gain a competitive advantage (Tubbs, 2014).

2.6.3 Brand name

A brand is a company's most prized possession, as it represents a product or service to consumers (Mohan, 2014:33). It also acts as a link between a company and a consumer in the relationship (Kotler & Armstrong, 2010). Kotler and Keller (2012:263) use the following terms to define a brand: a name, term, sign, symbol, design, or an amalgamation of all, used with the intention to identify and differentiate the goods or services of one seller or group of sellers among competitors.

Trivedi and Raval (2016:740) reveal that researchers discovered that out of three drivers of purchase decision, brand name and brand ambassadors were found to be key drivers in the purchase decision on mobile phones. There are many top smartphones in the world with advanced features, but few of them beat the offers in terms of their overall sales across the globe (Bhasin, 2018).

Marketing and Media (2017) chose the Sunday Times Top Five Smartphone brands for 2017 as follows: Samsung at number one, followed by Nokia, then Apple iPhone in third position, Huawei in 4th and, lastly Blackberry.

A brand name is an elemental building block of the brand and represents a potential starting point for creating brand personality (Klink & Athaide, 2011). As brand name represents a specific product or service to the consumer, it is also influenced by brand personality.

2.6.4 Brand personality

Aaker (1997:347) defines brand personality as the set of human traits/characteristics assigned to a brand. Brand personality is the way in which a brand speaks and behaves on their social media marketing, advertising and other promotional channels (Hallissey, 2016). Building a brand is a time-consuming activity that often takes very long before yielding any results (Mohan, 2014:35). Brand personality is derived from two components, namely the company's thinking and the consumer's thinking about the product (Mutinda, 2016:2). Brand personality alliances create a holistic image of a brand in relation to people, so we may think of the two as one (Ajilore & Solo-Anaeto, 2016:33).

Aaker (1997:352) developed the first systematic brand personality trait scale (see Figure 2-2) by constructing a five-dimensional framework ("Sincerity," "Excitement," "Competence," "Sophistication," & Ruggedness") for describing and measuring the personality of a given brand by means of 15 facets and 42 brand personality traits in the process.

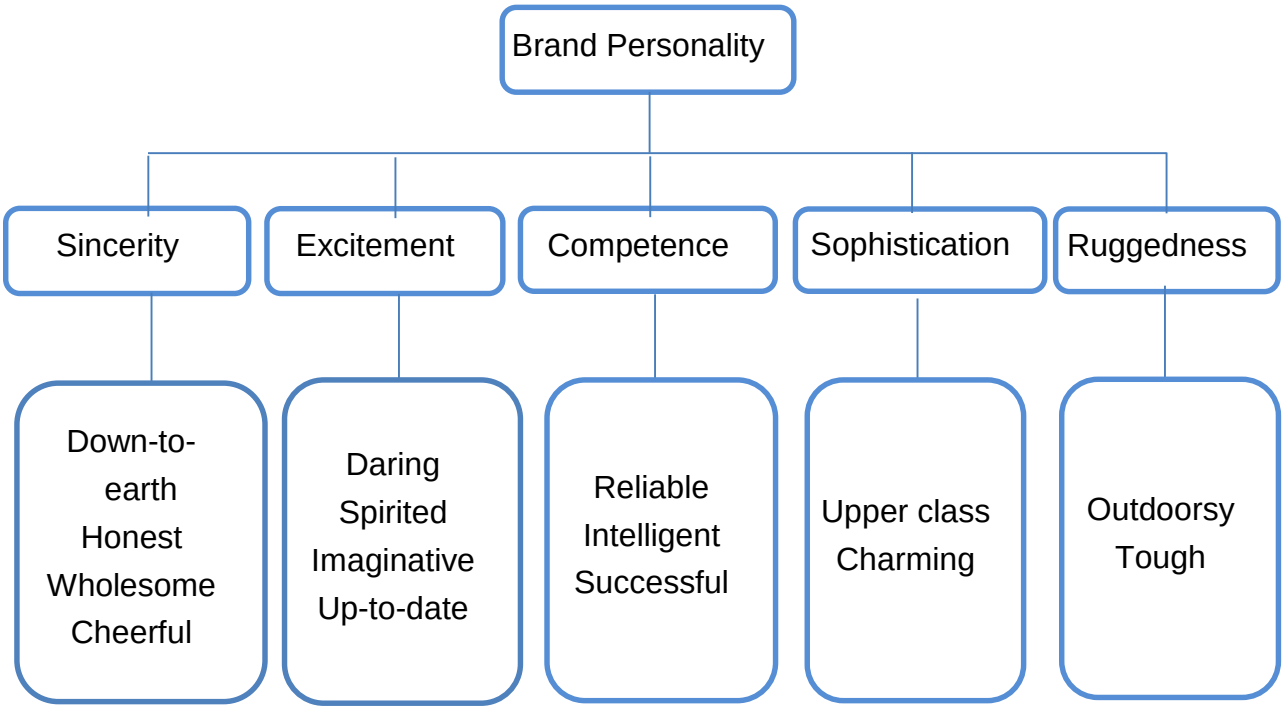

Figure 2-2: Five-dimensional framework on brand personality traits

Many brands have developed an image and personality that relates with the consumers' values and traits (Lautiainen, 2015:9). Kardes *et al.* (2011:230) suggest that this allows the consumer to express themselves through their choice of brands. A person's choice of smartphone may affect what other people think of them, while also indicating something of their own personality (MacMillan, 2016). Dambrans (2014) points out that a 2013 study by Australian telecommunications company Telstra revealed that iPhone users are, for the most part, extroverts who enjoy travelling, playing sport, entertaining at home, and such personal luxuries as massages and facials; while Samsung users are more conscientious, agreeable, and enjoy exercise and video games; HTC fans are gamers as well, but sadly less affable than iPhone or Samsung users. Consumers purchase cell phones to add to their own image. For this reason, the study utilizes Müller's (2016) Symbolic-Product-Brand-Personality trait scale instead of Aaker's (1997) scale. The illustration below shows the SPBP-trait scale with 15 items divided into four factors.

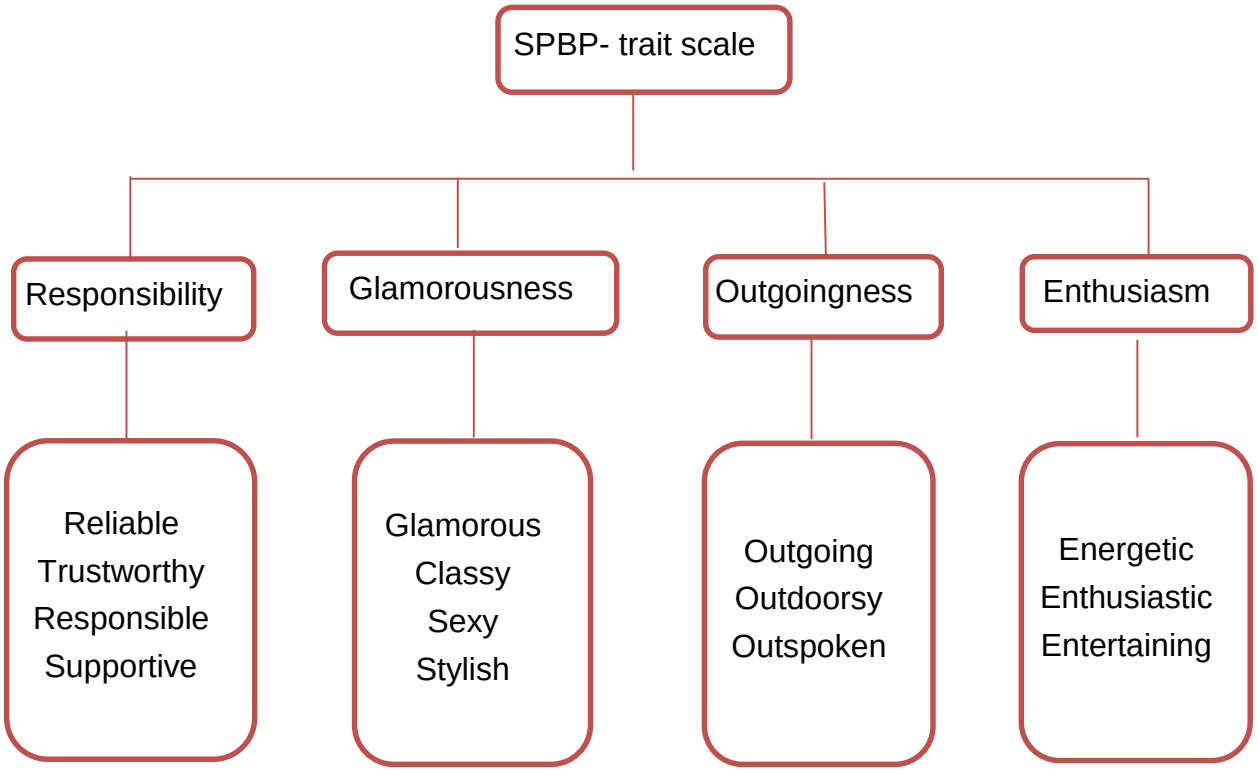

Figure 2-3: Symbolic-Product-Brand-Personality trait scale

A smartphone is a product used by consumers to add value to their image. The SPBP-trait scale is of relevance to this study as it highlights the key image drivers that an individual would associate with to align with a certain brand. Symbolic products are generally products with high capital value that involve an extensive thought process (Müller, 2017:3). Consumers purchase smartphones as a symbol of the social status (Madinga & Dondolo, 2018:288). Alhadid (2015) states that many marketers mention and discuss brand personality as the way in which consumers perceive brands and react based on their relationship with it, which results in their loyalty to the brand. Symbolic products are associated with the following features: high price, differentiation, brand recall and valuation, customer perceived risk, availability of information, and after-sale service (Bhasin, 2017). This results in consumer brand loyalty after identifying themselves with common personalities associated with the brand. A strong favourable brand personality provides the consumer with emotional fulfilment, image enhancement and an increased willingness to remain loyal to the brand (Farhat & Khan, 2011:5).

2.6.5 Brand loyalty

Brand loyalty mainly focuses on how consumers perceive a brand along with the various interactions with the company through promotional activities, reputation or past experiences (Retention Science, 2018). Loyalty means a customer is willing to continue making multiple purchases and engaging in experiences from brand activities over the competitors, regardless of whether they offer better prices or similar incentives (DeMers, 2017). TrackMaven (2014) explain brand loyalty as the likelihood of consumers to repeatedly purchase one brand's products over those of the competitor. Sometimes brand loyalty creates the relative advantage based on consumers' past interactions with the brand (Denoue & Saykiewicz, 2009:36).

Repeat purchase behaviour simply refers to the extent to which consumers repurchase the same brand after having experienced the brand (Ordun, 2015:43). Woong-Kyu (2016:3574) warns that competition among smartphone vendors to attract customers is becoming more intense and can lead to frequent brand switching for new purchases.

Yeh *et al.* (2016:245) feel that the core reason that drives consumers' loyalty to smartphone brands has become important for academics and practitioners to uncover, especially with the rapid growth and competition within the smartphone industry. A study done by Consumer Intelligence Research Partners (CIRP) states that Android users have higher brand loyalty compared to iOS users (Deahl, 2018).

In 2013, iOS users were loyal, but Android had the lead from January 2016 through December 2017, ranging from 89 to 90 per cent while iOS's loyalty ranged from 85 to 88 per cent (Deahl, 2018). Building brand loyalty is becoming a stronger market shaper than ever before, in growth markets in particular (Kass, 2016). Apple has dominated the market and was recognized as the best representative of customer loyalty and enjoyment in all its devices (Martindale, 2017). Labrecque *et al.* (2011:458) claim that consumers can remain loyal to a brand to conform to a reference group.

2.6.6 Social influence

An individual or a group of people who can basically influence an individual's behaviour is known as a reference group (Shrestha, 2016:18). The reference group offers some point of comparison about the consumers' behaviour, lifestyle and habits (Lautiainen, 2015:6). Yu-Jui (2012:11) classifies reference groups that affect consumers' behaviour into the following groups: primary group (consistent and informal interaction – family, friends, neighbours and co-workers), secondary groups (inconsistent interaction and formally – religious, professional, and trade union groups), aspirational groups (groups individuals wish to join) and dissociative groups (groups individuals reject). The primary reference group is the most influential as it consists of individuals closest to the individual. Two-thirds of Generation Y respondents state that they spend most of their time socializing with friends and family online rather than in person (Freeman, 2012).

Nagarkoti (2009) posits that social influence is perceived to have a positive effect on behaviour towards smartphone purchasing. The Generation Y cohort identify their friends and peers as the most influential and they reinforce relationships with close friends and family to provide a sense of security, and point of contact in times of

distress and emergencies (Balakrishnan & Raj, 2012:263). Every individual has someone around them who influences their purchase decisions. The attempts to understand the role of social influence on our emotions, opinions, or behaviours in consumption dates back to the history in the fields of sociology, psychology and marketing (Dahl, 2013). Human beings are social individuals, as we all need people around to talk to and discuss various issues to reach better solutions and ideas. The term “social influencers” was created to define a group of individuals with a significant following on social media. There are large audiences who view daily posts by these influencers, who are often targeted by businesses to market products (Barker, 2017). Consumers no longer have to call their friends for a recommendation, they post on their social networks and crowd source unfettered responses from family, friends and strangers (DeGruttola, 2017). As stated by Murphy (2013), consumers can use online sources to obtain product information that are important for their purchase decisions. Generation Y consumers’ smartphone purchases is possibly influenced by friends, peers, family members and spouses (Lay-Yee *et al.,* 2013:2431).

Recommendations from peers can reap lot of customer conversions since a study by Hubspot data states that 71% of people are more likely to make a purchase online if the product or service comes recommended by others (Arnold, 2017).

2.7 MARKETING MIX ELEMENTS

The marketing mix is all about ensuring that the right product or a combination of products is in the right place, at the right time and at the right price (Acutt, 2016). The marketing mix elements are tactical tools that marketers use to implement strategies and to deliver superior customer experiences (Armstrong & Kotler, 2013:246). The marketing mix or elements available to the marketing manager are commonly known as the 4 Ps: product, price, place and promotion (Mindtools, 2018).

2.7.1 Product

A product is described as a good, an idea, a method, or information generated as an outcome of a process to satisfy a need or a want and has tangible and intangible

advantages (Business Dictionary, 2016). A product, which in this case is a smartphone, is the item being sold to the customer, its features and design. Vermaelen (2014) points out that the product is the centre of the marketing mix and the other three Ps are based on it. Contemporary consumers conduct research on products they find interesting before they buy and gather their information from product reviews and third party information to help them make a decision (Cohen, 2012).

When purchasing a smartphone, one of the first decisions to make is whether you want an Android device or an iPhone (Field & Rear, 2018). Smartphone companies often bring new features onto the market to gain a competitive advantage, but there's a question as to whether or not some of these are wanted or even used by consumers (Versace, 2018). Fowler (2018) alleges there are a number of low-priced smartphone models that offer many of the features people have come to expect from a premium phone. Smartphone manufacturers have a wide product range with different features to cater for every consumer need.

Santader (2018) highlights that although there are about 29 million smartphones in use in South Africa, only 21 million devices access the internet. Nokia products vary significantly as the company has a number of smartphones with different designs in their product range (Patel, 2015). Wambui (2013:15) intimates that Samsung's smartphones developed gradually beyond the limitations of their slim feature and now incorporate the perfect combination of comfort, simplicity and sophistication. This wide variety of different models of smartphones is mainly to ensure that the manufacturer has phones at various price ranges to cater for a wide range of consumers.

The following section focuses on price and how it fits into the smartphone marketing mix.

2.7.2 Price

Kotler and Armstrong (2010) defend price as a levy charged for a good or service, or a sum of the values that customers are willing to exchange for the benefits of taking

ownership or use of the good or service. Chow *et al.* (2012:46) explain that price will always be a key factor that consumers will take into consideration before making any purchase decision. Smartphones have a wide price range where brands compete for customer satisfaction and loyalty. Price has become a huge differentiator as prices are now transparent which makes them easily comparable (Ask, 2018).

Pricing is one of the most challenging aspects of marketing as it requires understanding the product and the market (Bungla, 2016). One of the most common basic pricing approaches is price skimming, which is defined as a product pricing strategy where a firm charges the highest initial price that consumers will pay and lowers it over time (Allen, 2016). Bhasin (2018) explains that with iPhone's premium target with a product and promotions to support the targeting, they have a skimming price. Apple uses the premium pricing strategy for its products, meaning that all their products are priced above competitors (Pratap, 2017). Samsung uses a limited range-of-price strategy for the Galaxy S9, however the most popular strategy is price skimming (Creanga, 2015).

Harvey (2017) warns that it is important to assess the cost of your services and products on a regular basis to ensure that you are in line with the realities of your marketplace. As each model gets smarter, the value is bound to increase as it would cost more to manufacture. The five most expensive smartphones in South Africa in 2018 are indicated in the below table.

Table 2-4: The five most expensive smartphones in South Africa in 2018 (BusinessTech, 2018)

Most expensive smartphones in South Africa in 2018	
Model	**Price**
Huawei Mate RS Porsche, 256 GB model	R26,459
Apple iPhone X 256GB	R21,999
iPhone 8 Plus 256 GB	R18,499
Samsung Galaxy Note 8	R17,129
Huawei P20 Pro	R15,499

The following table illustrates the five least expensive smartphones in South Africa in 2018.

Table 2-5: The five least expensive smartphones in South Africa in 2018 (Petersen, 2017a).

Least expensive smartphones in South Africa in 2018	
Model	**Price**
Asha 208	R999
Samsung Z2	R999
Microsoft Lumia 532	R999
Vodacom Kicka	R789
Hisense U60	R699

Samsung recently released the Note 9 with a price range of R18 999 for the 128 GB to R23 999 for the 512 GB (McKane, 2018c). Apple iPhone, heavily in competition, also released the new Xs Max 512 GB, which goes all the way up to R31 999 (MyBroadband, 2018) see https://mybroadband.co.za/news/. Smartphone price decreases and aggressive promotions and growth in WiFi/4G penetration are all contributing to the increased adoption of smartphones in South Africa (Moyo, 2017).

The following section focuses on how place fits into the smartphone marketing mix.

2.7.3 Place

Kareh (2018) explains that place refers to product accessibility for potential customers. This is where your business will sell its products or services and how they will get them to the end user (Duermyer, 2017). Geographic location is no longer a barrier to purchasing products or services, as the focus now has shifted to product and service being more accessible through online shopping (Huguesrey, 2015).

In South Africa, traditional mobile distribution is linked to mobile operations (Alfreds, 2017). In comparison with other shopping channels, mobile operators remain

dominant in the phone market, with a 58 per cent of consumers choosing to buy their phones directly from mobile operators and retail stores, while 33 per cent making online purchases directly from the operators (Deloitte, 2017).

Below is a graph indicating the current state of South Africa's mobile operator market share.

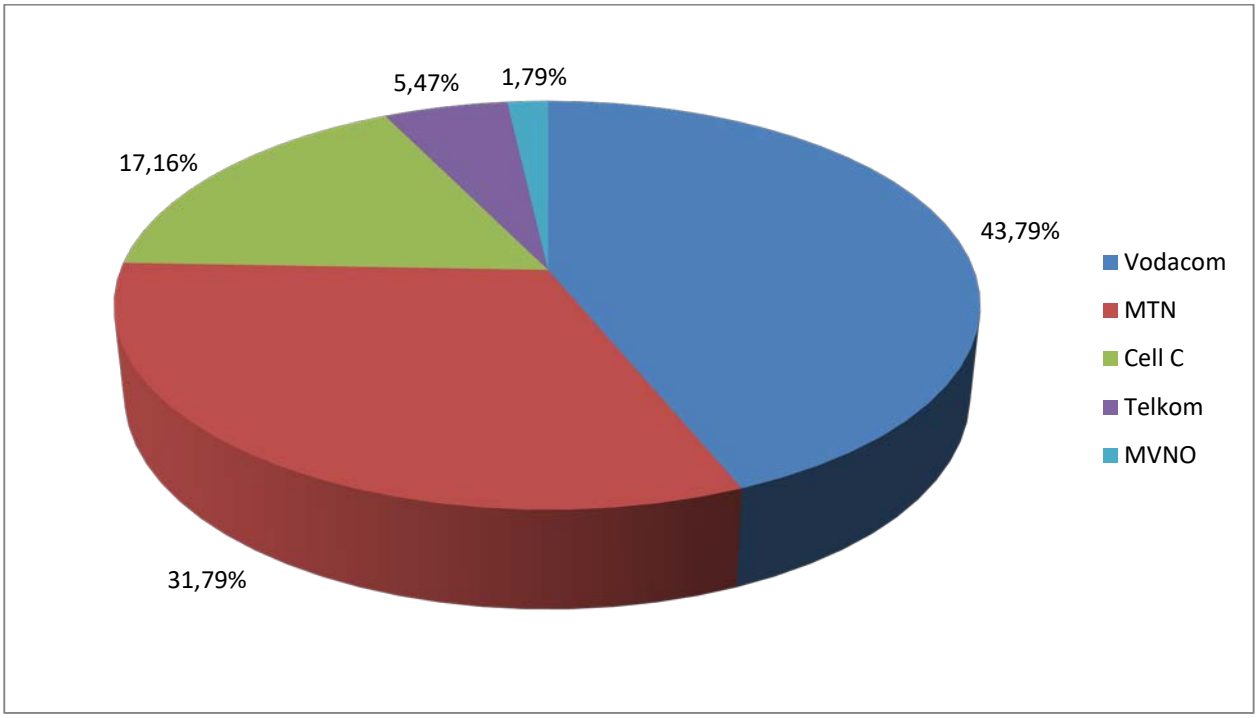

Figure 2-4: South Africa's mobile market share 2018 (BusinessTech, 2018).

There are four active mobile network operators in South Africa (MTN, CELL C, Telkom SA, and Vodacom) and 14 active mobile virtual network operators (AfriFoon, AfriHost, Econet Wireless, FNB, Hello Mobile, iBurst, iSmart, Lycamobile, Me & You, MrP Mobile, PSB Netwrok, Smart Mobile, The Unlimited and Virgin Mobile South Africa) (Africa & Middle East Telecom-Week, 2018). The Huawei brand does not deal directly with customers as it believes in cultivating an appropriate channel of distribution that includes distributors, sales networking team, enterprise and consumers (Bhasin, 2018). ReWare is the South African certified pre-owned mobile phone market leader with a physical retail distribution channel of over 160 retail

stores nationwide, namely Edgars, Edgars connect, Jet and Jetmart stores (Blue Label Telecoms, 2018).

Various strategies, such as intensive distribution, selective distribution, exclusive distribution, and franchising can be utilized by marketers to leverage other aspects of the marketing mix (Raja, 2013). In South Africa, 88% of respondents research products on their phone for about an hour before they make a purchase, and some claim they even make a purchase online while browsing in a retails store (Andrews, 2014). South Africans can purchase smartphones at four different types of outlets, namely (Mobile in Africa, 2018; Gearburn, 2015):

- Mobile network operators (e.g.: Vodacom & MTN)
- Phone brand stores (e.g.: iStore)
- Retailers (e.g.: Makro, Foschini, & Incredible Connection)
- Online stores (e.g.: Takealot)

The next section focuses on how promotion fits into the smartphone marketing mix.

2.7.4 Promotion

The Economic Times (2018) defines promotion as all activities undertaken to make the product or service known to consumers. Promotion involves providing consumers with information on the product through various media platforms (Vermaelen, 2014). It also aims to help the customers engage in the company's production activities while influencing and building customer loyalty (Tao, 2014). Raja (2013) defines promotion as all methods of communication that a marketer may use to provide information to different parties about the product. Kassabov (2018) states that mobile and social media are two of the biggest marketing forces at the moment. Real-time promotions can now be leveraged as one of the biggest benefits of mobile commerce as mobile devices are virtually always connected (Mehra, 2011).

The introduction of smartphones to the South African market has seen a significant increase in the number of South African mobile internet users due to cheaper internet access. This has presented marketers with an opportunity to create

interactive marketing campaigns (Pater, 2011:1). With an increasing number of South African using their smartphones for internet browsing, it is crucial for manufacturers to ensure that their ability to attract mobile users becomes a key point of their online marketing strategy (The Formula Digital Marketing, 2013).

Samsung uses various promotional strategies to make customers purchase their products, such as advertising in print and digital media, brand ambassadors and sponsoring big events with discount offerings (MBASkool, 2018). Google has invested a great deal of money in building Android Operating Systems, so they are bound to market it well enough to gain revenue by collaborating with various mobile device manufacturers (Bhasin, 2017). Samsung, for example, has a series of billboards in Gauteng advertising the new S9. They are active on social media, they give out booklets, advertise with mobile providers and they hosted an unpacked live streamed event for the launch in March 2018 (McKane, 2018c). Samsung South Africa has appointed PR Worx as their marketing communications agency to provide them with strategic PR counsel and to manage their communication efforts. They drive master brands and product awareness, stakeholder engagement, thought leadership, media relations and crisis communication (Samsung, 2017). The retail chain Big Save has rolled out a free smartphone campaign in Gauteng to create awareness of smartphone adoption by South Africans by sponsoring grocery hampers to the value of R850 (Alfreds, 2017).

Below is a diagram of the four marketing Ps on smartphones, as an example from Samsung. Wainstein (2017) claims that a winning integrated marketing strategy identifies a balance of all elements within the marketing mix (4Ps).

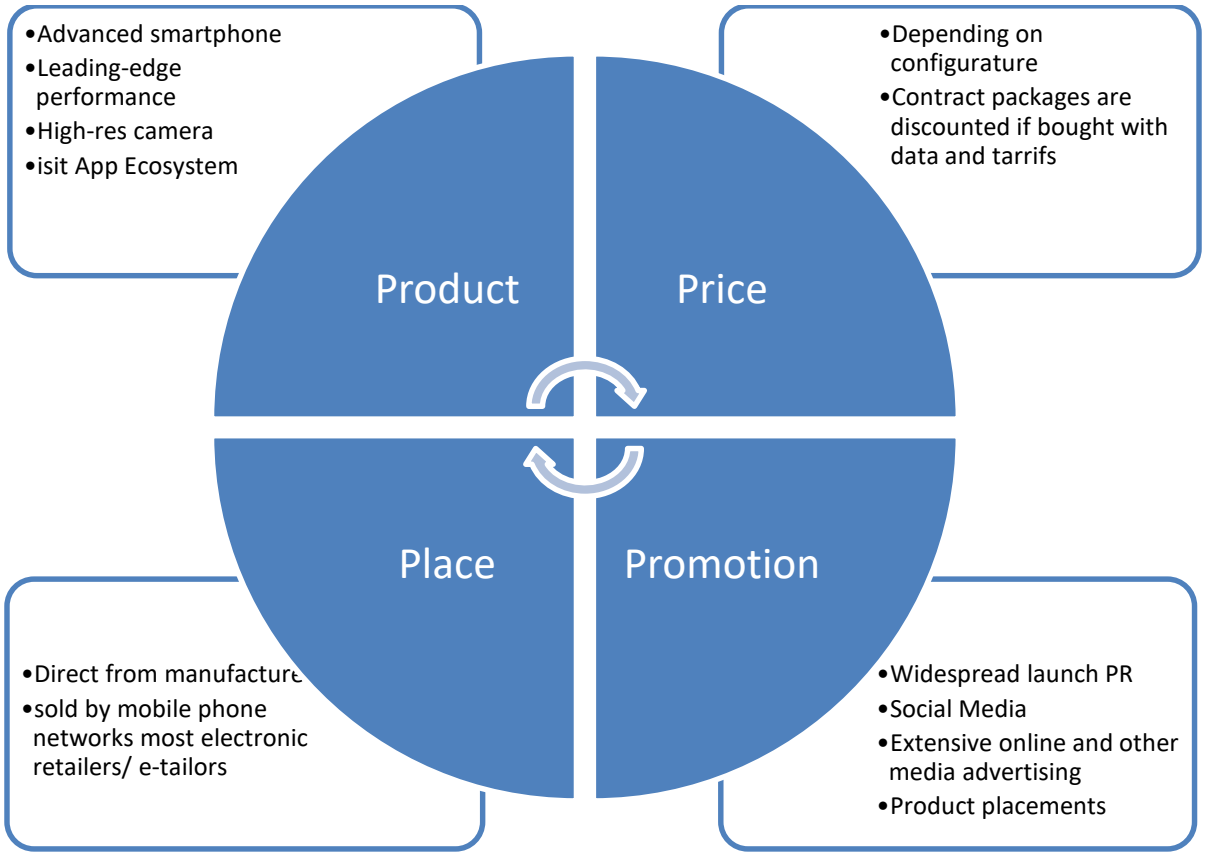

Figure 2-5: The four marketing P's on smartphones

2.8 GENERATION Y

Parment (2013:189) is of the opinion that marketing to generational cohorts has become a functional tool in market segmentation. Members of various generational cohorts possess similarity in values and divergent experiences, which influences their values, preferences and shopping behaviour. Markert (2004) explains that the Generation Y cohort is a generation of people born between 1986 and 2005. Bevan-Dye (2016:16) defines this cohort as the first digitally connected generation in history. Kei (2010) refers to the Generation Y cohort, which is also referred to as "Millennials" as individuals that are well educated, upbeat, socially conscious, self-reliant and entrepreneurial thinkers. Generation Y are accused to be cosseted, lazy, self-involved, political narcissists who cannot function without a smartphone and live in a state of eternal adolescence, lacking the ability to commit (Lyons, 2016). This cohort is defined by a set of characteristics created mainly by their surroundings and

circumstances they grew up in (Kane, 2018). Generation Y accounts for 36 percent of the South African population (Stats SA, 2018).

Madinga and Dondolo (2018) show that Generation Y is the biggest generation cohort and a profiling segment in South Africa. This generation has grown up in a technology-driven world and therefore has very high expectations of technology (DialogTech, 2016). Enterprise News (2011) states that the highest rate of internet usage by means of smartphones is among the Generation Y cohort. They are between the age groups 25 to 35 years old (41%) and 18 to 24 years old (38%). Freeman (2012) declares that smartphones have replaced newspaper, radio and PC for Generation Y-ers, hence their preference for this mobile device. Almost 90 % of Generation Y consumers are more fascinated by fashion apparel, fast food and electronic gadgets than other commodities (Mafini *et al.,* 2014:2).

“Selfies” is a modern term used to refer to self-portrait photographs taken by a smartphone, and they make up one-third of all pictures uploaded on social media platforms. Of this percentage, 55 per cent come from Generation Y who spend at least an hour a week on selfie duty (Samsung Newsroom SA, 2017).

Kim and Hahn (2012:134) warn that it is critical for mobile technology related industries to understand the Generation Y cohort due to their spending power and heavy usage of mobile devices and services. Statista (2016) states that research conducted in South Africa showed that the representative smartphone user was between 16–34 years old. This generation being the first to be brought up in the era of mobile technology, they represent a big part of the current and future segment for manufacturers and marketers of smartphone and mobile phones (Roets *et al.,* 2014:75).

2.9 SYNOPSIS

This chapter reviewed the smartphone industry and its growth throughout the 21st century. Factors affecting smartphone purchase behaviour were reviewed and thoroughly discussed to ascertain what consumers look for when purchasing a smartphone. The decision making process was investigated and linked with

smartphone purchase behaviour. The marketing mix was then thoroughly examined to show the effect of product, price, place and promotion on the smartphone market. Lastly, Generation Y was brought into the spotlight by investigating what defines them and how to market to them.

The next chapter focuses on research design, methodology, collection and interpretation of data.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

Marketing research is referred to as the structured and objective recognition, collection, investigation, dissertation and use of information to refine decision making for identifying and solving problems and opportunities (Malhotra, 2010:39). It is not a rigid sequence of steps that leads to a definitive conclusion; rather it is an iterative process that requires an open mind and a drive for a holistic overview, as sometimes a project may simply unearth the need for more research (Benzo *et al*., 2017). Berndt and Petzer (2011:1) define marketing research as a critical to the marketing and success of an organization based on its focus to make conscious marketing decisions.

Bradley (2013:4) states that marketing research concerns inquiry into marketing, which looks at the different aspects considered when satisfying requirements. The reason behind conducting such research is to assess information needs and provide management with relevant, accurate, reliable, valid and current information to aid marketing decision making (Malhotra, 2010:40).

The primary objective of this study is to determine which factors influence Generation Y students' smartphone purchasing behaviour. The following aspects are investigated from the literature:

- The historical background of mobile phones
- The development and growth of the smartphone industry
- The decision making process
- Factors affecting smartphone purchases
- The marketing mix elements
- The Generation Y cohort's characteristics and importance as the current and future target segment for smartphones

This chapter is based on the discussion of the population, sampling method, sampling frame and data collection. Data analysis and statistical techniques are also

outlined. This is followed by a detailed discussion on the challenges experienced and the response rate to the questionnaire. The data analysis and statistical procedures used in the study are also outlined.

3.2 RESEARCH DESIGN

Berndt and Petzer (2011:31) define research design as a plan followed by researchers to achieve the research objectives that will enable them to answer the research problem. The research could only follow once the research problem and research objectives have been defined. Hair *et al*. (2008:32) identify three broad categories of research design: exploratory, descriptive and causal research. These categories involve techniques to meet research objectives. Elle (2016) defines exploratory research as a market investigation approach that seeks to answer questions about a subject that was previously unknown through independent exploration. Exploratory research is usually conducted during the initial stages of the research process (D'Alessandro, 2014:22). Zikmund and Babin (2013:49) explain descriptive research as research that describes the characteristics of objects, people, groups, organisations or environments. Descriptive research tries to paint a picture of a given situation. Lastly, causal research is the research designed to collect information that will allow the researcher to determine a cause and effect relationship between two or more market variables (Hair *et al.,* 2008:32).

The aim of this study was to gather data on Generation Y students and their preferences while making smartphone purchasing decisions. Therefore, a descriptive research design was selected as a relevant research design for this study as this study aims to shed light on the consumer behaviour of Generation Y students.

3.3 RESEARCH APPROACH

There are three main approaches of data collection. Primary data can be collected using either quantitative, qualitative techniques or a mixed method (Wiid & Diggines 2013:86). Brandenburg (2013) defines quantitative market research as the collection of numerical data that usually results in statistical analysis to understand trends in the data. Qualitative research is basically exploratory research, as it provides

insights into a problem or helps develop ideas for possible quantitative research (DeFrenzo, 2011). Berndt and Petzer (2011:91) find it important to review techniques typically used for qualitative data collections as the following: in-depth, focus groups, observation techniques, and projective techniques.

The third approach is a mixed method, which is defined as an approach to inquiry involving the collection of both qualitative and quantitative data collection techniques. The two forms of data collection methods are integrated using distinct designs involving philosophical assumptions and theoretical frameworks (Creswell 2014:4). A summary of qualitative and quantitative research according to different aspects is presented in the table below.

Table 3-1: Summary of qualitative and quantitative research (Zikmund & Babin, 2013)

Research aspect	Qualitative Research	Quantitative Research
Common purpose	Discover ideas, used in exploratory research with general research objects	Test hypotheses or specific research questions
Approach	Observe and interpret	Measure test
Data collection approach	Unstructured, free-form	Structured response categories provided
Researcher independence	Research is intimately involved, results are Subjective	Researcher uninvolved observer, results are objective
Samples	Small samples – often in natural settings	Large samples to produce generalizable results, results that apply to other situations
Most often used	Exploratory research designs	Descriptive and causal Research designs

This study made use of the quantitative research approach to collect data and to gather it according to factors that influence South African Generation Y students' smartphone purchasing behaviour.

3.4 SAMPLING STRATEGY

The following factors of sampling procedure are outlined: target population, sampling frame, method of sampling and sample size.

3.4.1 Target population

The first task assigned to marketers when conducting research is to identify a group of people that will be part of an analysis that aims to solve marketing research problems. A target population refers to a group of special people or objects that can partake in a survey study or observation made to gather information (Hair *et al.,* 2008:33). Iacobucci and Churchill (2010:282) define a target population as a number of instances that comply with the specifications of the study. It is critical for the target population to be defined precisely, as any effort expended on identifying the population pays generous dividends in terms of accurate and representative data (Lawrence *et al*., 2013:153). A clear definition of the target population must contain information on sampling elements, sample unit and area of coverage (Aaker *et al.,* 2013:304). The target population identified and used for this study was all the registered students at all South African HEIs.

3.4.2 Sampling frame

Researchers should first get clarity on the population or units of analysis, before outlining the population sample to which their research hypothesis will apply (Welman *et al.,* 2005:57). A sample frame can comprise a list, an index or any population record. Wiid and Diggines (2013:186) consider a reliable sample frame to contain the following requirements: that all the elements and strata of the population be represented. It must be up to date, the details of each entry must be accurate and complete, all duplications of entries must be eliminated, it must be easily accessible and user friendly, and last but not least, it should include additional information to facilitate stratification. The sampling frame of this study consists of the 26 South African HEIs as listed by the Department of Higher Education and Training (BusinessTech, 2015). This study selected three universities in the Gauteng province, of which one is a traditional university, one a university of technology and

one a comprehensive university. These three universities were selected using judgemental sampling.

3.4.3 Method of sampling

The two main methods of sampling are probability and non-probability sampling. Probability samples are identified according to the basic principle that each population element has a known, nonzero chance of inclusion in the sample, where else with non-probability samples there is no guarantee on the probability that any of the population elements will be included in the sample (Iacobucci & Churchill, 2010:285).

The different sampling designs are illustrated in the diagram below:

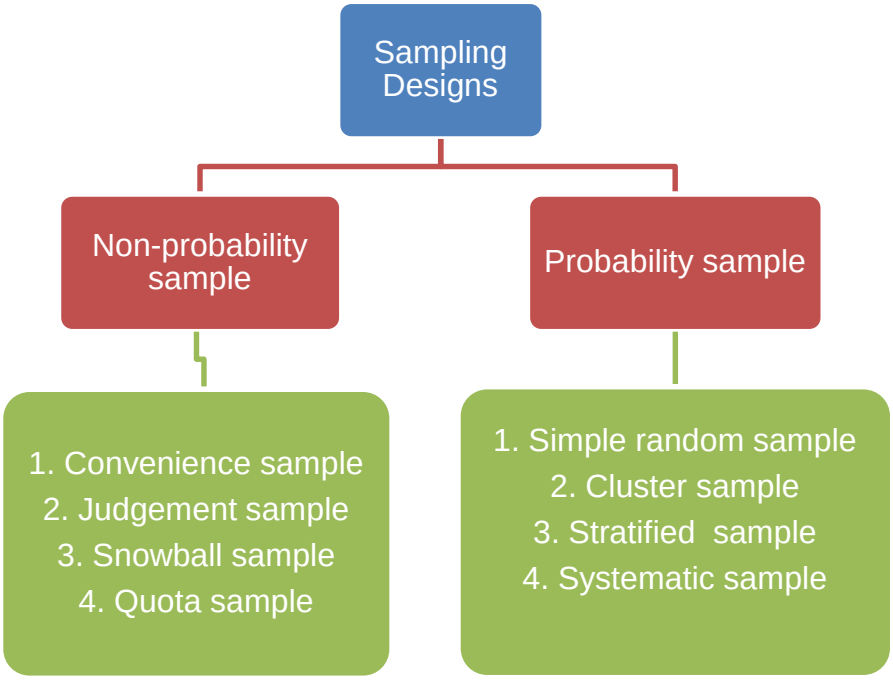

Figure 3-1: Sampling designs (Berndt & Petzer, 2011:174)

Probability sampling is performed with the aim of obtaining an estimate of the actual value of the population parameter to measure its reliability (Barragués *et al*., 2014:178).

In the study of non-probability sampling, the probability of any particular member of the population being chosen is unknown. A convenience sample involves a selection of sample elements that are most readily available to participate in the study with provision of the required information (Hair, 2015:75). Doyle (2011:340) refers to judgemental sampling as an occurrence when the researcher uses his expert opinion to determine what would constitute a representative sample. Snowball sampling begins by identifying a single subject or small number of subjects to identify others who may be willing to participate in a study (Maxfield & Babbie, 2018:224). Last in the non-probability sampling methods is the quota sampling which is defined as a method of sampling in which subjects or participants are selected based on known or unknown criteria or characteristics in the target population (Privitera, 2013:129).

Furthermore, with probability sampling, the simple random sample is a sampling process where units of the population are selected individually and directly by means of a random process, which means that every other unit in the population has an equal chance of being selected (Wiid & Diggines, 2013:192). Cluster sampling is a probability sample where each sampling unit is a collection or cluster, of elements. It is less costly than simple or stratified random sampling if the cost of obtaining a frame with a list of all population elements is very high or it increases as the distance separating the elements increases with the cost of obtaining observations (Schaeffer *et al.,* 2011:252). Strata sampling refers to a population as partitioned into regions or strata, with a sample being selected by some design within each stratum (Thompson, 2012:141). Systematic sampling is referred to as a probability sampling strategy. The researcher selects a random selection of the first element of the sample, followed by other elements using a fixed or systematic interval to achieve the desired sample size (Daniel, 2011:145). The sample is mostly determined by the correct selection of the first element.

This study made use of a non-probability convenience sample to be drawn from the target population. The method was chosen because of the cost effectiveness of this sample. The sample frame is made up of South African Generation Y students from three HEI campuses based in the Gauteng province.

3.4.4 Sample size

Zamboni (2018) refers to a sample size as the number of samples measured or observations made. It must be big enough to ensure reliable and valid conclusions about the population. Before selection, a researcher is required to identify the most suitable sample design by conducting an analysis to determine a number of sampling criteria and evaluate the relative importance of each criterion (Zikmund & Babin, 2013:330). Berndt and Petzer (2011:176) teach that a greater dispersion or variance within the population is equal to a larger sample size with precise estimates. On the other hand, a greater desired precision equals a larger sample base. How narrow or small the error range is will determine how large the sample must be. Lastly, a high level of confidence predicts a larger sample, which influences the sample size.

This study made use of a sample size of 450 respondents by means of the historical approach to determine the sample size. The historical approach to sample size is based on the sample size employed in previous research with a similar description (Clow & James, 2014:239). Qun *et al.* (2012:28) used a sample size of 400 respondents; Rahim *et al*. (2016:249) used a sample size of 367 respondents; De Kuan (2017:30) used a sample size of 400 respondents; Chow *et al.* (2012:47) used a sample size of 350 respondents.

The sample size of 450 undergraduate and postgraduate students was divided evenly between three HEIs, allowing a sample size of 150 students per HEI. The next section focuses on various methods of collecting data.

3.5 DATA COLLECTION METHOD

Berndt and Petzer (2011:202) refer to data collection as a task of collecting responses from the sample (or group of people) that have been identified in the earlier stages of the research.

3.5.1 Questionnaire design

Malhotra (2010:335) explains that a questionnaire is a structured technique that is used for data collection. It consists of a series of questions, written or verbal, to be answered by a respondent. A questionnaire is a document that consists of a set of questions used to gather primary data (Hair *et al*., 2008:170). Wiid and Diggines (2013:162) submit that the data collection process requires the questionnaire to be able to achieve the following requirements: collect relevant information as per the identified marketing problem, ensure that the information gathered is corresponding; minimize unfairness; entice and motivate respondents to participate in the survey; encourage respondents to be truthful and precise when answering; and lastly to facilitate the task of the interviewer and data processing activities. Most importantly, the layout of the questionnaire should have a logical structure were it almost feels like it is telling a story (Berndt & Petzer. 2011:186).

The design of the questions can either be open-ended or fixed-alternative. Open-ended response questions suggests a problem or topic and ask respondents to answer in their own words, while fixed-alternative questions (closed-ended questions) give respondents a limited number of specific alternative responses to choose from (Zikmund & Babin, 2013:282). It is always important to structure a questionnaire carefully so that your target population can give conclusive responses relevant to the study.

The study opted for fixed-alternative questions in line with the empirical research objectives mentioned in Section 1.3.3. The cover letter attached to the questionnaire explains the aims of this research study in its simplest form.

3.5.2 Questionnaire content and layout

Questionnaire content refers to the general nature of the questionnaire and the information it provides, not the phrasing and format (Wiid & Diggines, 2013:163). The researcher has to ensure an appropriate scale in line with the research objectives to develop a questionnaire that will elicit the required data. This study was compiled

from various sources to measure the antecedents of Generation Y students' smartphone purchasing behaviour.

Gee (2017) describes a Likert scale as an orderly scale that offers respondents the option to choose what best supports their opinion. Designing questions with a level of importance help marketers understand and assess what is essential to their customers (DeFranzo, 2011). The Likert scale is widely used in its various formats, for instance in psychology, social sciences and also in commercial market research (Dobronte, 2012). Devault (2018) mentions that a Likert scale is a version of an outlined rating scale that is configured to enable the conversion of text responses to quantifiable categories that can be summed up to reflect the relative differences of the individual.

The questionnaire in this study consisted of three sections. Section A requested the respondent's demographic information, while Section B measured their smartphone brand preferences. Section C addressed factors that affect smartphone purchases such as product features (PF) (Nainkin, 2014), brand name (BN) (Belen del Rio, Vazquez & Iglesias, 2001), brand loyalty (BL) (Al-Azzawi & Anthony, 2012), brand personality (BP) (Müller, 2017), purchase intension (PI) (Ling, 2011) and price (P) (Sinha & Batrab,1999; Grewal *et al.,* 1998; Cheong & Park, 2005), the social influence (SI) (Pederson, 2011; Bouwman *et al*., 2011) and dependency on smartphone (DOS) (Ting *et al*., 2011). Section C utilised a 6-point Likert scale to measure responses. The motivation for 6-point instead of a 5- or 7-point scale is to prevent respondents to choose the neutral option.

3.5.3 Pre-testing and pilot testing

Berndt and Petzer (2011:146) define pre-testing as an essential part of research survey design as it prevents the researcher from uncovering disastrous significant errors in the questionnaire before final distribution. Pre-testing involves administering a dry run of the survey on a small group of people who are representative of your respondents with the hope of discovering questionnaire errors before the final survey is undertaken (Burns & Bush, 2014:229). This study made use of three students and two qualified researchers to inspect the questionnaire for any errors. Any discovery

resulted in the necessary amendments such as rephrasing some of questions for a simplified meaning and discarding questions that were identified as too complex or not value-adding to the questionnaire.

The pilot test is a practice run for the research study (Wright, 2018). Conducting a pilot survey has many advantages for the researcher, such as the exploration of particular issues that may impact the survey results, measuring the correctness of the instructions, save financial resources, and provide better information on whether the type of survey would be effective to fulfil the purpose of the study (Sincero, 2012).

Zikmund and Babin (2013:64) state that a pilot study is a small-scaled research project that collects data from respondents with similar characteristic to those used in the final study. Pre-testing results are more preliminary and intended to assist with the design of the study. Wong (2015) says that the difference between the two is that a pilot test is a complete study while a pre-test is not a complete study.

The researcher conducted a pilot test by using a mall intercept method at one of the HEI campuses. A total number of 50 questionnaires were regarded as a sufficient measure for the questionnaire's reliability. Findings from the pilot test were used to confirm the viability of all constructs, whether the language was straightforward and that students were allocated enough time to complete the questionnaire.

3.6 ADMINISTRATION OF THE QUESTIONNAIRE

In August 2018, the final survey of this study was conducted using a sample of 450 students. Only one standardised questionnaire was used to ensure that there was consistency in the format of the information obtained from the respondents.

Three public HEIs was used to reach the target population to administer the questionnaire. The study was only interested to gather data from South African undergraduate and postgraduate students between the ages of 18–24. The Generation Y students were requested to complete a self-administered

questionnaire, which was distributed to them after their formal classes and collected once completed.

3.7 DATA PREPARATION

According to Wiid and Diggines (2013:220), in order to prepare and process primary data into useful information, it must first be validated, edited, coded and captured into electronic format, then imported into a statistical package, where it is then labelled, verified and cleaned.

3.7.1 Editing

Iacobucci and Churchill (2010:350) state that editing involves the inspection and, if necessary, correction of each questionnaire or observation form. Beri (2013:266) suggests that editing can be undertaken both at the time when the field survey is in progress and or after it has been completed. All questionnaires that fall outside of the target population were discarded, along with those who have more than 10% of the questions incomplete. Furthermore, questionnaires with less than 10% missing values were replaced with the mode of relevant items.

3.7.2 Coding

Mooi and Sarstedt (2011:79) define coding as assigning values to specific questions. An example of the process of data coding with reference to the responses on the questionnaire is instead of capturing strongly agree or strongly disagree, you capture 1 or 5. Coding converts raw data into symbols, in most cases numbers, and captured it on a computer for tabulation (Wiid & Diggines, 2013:222–223). The questionnaire relevant to this study consists of three sections: Section A collected data on the respondent's demographics. Section B gathered data on smartphone preferences, while Section C gathered data on smartphone purchasing behaviour. A variety of codes were allocated to different variables and participants. Below is a summary of how data relevant to this study was coded according to the contrast in Table 3-2.

Table 3-2: Coding information

TYPE OF DATA	VARIABLE	QUESTION NUMBER
Demographic data	A1 – A9	Section A Question A1 – A9
Smartphone Preference data	B1 – B6	Section B. Question B1 – B6
Product Features	C1 – C13	Section C. Question C1 – C13
Brand Personality	C14 – C28	Section C. Question C14 – C28
Brand Name	C29 – C32	Section C. Question C29 – C32
Brand Loyalty	C33 – C36	Section C. Question C33 – C36
Price	C37 – C41	Section C. Question C37 – C41
Purchase Intention	C42 – C48	Section C. Question C42 – C48
Social Influence	C49 – C55	Section C. Question C49 – C55
Relative advantage	C56 – C60	Section C. Question C56 – C60
Compatibility	C61 – C65	Section C. Question C61 – C65
Dependency on smartphones	C66 – C70	Section C. Question C66 – C70

3.7.3 Tabulation

Tabulation is the arrangement of data in an orderly manner in a table or summary format, showing the number of responses to each response category (Zikmund & Babin, 2013:365). This final step of data preparation simply shows the researcher how frequent each response was.

The data are presented in a statistical table that is arranged in different sections. Tabulation has two categories that are classified as simple tabulation, which involves counting a single variable; and cross-tabulation, where two or more variables are treated simultaneously, and only the number of cases with joint characteristics are counted (Iacobucci & Churchill 2010:352).

3.8 STATISTICAL ANALYSIS

Statistical Package for Social Science (version 25.0 for Windows) was used to analyse the captured data. The following statistical methods were applied to the empirical data.

3.8.1 Descriptive statistics

Descriptive statistics aims to describe the basic features of a study, often through the use of graphical analysis such as graphs or charts (Gray 2013:562). Malhotra (2010:486) remind us that the most commonly used descriptive statistics are measures of location, measures of variability, and measures of shape.

3.8.1.1 Measures of location

Measure of location is computed by summing the data values and dividing by the number of observations (Camm *et al*., 2015:58). There are different measures of location that are used, with the most common being arithmetic mean, mode, median. These measures best describe the central tendency of data.

Mean is the arithmetic average of the sample, where all values of a distribution of responses are summed and divided by the number of valid responses (Hair *et al.,* 2008:246). Means are frequently calculated in marketing research when numerical data that represents the actual quantities are collected (Clow & James, 2014:117). The median is known to be the middle value once data have been ranked in ascending or descending order. Zikmund and Babin (2013:340) regard the median as a better indicator of central tendency, though when observation is with even numbers the median equals the average of the two middle numbers. Burns and Bush (2014:319) define the mode as a descriptive analysis measure as the value in the string of numbers that occurs most often. The mode is simply the most frequent occurring value. The median and the mode are both legitimate measures of central tendency (Iacobucci & Churchill 2010:394).

This study made use of the mean and mode as measures of location.

3.8.1.2 Measures of variability

According to Polger and Thomas (2011:155), measures of variability are statistics representing the extent to which scores are spread out numerically. These measures are used to provide descriptive information about the dispersion of scores in data, providing summary statistics to understand the scores in relation to the midpoint of

the data (Allen, 2017:953). The three common measures of variability are the range, variance, and standard deviation (Khan, 2012).

The range is the difference between the highest and the lowest scores (Gray, 2013:568). The variance is the mean squared deviation from the mean; it can never be negative (Malhotra, 2010:487). The standard deviation is a measure of dispersion indicating how variable or spread out while the data points are around the mean (Clow & James, 2014:273).

This study made use of standard deviation as a measure of variability.

3.8.1.3 Measures of shape

Measures of shape are sometimes used in statistical analysis to compare the observed distribution with a nominal distribution (Remenyi *et al*., 2011:34). The two most common measures of shape are skewness and the kurtosis coefficients of a data set (McNeese, 2016).

Malhotra (2010:488) explains that skewness measures can either be systematic or skewed. Systematic distribution means that the values on both sides of the distribution centre are equal and the mean, mode, median are equal, whereas in a skewed distribution both positive and negative deviations from the mean are unequal.

Kurtosis measures the extent to which a distribution has a pointy peak (leptokurtie) or a rounded peak (platykurtic) (Podesva & Sharma, 2013:302). A normal distribution has a kurtosis of zero, which becomes more peaked when the kurtosis is positive, and has a flatter distribution if the value is negative (Birks & Malhotra, 2006:452). This study utilized both skewness and kurtosis to evaluate the measures of shape of the data.

3.8.2 RELIABILITY

The measurement used by a marketing researcher should be reliable and valid. Birks and Malhotra (2006:140) define reliability as the degree to which a

measurement would replicate consistent results if it was to be repeated. The sample size, response rate, questionnaire design and methods of data analysis are other factors of research methodology that can affect the reliability of the data collected (Berndt & Petzer, 2011:67).

Reliability can be assessed in three key ways, namely the stability of the measurement, internal consistency and Cronbach alpha. Sarstedt and Mooi (2014:37) regard the measurement as stable (also referred to as the test-retest reliability) when a construct can be measured twice with expectations of a similar outcome.

Zikmund and Babin (2016:257) describe internal consistency as a term used by researchers to represent a measure's homogeneity through either a split-half method or coefficient alpha (α). Split-half reliability requires that a multi-item measurement device be divided into two equal groups and associates the item responses as an estimate on reliability (Beri, 2013:148). Reliability can be tested in an exploratory factor analysis (EFA) by computing Cronbach's alpha for each factor above 0.7, from at least three variables (StatWiki, 2018).

Andrew *et al*. (2011:202) define Cronbach's alpha as a method of measuring the way in which a set of variables or items measures a single, dimensional latent contrast. Although reliability is important to a study, it becomes insufficient to measure without validity (Wilson, 2014). George and Mallery (2016:240) rate values in Cronbach's alpha, as seen in Table 3-4.

Table 3-3: Cronbach's alpha

VALUE	RATING
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha > 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Reliability does not imply validity as a reliable measurement can measure consistency, but it will not necessarily measure what it is supposed to (Widd & Diggines 2013:238). This study made use of the Cronbach's alpha as reliability measure.

3.8.3 VALIDITY

Welman *et al*. (2005:142) define validity as the extent to which the research findings accurately measure what they should measure. The validity of a scale is defined as the difference in observed scale scores among objects being measured with a reflection of true differences (Malhotra 2010:320). Validity is the truthfulness of responses to a measure (Burns & Bush, 2014:214). Before concluding that an experiment has produced valid results it is critical to ensure that the results of the experiment were controlled and show internal as well as external validity (Berndt & Petzer, 2011:109).

Internal validity is the extent to which a particular treatment in an experiment produces the sole effect on the dependent variable. External validity refers to the extent to which the findings of an experiment or research study can be generalized to the population as a whole or to the specific population of the study (Clow & James, 2014:198).

Validity can be categorised into three sections, namely content validity, criterion validity and construct validity. Content validity is based on the subjective judgements made by experts according to the appropriateness of the measurement (Feinberg *et al.,* 2012:131). Grifford (2012:99) states that content validity is specifically important for achievement tests conducted in the hope to uncover an inference about what a person knows about a subject matter domain. According to Rubin and Babbie (2012:105), criterion validity is based on an external criterion that is an indicator or measure of the same variable that an instrument intends to measure. Criterion validity is known to have a close relation with predictive validity. The only difference in the relationship between two constructs is that an external criterion is measured at

the same time (Mooi, 2014:37). Criterion validity is used to assess whether a test reflects a set of capabilities in a current or future setting (Salkind, 2010:153).

Construct validity refers to the likelihood that a scale measures or correlates with the theorized psychological scientific constructs that it is supposed to measure (Schultz, 2016).There are three types of construct validity: nomological, convergent, and discriminant validity. Nomological validity is defined as the degree of behaviour to which a construct is expected to adhere to in a system of related constructs (Mooi *et al.,* 2018:40). Clow and James (2013:271) explain that convergent validity refers to the degree to which relations between relevantly relate to the constructs. Finally, discriminant validity reveals the lack of weak or low correlation among constructs that are supposed to be different (McDaniel & Gates, 2007:282). Construct validity is not that easy to measure, as several measures usually have to be done, which includes pilot studies and clinical trials (Stephanie, 2014). Construct validity is the one amalgamating conception of validity by extending validity beyond its test measure to include relevance and utility, value and implications, and social consequences (Panahi, 2014:333)

This study made use of both content and construct validity. The questionnaire was examined and approved by two experienced researchers to ensure content validity. The construct validity was to ensure that it measured what it was set out to measure to give satisfactory and reliable results. The next section focuses on factor analysis along with its subsets.

3.8.4 FACTOR ANALYSIS

Bradley (2013:322) highlights that factor analysis is a term used to describe a set of procedures used to reduce and summarise data. The method aims to discover simple patterns. Factor analysis is an interdependent technique where an entire set of independent relationships is examined (Malhotra, 2010:636).

The two basic reasons for factor analysis are to simplify a set of data by reducing the large number of measures or variables to a smaller number of manageable factors, while still retaining most of the information contained in the original data, as well as

to determine the underlying structure of the data in which a large number of variables measure a small number of basic characteristics of the sample (Wiid & Diggines, 2013:289). Spring (2017:11) distinguishes between two major types of factor analysis: Confirmatory factor analysis (CFA) and exploratory factor analysis (EFA).

Brown (2015:1) refers to confirmatory factor analysis (CFA) as a type of structural equation modelling (SEM) that deals specifically with measurement models, such as the relationships between observed measures or indicators.

Salkind (2010) defines EFA as a multivariate statistical technique to combine observed variable structures using three sets of parameters: factor loading affiliated with latent variables called factors, residual variances called unique variances, and factor correlation. EFA is one of the most widely used statistical procedures in social research, with the main objective being to describe the most common practices used by researchers in the consumer behaviour and marketing space (Navarro & Soler, 2012). Stephanie (2016) describes EFA as a data-driven approach used to identify the smaller numbers of underlying factors or latent variables. EFA aims to help reduce the large number of indicator variables into a finite set of factors based on correlations between variables (Maskey, *et al*., 2018). This study made use of EFA to uncover the underlying factors of smartphone purchasing behaviour of Generation Y students.

Before a factor analysis can be considered, several tests such as Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of Sphericity should be conducted to assess the suitability of the sample and the data for factor analysis (Williams *et al*., 2010:5). KMO measures how suitable the sample is for factor analysis (Stephanie, 2016). Beavers *et al*. (2013:4) suggest the following guidelines as an assessment of the measure; 0.90–1.00 (marvellous), 0.80–0.89 (meritorious), 0.70–0.79 (middling), 0.60–0.69 (mediocre), 0.50–0.59 (miserable), and 0.00–0.49 (do not factor). A KMO value above 0.5 can be considered suitable for factor analysis when the cases to variable ratio are less than 1:5 (Kiirithio, 2012:22). Hooper (2012:12) warns that for EFA to be considered there should be sufficient

correlations among the variables. This is indicated by a significant Bartlett's test value ($p<0.05$).

The next step is to decide on a factor method, which is defined as an extraction technique from a group of methods that examine the correlation or covariation between all variables from the measured variables and seek to extract the latent variable (Osborne & Banjanovic, 2016:5). There are two basic factor methods, common factor analysis and principal component analysis. According to Samuels (2017:1), common factor analysis looks at the relationship between individual and common variances shared between items, while principal component analysis analyses the relationship between individual and total (both common and error) variances shared between items. Maximum Likelihood, a form of common factor analysis analyse the maximum likelihood of sampling an observed correlation matrix and is more useful for CFA (Yong & Pearce, 2013:83).

Goodwyn (2012:3) argues that a minimum number of one factor can be extracted, while the maximum number of factors extracted can be equivalent to the total number of variables. There are various methods for choosing how many factors to extract. The first method assesses the eigenvalues of factors and retain factors with eigenvalues above 1 (Iacobucci & Churchill, 2010:497–498). The eigenvalue represents the share of the total item variance that can be captured using one linear combination of items (Ruscio & Roche, 2011:283). The scree test represents a graph where eigenvalues are plotted in descending order with each component (D'agostino Sr & Russell, 2014). The scree test method assesses the graph for the point where it changes direction and becomes horizontal (Wiid & Diggines, 2013:242). Priori criterion is another method where the researcher specifies the appropriate number of factors to retain based on a theoretical background (Hooper, 2012:14).

After the decision has been made on the number of factors to retain, the researcher has to decide on a rotation method. The goal of rotation is to simplify and clarify the structure of the data, since it cannot enhance the basic aspects of the analysis such as the amount of variance extracted from the items (Mutlu & Köseoğlu, 2016:271). There are two broad categories of rotation methods orthogonal and oblique

(Osborne, 2015:4). An oblique rotation allows a degree of correlation between the factors (Brown, 2015:27). An orthogonal solution is comprised of factors that are uncorrelated (O'Rourke & Hatcher, 2013:6). Beavers *et al.* (2013:10) point out that of all the orthogonal rotations, Varimax is often regarded as the best and most widely used. Varimax rotation is a statistical technique used as an attempt to clarify the relationship among factors (Allen, 2017).

This study conducted an EFA by means of principal component analysis using Varimax rotation and used priori criteria to select the number of factors to be extracted. The next section focuses on hypothesis testing.

3.9 HYPOTHESIS TESTING

Clow and James (2014:397) regard understanding the research hypothesis concept as important because marketers want to know if conditions or situations constitute a change in the marketing strategy being used. Hypothesis testing is used as a comparison measure of the sample statistic, which is believed to be the value of the population before the study was undertaken (Burns & Bush, 2014:332). A hypothesis is a formal statement that elaborates the outcomes (Zikmund & Babin, 2013:55). The two types of hypothesis are the null hypothesis and alternate hypothesis. The null hypothesis can be tested and always indicates similarity between various groups, while the alternate hypothesis shows dissimilarity between the groups (Berndt & Petzer, 2011:30). The significance level for testing the hypothesis of this study is positioned at the conventional α=0.05 (Berndt & Petzer, 2011:255). The rule to a decision for the hypothesis applied is set at:

- If P-value is < α, conclude Ha
- If P-value is ≥ α, conclude Ho

An alternate hypothesis (Ha) suggests similarities or relationship between the variables; while a null hypothesis (Ho) states a dissimilarity in the relationship between the variables.

3.10 CORRELATION ANALYSIS

A correlation analysis does not only focus on whether two variables have a significant relationship or not, but also on the possibility of the relationship being either positive or negative (Coussement *et al*. 2011:106). Correlations are used to describe relationships between variables (Welman *et al.,* 2005:234).

In order for us to make use of a correlation, we must first determine that it is statistically significant from zero (Burns & Bush, 2014:394). A correlation that is not statistically significant has no meaning at all. The correlation analysis produces a correlation coefficient (*r*), as a value, which indicates the strength and direction of the relationship between the two continuous variables (Wiid & Diggines, 2013:283). Karl Pearson formulated the *Pearson correlation coefficient,* which is also known as simple correlation, bivariate correlation or solely the correlation coefficient (Birks & Malhotra, 2006:512). Correlation coefficient *r* is a measure of the strength and direction of a linear relationship between two variables on a scatterplot (Rumsey, 2016). A correlation coefficient is expressed in values between +1 and -1, with +1 indicating a positive correlation and -1 a negative correlation (Rouse, 2013). Therefore, the results of correlation can either be positive or negative (Hair *et al.,* 2008:286). Pearson correlations that are positive indicate respondents tended to give the same answer to two different questions, which means the higher the value (and closer to 1 the correlation), the more often the same response will occur.

This study utilised the Pearson correlation coefficient by means of a correlation analysis to determine nomological validity

3.11 .REGRESSION ANALYSIS

Malhotra (2010:568) defines regression as a statistical method that analyses the connections in the relationships between a metric dependent variable and one or more independent variables.

Regression analysis provides a test for measuring the relationship or correlation among two or more variables. If the number of variables being examined is two, it is

simple regression and if more than two, it is called multiple regressions (Clow & James, 2014:416).

Simple linear regression is similar to bivariate correlation as it also analyses the relationship between two variables, though it has the extra benefit of producing a regression equation that can be used for prediction purposes (Andrew *et al*. 2011:216). In simple linear regression the custom only X is called the dependent variable and referred to as the predictor or regression variable, and the y is the response variable (Montgomery *et al.*, 2015:3).

Multiple regression analysis is an example of bivariate regression analysis that uses more than one independent variable in the regression equation (Burns & Bush, 2014:412). With multiple regressions, we work with a regression plane rather than a line.

In this study, a multiple regression analysis was used to achieve the empirical objective to determine how product features, brand personality, brand name, brand loyalty, price, purchase intention, social influence and dependency has an influence on Generation Y students' purchasing decisions with respect to smartphones. The next section focuses on the two independent samples t-test.

3.12 TWO INDEPENDENT SAMPLES T-TEST

According to Urdan (2017:93), the *t*-test is a comparison of two means to determine their significant difference. Wiid and Diggines (2013:281) refer to the independent sample t-test as a statistical experiment that is conducted to clarify whether there is a significant difference between the mean scores of two categories for groups. In one-way analysis of variance, the null hypothesis tests whether the category means are equal in the population (Birks & Malhotra, 2006:490).

Independent samples can easily be recognized by the absence of anything fancy when selecting participants, such as creating pairs of participants or repeatedly testing the same participants in both conditions (Heiman, 2013:265). The independent samples t-test is a comparison of two independent groups of means,

used to determine whether there is statistical evidence on the significance between the associated population means (University Libraries, 2018). ANOVA (analysis of variance) is a statistical technique used to test whether three or more population means are equal (SPSS Tutorial, 2018). In this study we made use of the two independent sample t-test and practical significance to derive the differences between male and female respondents.

3.13 PRACTICAL SIGNIFICANCE

Jarman (2015:35) refers to practical significance as the result that matters given your particular problem. It is also known as the evaluation of the size of the effect (Vito & Higgins, 2014:123). Cohen's D is one of the most common ways to measure how large the effect of something is (Stephanie, 2016). According to Salkind (2010), Cohen's D is used as a representation of the magnitude of differences between two, or more groups of variables, with larger value constituting to a greater difference between the variable groups. When the d-value is at 0.2, there is a small effect; though at 0.5 it indicates a moderate effect, and at 0.8 it indicates a large effect (Navarro, 2013:415). This study made use of Cohen's D-statistics which, according to Frederick (2013:237), is calculated as follows:

$$d = \frac{M_1 + M_2}{\sqrt{\frac{S_1^2 + S_2^2}{2}}}$$

d	=	Cohen's D
M_1	=	Mean of first observation
M_2	=	Mean of second observation
S_1	=	Standard deviation of first observation

This was used to uncover whether the differences in responses between male and females respondents were significant.

3.14 SYNOPSIS

The chapter gave a detailed description of the research methodology used in this study. A brief explanation of the methods used to consolidate, compose and analyse the data followed. Sampling strategies were also discussed with the selection of a non-probability convenience method, followed by the statistical method used in the study; descriptive statistics, reliability, validity, factor analysis, correlation analysis, regression analysis and tests of significance. The next chapter gives a thorough explanation of the data obtained during the study through an analysis and interpretation.

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This chapter of the study provides insight into the analysis and interpretation of the empirical findings of the study. It includes the pilot testing results in Section 4.2. Section 4.3 describes the process of gathering pilot data in detail. Next, Section 4.4 is dedicated to the data analysis process and involves coding, data cleaning, and tabulation of variables. Section 4.5 comprises of the demographic data, which includes charts to illustrate the data. Section 4.6 reviews the exploratory factor analysis that was conducted on the data. Section 4.7 provides an analysis on reliability and validity. Section 4.8 focuses on the descriptive statistics that used to analyse the data set in the study. Section 4.9 elaborates on Section B of the questionnaire, which investigated the smartphone preference information. Section 4.10 and Section 4.11 provide a correlation analysis and hypothesis testing, respectively. The findings of the regression analysis can be found in Section 4.12, and those of the t-test in Section 4.13. The chapter is concluded in Section 4.14 with a synopsis of the findings.

The next section of this chapter comprises a discussion of the pilot testing procedure and the results that stemmed from it.

4.2 PILOT TESTING RESULTS

After the questionnaire was pre-tested to ensure the validity of the content, a pilot test was conducted on a convenience sample of 50 Generation Y students. The students who participated in the pilot study did not take part in the main study. The pilot study was conducted to determine the internal consistency reliability of the scales that were used. Of the 50, 47 questionnaires were deemed viable after data cleaning. Mistakes were found in three questionnaires. However, they did not exceed the 10% margin of error and were therefore not discarded.

The internal consistency reliability results of the pilot study are presented in Table 4-1.

Table 4-1: Pilot Test Results

ITEMS	NUMBER OF VARIABLES	N	CRONBACH ALPHA
SECTION C			
C 1 – C 13 (Product Features)	13	50	0.830
C 14 – C 28 (Brand Personality)	15	50	0.937
C 29 - C 32 (Brand Name)	4	50	0.562
C 33 – C 36 (Brand Loyalty)	4	50	0.769
C 37 – C 41 (Price)	5	50	0.583
C 42 – C 48 (Purchase Intention)	7	50	0.734
C 49 – C 55 (Social Influence)	7	50	0.846
C 56 – C 60 (Dependency)	5	50	0.877

For a Cronbach alpha to be deemed acceptable, it must be above 0.7 (George & Mallery, 2016:240). Six of the factors in the pilot test measured above 0.7 while two measured below 0.7, namely Brand Name (0.562) and Price (0.583). The table indicates partial satisfactory reliability. The two unreliable dimensions were removed from the main study.

The next section focuses on the data gathering process and provides a preparatory layout of the questionnaire to see if it meets the desired outcomes.

4.3 DATA GATHERING PROCESS

Data were gathered to measure the effect of certain variables (Phone Feature, Brand Personality, Brand Loyalty, Purchase Intention, Social Influence, Dependency) on the smartphone purchasing behaviour of Generation Y students. The measurements were guided by the empirical objectives set out in Chapter 1 (Section 1.3.3). A total of 450 questionnaires were evenly distributed between 3 HEIs in the classes of lecturers who permitted their students to partake in the survey. Participation in the study was voluntary. The questionnaire had a total of 66 items that were divided into 3 sections. Section A consisted of 9 items to gather demographic information on the participants. Section B consisted of 6 items to illuminate the smartphone preference

information of respondents. Section C consisted of 51 items aimed at determining phone features and brand personality. Furthermore, brand loyalty, purchase intention, social influence, and dependency.

The next section focuses on the preliminary data analysis.

4.4 PRELIMINARY DATA ANALYSIS

The preliminary data analysis of this study included coding, data cleaning and tabulation.

4.4.1 Coding

The questionnaire used for this study comprised of three sections. Section A collected demographic data; Section B measured smartphone ownership, and Section C measured different constructs pertaining to Generation Y students' purchasing behaviour towards smartphones. All respondents received a questionnaire with the same questions. Table 4-2 shows all variable codes and assigned values.

Table 4-2: Coding Information

SECTION A: DEMOGRAPHIC INFORMATION			
Item	**Code**	**Construct measured**	**Value assigned to response**
Item 1	A 1	Name of Institution	Traditional University Comprehensive University University of Technology
Item 2	A 2	Country of Origin	South Africa Other
Item 3	A 3	Province of Origin	(1) Eastern Cape (2) Free State (3) Gauteng (4) KwaZulu-Natal (5) Limpopo (6) Mpumalanga (7) Northern Cape (8) North West (9) Western Cape
Item 4	A 4	Registered	(1) Full-time (2) Part-time
Item 5	A 5	Current Year of Study	(1) 1st year (2) 2nd year (3) 3rd year (4) 4th year (5) Post-graduate
Item 6	A 6	Gender	(1) Male (2) Female
Item 7	A 7	Ethnic Group	(1) Black/African (2) Coloured, Indian/Asian (4) White (5) Other
Item 8	A 8	Home Language	(1) Afrikaans (2) English (3) IsiNdebele (4) IsiXhosa (5) IsiZulu (6) Sepedi (7) Sesotho (8) Setswana (9) SiSwati (10) Tshivenda (11) Xitsonga (12) Other
Item 9	A 9	Age	(1) <18 (2) 18 (3) 19 (4) 20 (5) 21 (6) 22 (7)23 (8) 24 (9) 25 (10) 25<
SECTION B: SMARTPHONE OWNERSHIP			
Question	**Code**	**Construct measured**	**Value assigned to response**
Item 1	B1	Smartphone Ownership	(1) Yes (2) No
Item 2	B2	Amount of Time Spent	(1) 1–2 hours (2) 3–4 hours (3) 5–6 hours (4) 7–8 hours (5) more
Item 3	B3	Level of Satisfaction	(1) Yes (2) No
Item 4	B4	Owning Smartphone Brands	(1) Sony (2) Samsung (3) Nokia (4) Apple (5) Huawei (6) LG (7) Other

SECTION B: SMARTPHONE OWNERSHIP			
Question	**Code**	**Construct measured**	**Value assigned to response**
Item 5	B5	Preferred Smartphone Brand	(1) Sony (2) Samsung (3) Nokia (4) Apple (5) Huawei (6) LG (7) Other
Item 6	B6	Open to Switching	(1) Yes (2) No
SECTION C: INFLUENCERS OF SMARTPHONE PURCHASING			
Question	**Code**	**Construct measured**	**Value assigned to response**
Item 1-13	C1-C13	Product features	Strongly disagree (1), Disagree (2), Slightly disagree (3), Slightly agree (4), Agree (5), Strongly agree (6)
Item 14-28	C14-C28	Brand Personality	
Item 29-32	C29-C32	Brand Loyalty	
Item 33-40	C33-C40	Purchase Intention	
Item 41-46	C41-C46	Social Influence	
Item 47-51	C47-C51	Dependency of smartphone	

4.4.2 Data cleaning

The data cleaning process started with the elimination of questionnaires that had been completed by respondents and were not viable as more than 10 percent of the responses were missing (21 were discarded). In the second step, questionnaires with less than 10 percent of the entries missing were completed with the median value of the respective questions.

4.4.3 Tabulation of variables

A total of 450 questionnaires were distributed among respondents. After the cleaning process, 429 questionnaires were deemed viable. Data were tabulated after it had been coded and cleaned.

Table 4-3 contains the frequency of scaled responses.

Table 4-3: Frequency Table of Section C Responses

Scale Item	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
C1	5	8	16	30	134	236
C2	5	3	19	70	154	178
C3	15	16	34	63	99	202
C4	11	14	37	81	113	173
C5	7	8	25	57	121	211
C6	5	9	15	71	115	214
C7	4	8	28	81	130	178
C8	7	9	30	54	104	225
C9	6	10	27	83	133	170
C10	14	9	32	79	115	180
C11	19	28	46	91	116	129
C12	7	13	16	63	134	196
C13	17	19	26	88	109	170
C14	5	6	14	45	164	195
C15	2	8	22	62	174	161
C16	3	7	18	66	166	169
C17	2	6	23	77	180	141
C18	6	12	34	87	139	151
C19	4	8	35	79	138	165
C20	3	6	30	82	121	187
C21	16	30	40	93	120	130
C22	7	13	41	90	122	156
C23	5	21	29	101	132	141
C24	3	23	31	93	140	135
C25	3	18	33	107	152	116
C26	4	14	36	96	153	126
C27	5	11	31	96	154	132
C28	2	9	13	46	144	215
C29	24	28	43	66	122	146
C30	11	15	34	74	134	161

Scale Item	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
C31	13	15	49	102	135	115
C32	43	41	63	81	111	90
C33	14	14	28	63	135	175
C34	23	22	53	77	140	114
C35	29	35	61	95	115	94
C36	13	20	52	87	145	112
C37	4	19	23	69	101	213
C38	9	12	30	73	123	182
C39	5	8	38	100	129	149
C40	35	47	66	112	92	77
C41	61	76	54	96	96	46
C42	38	71	57	97	110	56
C43	51	57	54	85	109	73
C44	90	61	60	81	82	55
C45	104	54	55	77	84	55
C46	121	74	60	78	67	29
C47	8	19	37	88	146	131
C48	35	37	62	119	88	88
C49	59	68	80	95	67	60
C50	44	40	47	71	85	142
C51	18	18	24	70	109	190

The next section reports on the demographic analysis, which includes charts of different demographical questions from the collected data.

4.5 DEMOGRAPHIC ANALYSIS

The demographic information is explained in this section using charts to illustrate the data. Section A of the questionnaire set out to gather the respondents' biographic information. Section 4.5 gathered data on the following: country of origin, province of origin, type of registration at the institution, types of HEI attended by respondents,

current year of study, gender, home language, ethnic group, and age. The data is presented as follows.

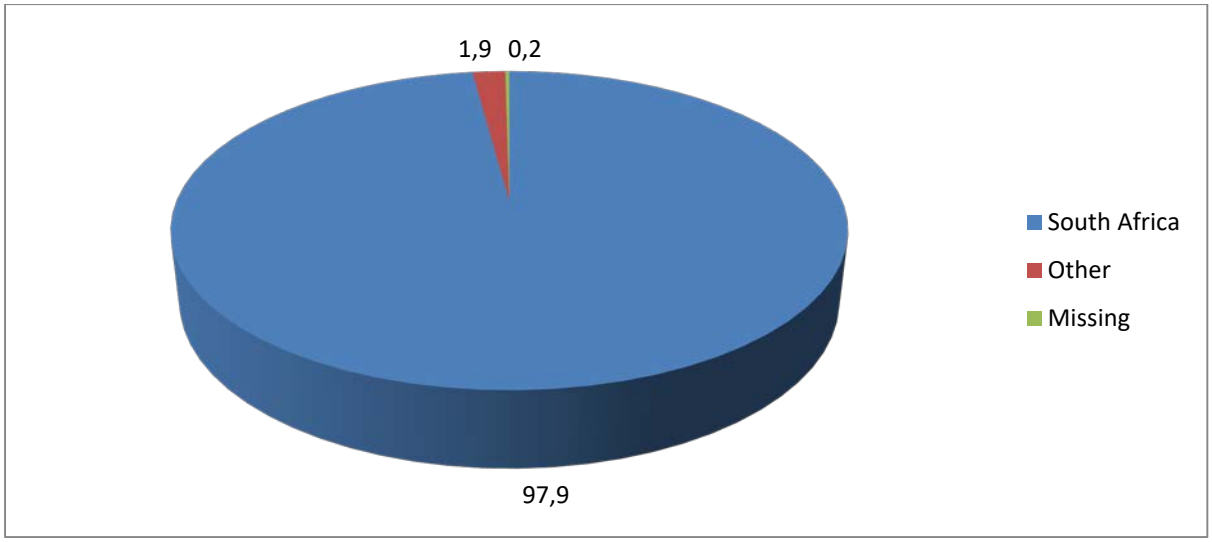

Figure 4-1: Country of origin

Figure 4-1 focuses on the students' country of origin. This figure shows that 97.9 per cent of respondents were born in South Africa and 1.9 per cent was born outside of South Africa. A total of 0.2 per cent of the respondents did not indicate their country or origin.

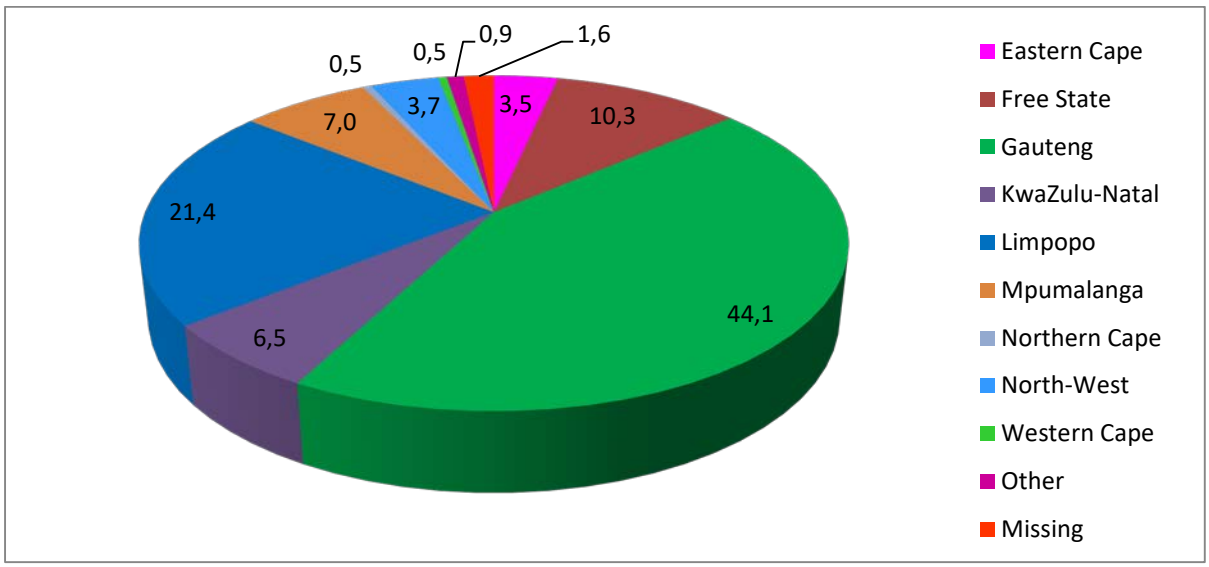

Figure 4-2: Province of origin

Figure 4-2 indicates the students' province of origin. This study was conducted in the Gauteng province of South Africa. The figure illustrates that 44.1 per cent of the respondents originate from Gauteng, 21.4 per cent from Limpopo, 10.3 per cent from Free State, 7.0 per cent from Mpumalanga, 6.5 per cent from KwaZulu-Natal, 3.7 per cent from the North West, and 3.5 per cent of students were from Eastern Cape. Furthermore, 0.9 per cent of students were from outside the South African provinces (they were born in another country). Only 0.5 per cent came from Northern Cape, and 0.5 per cent from Western Cape. The missing data (1.6%) represents respondents that did not complete this question.

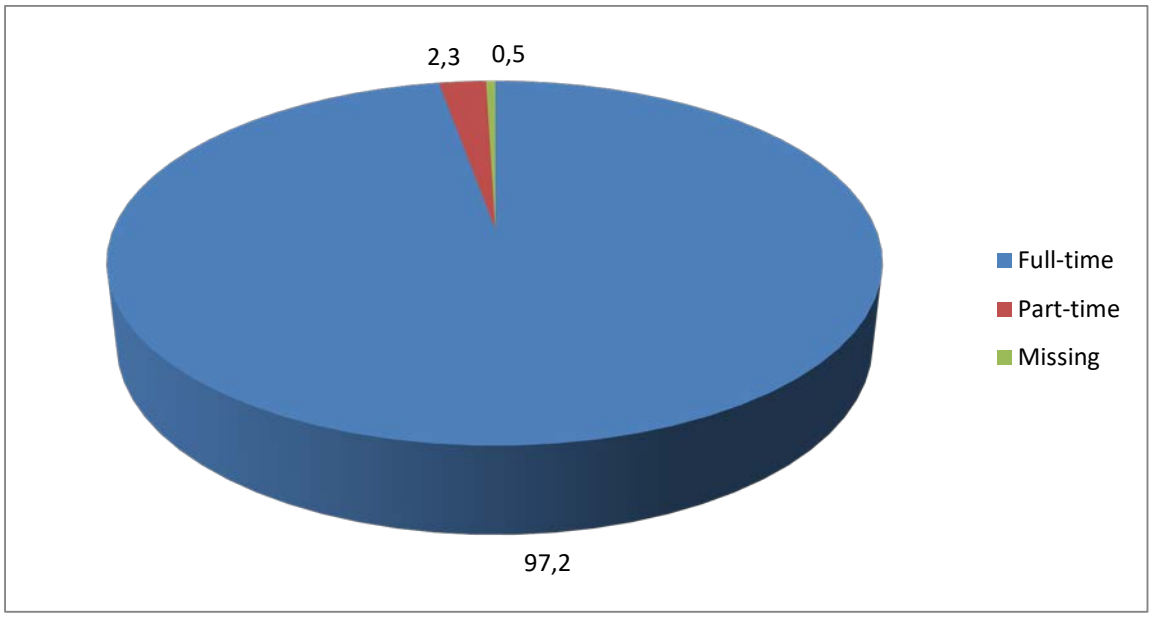

Figure 4-3: Registered

In Figure 4-3, the types of registration with the institutions indicate that 97.2 per cent of the respondents are registered full-time and 2.3 per cent are part-time. The missing data account for 0.5 per cent of the responses.

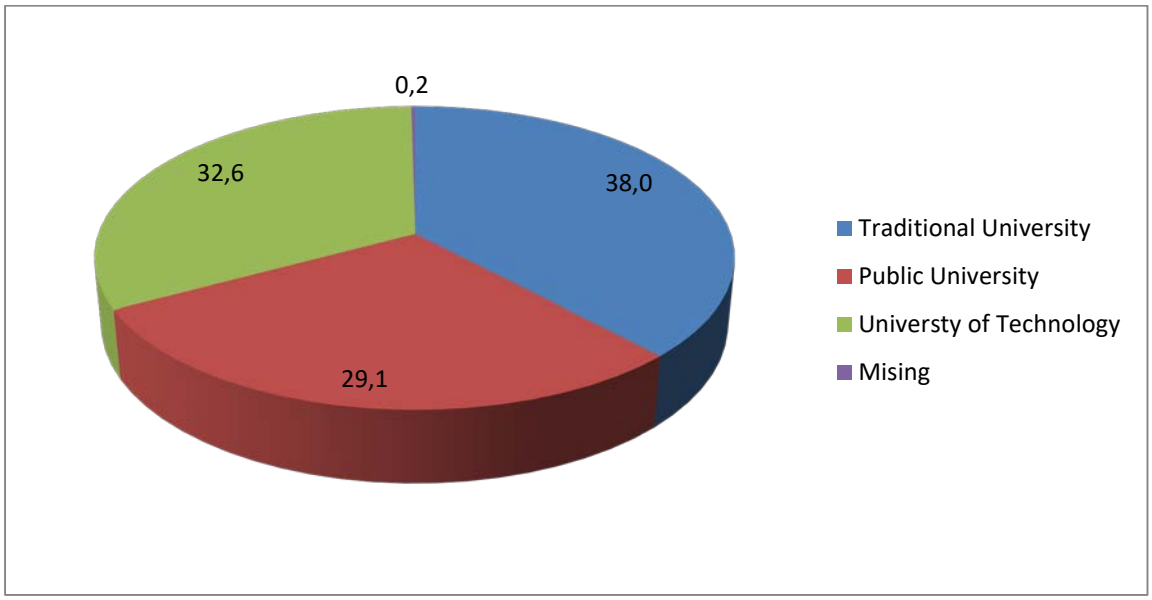

Figure 4-4: HEI of respondent

Figure 4-4 gives an indication of the types of institution attended by the students. The traditional university had a representation of 38 per cent; the university of technology 32.6 per cent and the comprehensive university 29.1 per cent. The missing data accounted for 0.2 per cent of the responses. The difference in percentage value between the three HEIs is attributed to the data cleaning in Section 4.4.2.

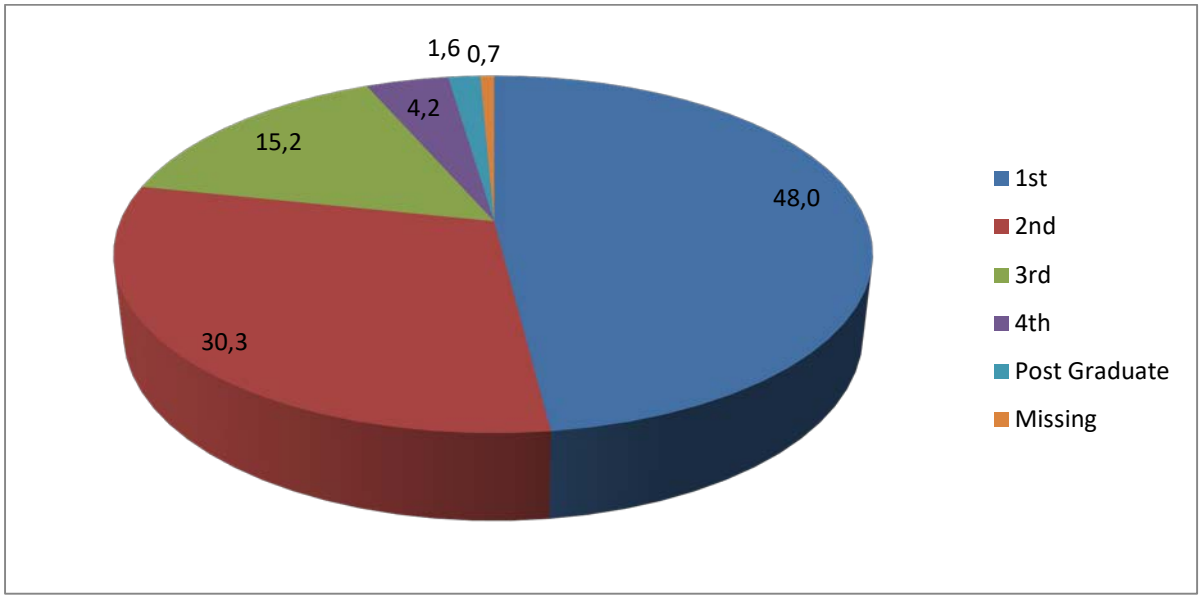

Figure 4-5: Current year of study

Figure 4-5 focuses on the current academic year of study of the respondents. The figure shows that 48.0 percent of the respondents are first-years, 30.3 per cent of the respondents are second-year, and 15.2 per cent as third-year students. Furthermore, 4.2 percent are identified as fourth-year, and 1.6 per cent identified as postgraduate students. A fraction of the respondents did not complete anything (0.7%), which was labelled as missing data.

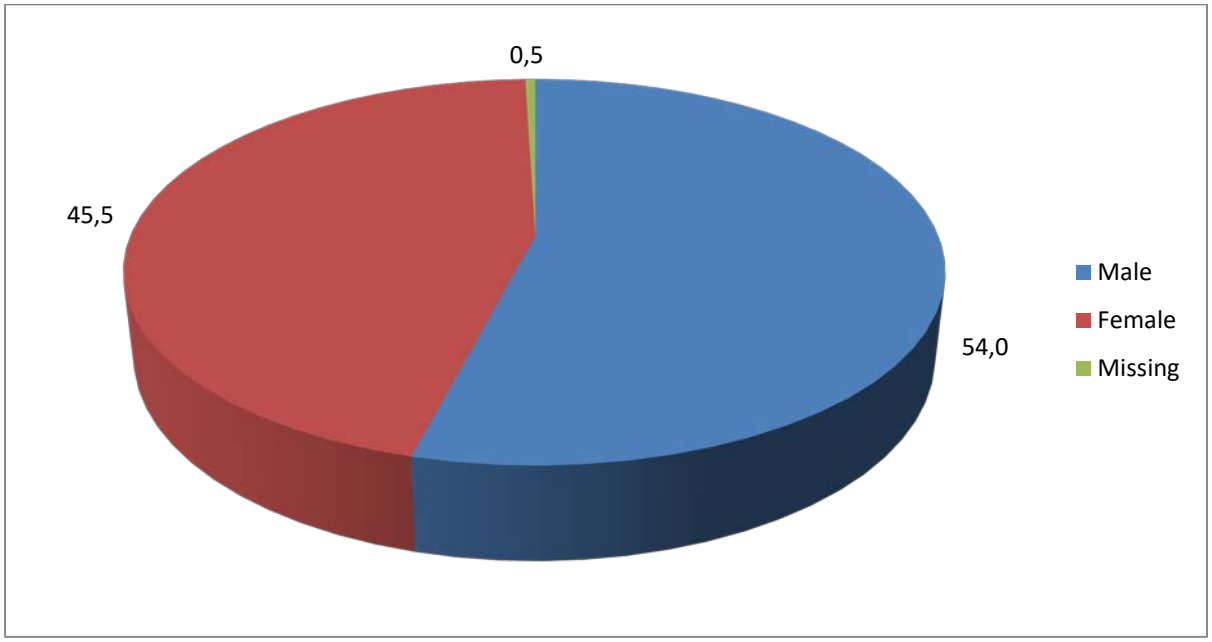

Figure 4-6: Gender

The gender distribution of the student respondents is shown in Figure 4-5. Most of the respondents were male (54.1 per cent), while 45.5 per cent were female. Both male and female respondents are represented. Of the data gathered, 0.5 per cent of the respondents did not answer this question and therefore is shown missing.

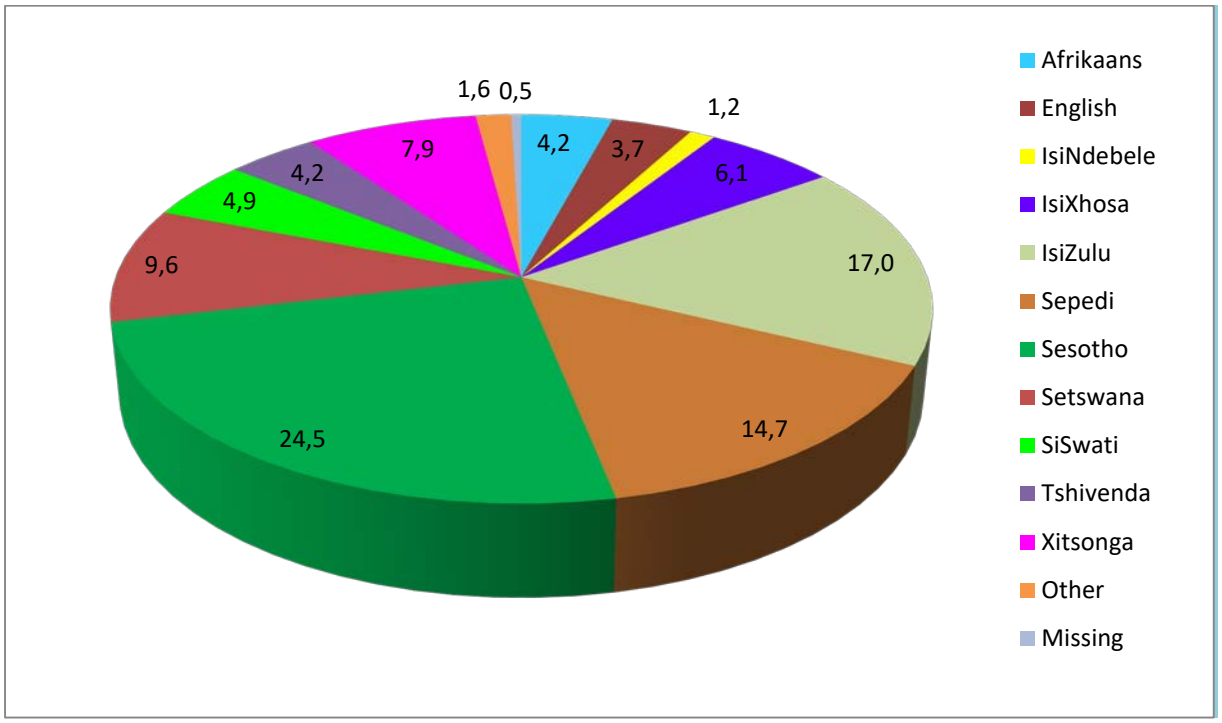

Figure 4-7: Home Language

Figure 4-7 represents the different home language of each student. The figure shows Sesotho's representation at 24.5 per cent, IsiZulu at 17.0 per cent, Sepedi at 14.7 per cent, Setswana at 9.6 per cent and Xitsonga represented 7.9 per cent. Furthermore, IsiXhosa, 6.1 per cent, and Siswati at 4.9 per cent. Tshivenda 4.2 per cent, Afrikaans at 4.2 per cent, English at 3.7 per cent, and IsiNdebele was the home language to 1.2 per cent. Finally, students who speak a different home language not recognized as one of the official South African languages were classified under the category "Other" (1.6 %). There was a fair representation of all of the 11 official South African languages in the home language section of demographics.

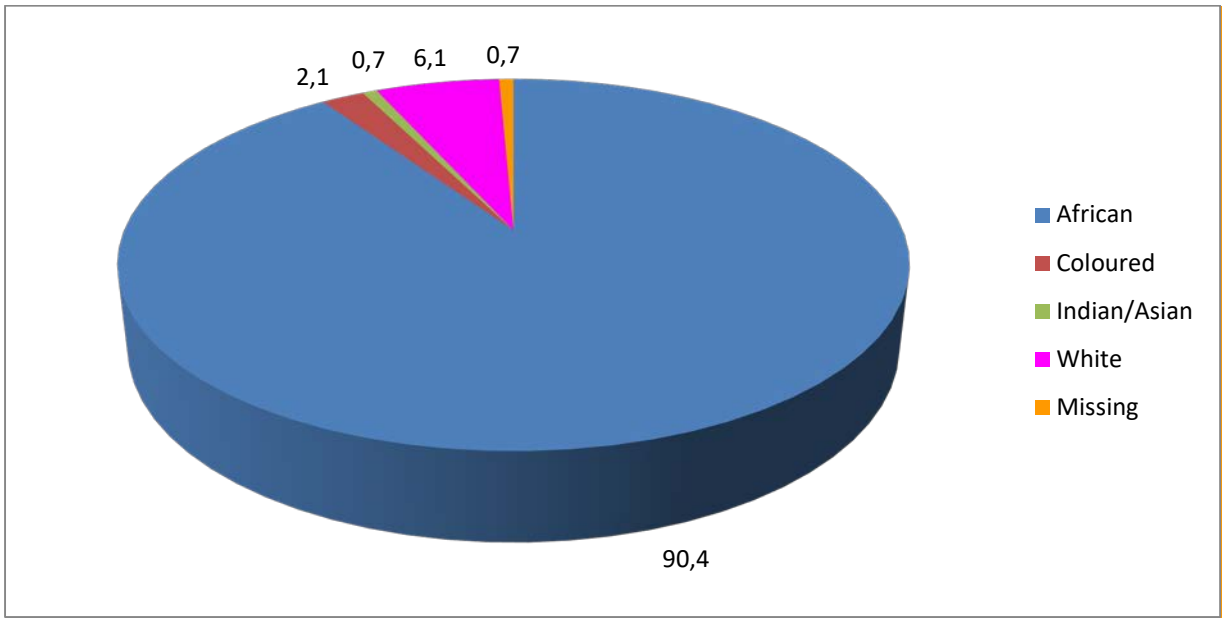

Figure 4-8: Ethnic group

Figure 4-8 focuses on the ethnic group identified by each student. The representation showed African students (90.4%), White students (6.1%), Coloured students (2.1%), and Asian/Indian students (0.7%). Missing data accounted for 0.7 per cent of the responses.

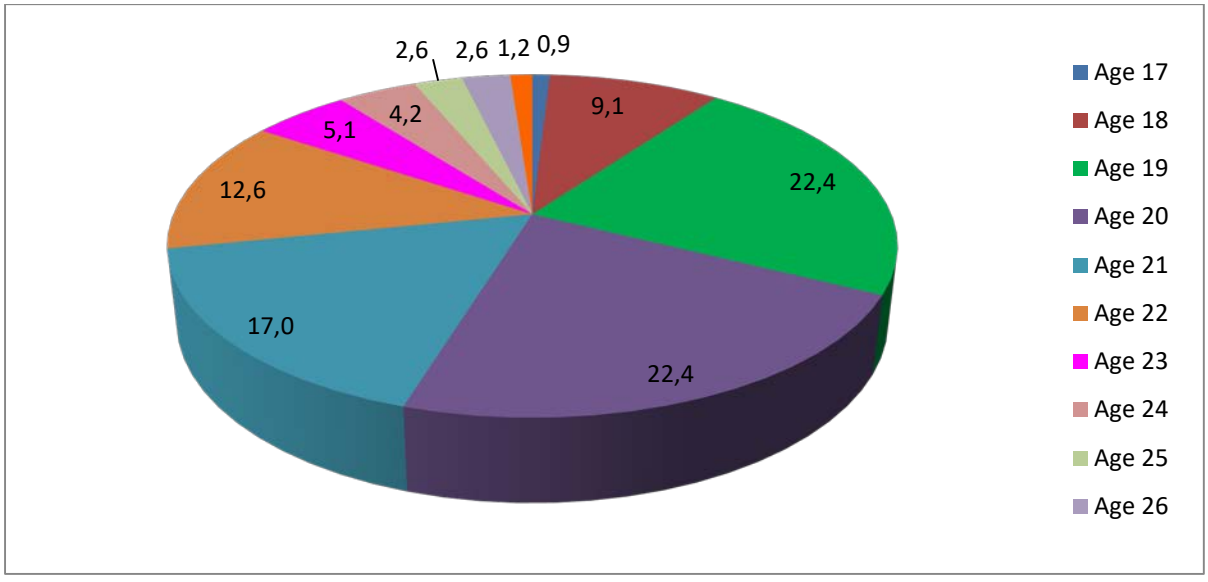

Figure 4-9: Age

Figure 4-9 shows the respondents' age distribution. Respondents showed that they were 24 (4.2%), 23 (5.1%), 22 (12.6%), 21 (17.0%), 17(0.9%), 18(9.1%), 26(2.6%), 19(22.4%), 20(22.4%), 25(2.6%) years of age. Missing data accounted for 1.2 per cent.

Section B of the questionnaire focused on the smartphone preferences of Generation Y students.

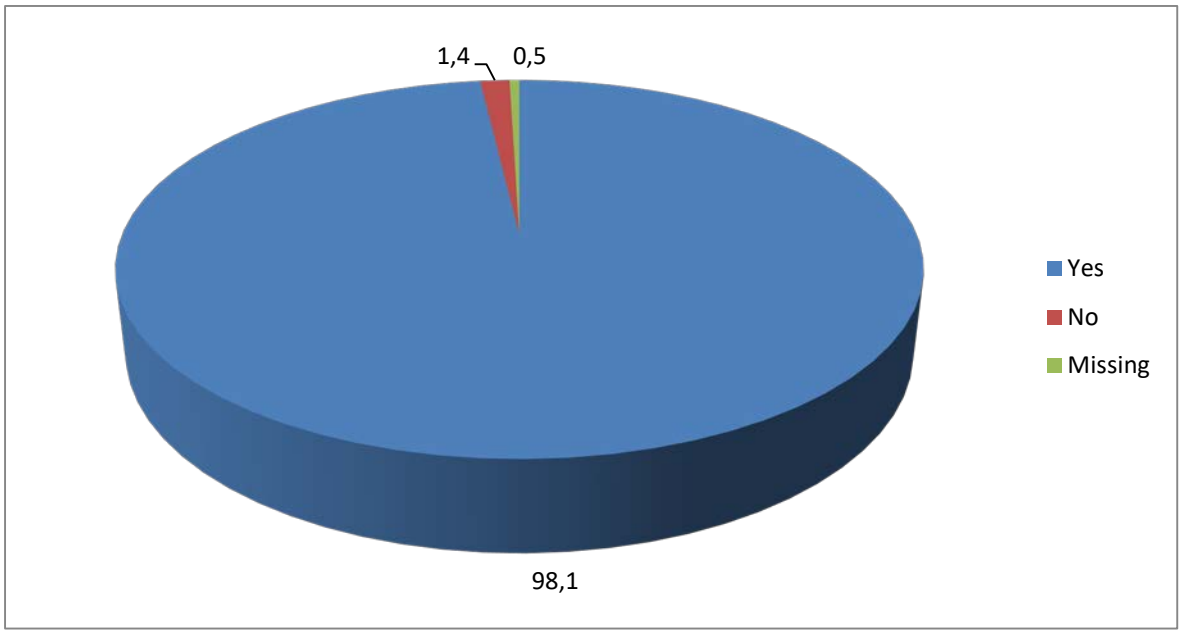

Figure 4-10: Smartphone ownership

Figure 4-10 shows the smartphone ownership of student respondents. The majority of the respondents owned a smartphone (98.1 per cent), while 1.4 per cent did not. Of the data collected, 0.5 per cent of the respondents did not answer and is therefore shown missing.

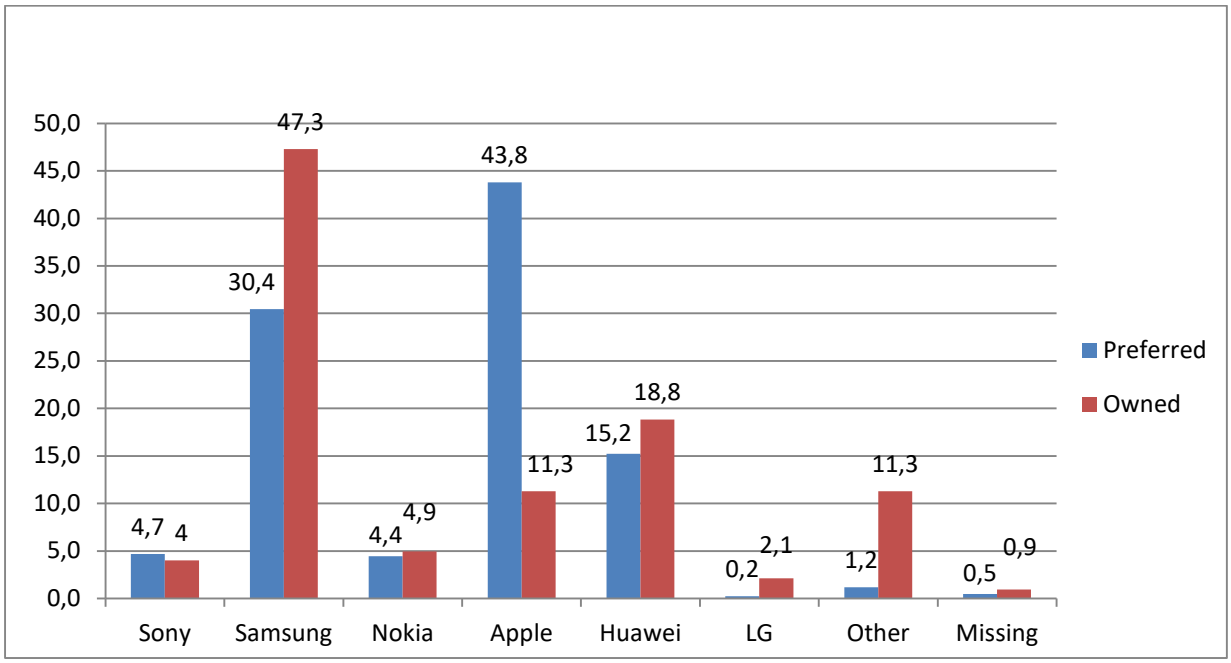

Figure 4-11: Preferred vs owned smartphone brand

Figure 4-11 indicates the students' most preferred smartphone brands versus their current owned smartphone brand. Most respondents indicated that they prefer the Apple brand (43%), Samsung (30.4%), Huawei (15.2%), while they owned the Samsung (47%), Huawei (18.8%), and other brands (11.3%) such as HTC and Xiaomi.

The next section focuses on the exploratory factor analysis part of the study.

4.6 EXPLORATORY FACTOR ANALYSIS (EFA)

An analysis was conducted on applicable constructs (Section C) through two different EFAs. The first EFA was conducted for all the items excluding the brand personality items (C14 – C28). In order to determine whether the EFA was viable, two tests were conducted; Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. An acceptable KMO of 0.853 was achieved and the Bartlett's test achieved a significant ($p = 0.000$) chi square score of 5737.71 ($df=630$), which indicated that the data was factorable.

Five factors were extracted based on priori criterion and this explained 48.52% of the total variance. All items loaded as expected with the exception of C40 cross-loading between two factors and C46 with a low factor loading of 0.389. Both these items were deleted and another EFA was conducted by means of a principal component analysis using Varimax rotation on the remaining items. Five factors were extracted based on priori criterion and explained 50% of the total variance. Acceptable KMO (0.852) was achieved and the Bartlett's test achieved a significant (p = 0.000) chi square score of 5461.61 (df=561). Table 4-4 shows EFA results after the exclusion of C40 and C46.

Table 4-4: Rotated Factors

Item	1	2	3	4	5	Communalities
C1	.494					0,417
C2	.565					0,440
C3	.472					0,358
C4	.558					0,432
C5	.640					0,490
C6	.711					0,580
C7	.656					0,447
C8	.719					0,561
C9	.688					0,512
C10	.665					0,467
C11	.534					0,386
C12	.669					0,483
C13	.484					0,330
C29					.787	0,646
C30					.719	0,635
C31					.796	0,675
C32					.624	0,440
C33			.594			0,452
C34			.607			0,441
C35			.640			0,584
C36			.577			0,444

Item	1	2	3	4	5	Communalities
C37			.603			0,527
C38			.490			0,324
C39			.424			0,315
C41		.709				0,547
C42		.687				0,547
C43		.688				0,523
C44		.809				0,669
C45		.741				0,594
C47				.609		0,439
C48				.764		0,632
C49				.670		0,509
C50				.743		0,582
C51				.722		0,572
Eigen Values	6.824	4.272	2.230	2.087	1.587	
% of variance	20.071	12.564	6.558	6.138	4.668	

A second EFA was conducted on the brand personality items (C14 – C28) as these items function together in one questionnaire and will not factor analyse with the other items. The brand personality trait scale was validated in South Africa (Müller, 2017). Consequently, a maximum likelihood analysis using Varimax rotation was conducted on items C14–C28. An acceptable KMO (0.914) was achieved and the Bartlett's test achieved a significant (p = 0.000) Chi square score of 3616.398 (df=105). Four factors was extracted based on priori criterion explaining 70.97 per cent of the variance. All the items loaded as expected. There is a slight cross-loading of C23 between factor 1 and factor 4. This item was not deleted as factor 4 only has three items and the biggest factor loading is still on factor 4.

Table 4-5 illustrates the rotated factors for brand personality.

Table 4-5: Rotated factors for brand personality items

Item	1	2	3	4	Communalities
C14		.703			.567
C15		.838			.802
C16		.752			.629
C17		.673			.535
C18	.619				.540
C19	.753				.662
C20	.731				.650
C21	.504				.404
C22	.644				.568
C23	.482			.595	.657
C24				.720	.676
C25				.514	.593
C26			.568		.603
C27			.919		.999
C28			.447		.441
Eigen Values	7.065	1.741	1.136	.704	
% of variance	47.099	11.606	7.571	4.696	

The next section focuses on the reliability and validity of the main survey of the study.

4.7 RELIABILITY AND VALIDITY ANALYSIS

Cronbach's alpha was used as a measure of reliability. The findings are summarized in Table 4-5.

Table 4-6: Cronbach's alpha and average inter-item correlation

Construct	Number of items in scale	Cronbach's alpha	Average inter-item correlation
Phone Feature	13	0.864	0.340
Brand Personality (overall)	15	0.918	0.431
Brand personality (responsibility)	4	0.867	0.62
Brand personality (Glamour)	5	0.848	0.540
Brand personality (outgoingness)	3	0.824	0.61
Brand personality (enthusiasm)	3	0.823	0.606
Brand loyalty	4	0.752	0.446
Purchase intention	7	0.733	0.281
Social influence	7	0.733	0.516
Dependency	5	0.778	0.413

In Table 4-6, all Cronbach's alpha values are above the recommended value of 0.7 (George & Mallery, 2016:240). Thus, the Cronbach's alpha shows sufficient results that indicate acceptable internal consistency reliability.

The average inter-item correlation in this study varied from 0.281 to 0.62. The majority of the factors (Product features, Overall Brand personality, Brand loyalty, Purchase intention and Dependency) exhibit average-inter-item correlations within the recommended 0.15 and 0.5. The factors with higher values were Responsibility, Outgoingness, Enthusiasm, Glamour & Social Influence. High average inter-item correlation values can be expected from items that measure the same concepts with slight differences (Felton, 2008:40). The constructs were considered reliable based on their Cronbach alpha values. Furthermore, several authors (Myburgh *et al.*, 2014:124; Katamba 2010:22; Llego-Canceko *et al*., 2009:65) feel that an average inter-item correlation of up to 0.6 is still viable.

The next section focuses on the descriptive statistics used.

4.8 DESCRIPTIVE STATISTICS

The descriptive statistics were calculated based on the survey questionnaire distributed to respondents. The following statistics were determined: means, standard deviations, skewness, and kurtosis. A six-point Likert scale was used to gather the data in both Section B and Section C.

The following table (Table 4-7) summarises the interpreted data. Higher mean values correlate with greater agreement

Table 4-7: Descriptive statistic

Items	N	Mean	Std. Deviation	Skewness	Kurtosis
Product features	**429**	**4.97**	**0,74263**	**-.980**	**1.134**
C1	429	5.30	1.017	-1.947	4.202
C2	429	5.10	.999	-1.337	2.377
C3	429	4.91	1.352	-1.257	.852
C4	429	4.84	1.273	-1.087	.669
C5	429	5.12	1.129	-1.482	2.081
C6	429	5.15	1.076	-1.450	2.165
C7	429	5.00	1.088	-1.097	1.005
C8	429	5.13	1.169	-1.455	1.723
C9	429	4.95	1.129	-1.145	1.180
C10	429	4.89	1.267	-1.238	1.187
C11	429	4.50	1.412	-.810	-.131
C12	429	5.08	1.133	-1.493	2.204
C13	429	4.78	1.353	-1.138	.700
Brand personality (Overall)	**429**	**4,9018**	**0,75564**	**-0,552**	**-0,002**

Items	N	Mean	Std. Deviation	Skewness	Kurtosis
Brand personality (Responsibility)	**429**	**5.08**	**0,82667**	**-1.218**	**2.378**
C14	429	5.20	.983	-1.706	3.767
C15	429	5.05	.983	-1.204	1.625
C16	429	5.08	.985	-1.279	2.031
C17	429	4.98	.962	-1.024	1.284
Brand personality (Glamour)	**429**	**4.84**	**0.93671**	**-.774**	**.449**
C18	429	4.85	1.152	-1.012	.767
C19	429	4.94	1.101	-1.019	.749
C20	429	5.03	1.071	-1.034	.723
C21	429	4.54	1.383	-.841	-.046
C22	429	4.81	1.206	-.931	.410
Brand personality (Outgoingness)	**429**	**4.74**	**1.01032**	**-.872**	**.756**
C23	429	4.76	1.187	-.908	.409
C24	429	4.73	1.222	-.956	.465
C25	429	4.71	1.113	-.797	.346
Brand personality (Enthusiasm)	**429**	**4.94**	**0.91248**	**-.908**	**.751**
C26	429	4.77	1.116	-.869	.500
C27	429	4.82	1.098	-.958	.870
C28	429	5.25	.965	-1.603	2.914
Brand loyalty	**429**	**4.50**	**1.06285**	**-.596**	**.150**
C29	429	4.57	1.481	-.938	-.078
C30	429	4.84	1.252	-1.154	.911
C31	429	4.58	1.259	-.845	.348
C32	429	4.04	1.592	-.495	-.851

Items	N	Mean	Std. Deviation	Skewness	Kurtosis
Purchase intention	**429**	**4.71**	**0.79780**	**-.592**	**.065**
C33	429	4.90	1.275	-1.337	1.372
C34	429	4.47	1.408	-.876	.017
C35	429	4.20	1.479	-.593	-.537
C36	429	4.55	1.288	-.854	.194
C37	429	5.06	1.191	-1.270	.993
C38	429	4.95	1.209	-1.235	1.192
C39	429	4.83	1.125	-.859	.463
Social influence	**429**	**3.58**	**1.28903**	**-.251**	**-.815**
C41	429	3.53	1.598	-.152	-1.172
C42	429	3.79	1.527	-.299	-1.006
C43	429	3.85	1.626	-.366	-1.056
C44	429	3.39	1.715	-.034	-1.300
C45	429	3.34	1.761	-.018	-1.370
Dependency	**429**	**4.28**	**1.21430**	**-.463**	**-.152**
C47	429	4.72	1.216	-.964	.530
C48	429	4.05	1.501	-.463	-.633
C49	429	3.52	1.597	-.029	-1.073
C50	429	4.26	1.694	-.621	-.879
C51	429	4.87	1.366	-1.295	1.005

Table 4-7 shows that Generation Y students were inclined to use smartphones, most likely for product features. Regarding the product features, respondents showed a preference for ability to use applications.

Section C used a 6 value Likert scale were 1–3 represented never to rarely taking part in an action or using an applicable medium, and 4–6 showing occasional to very

frequent action or usage, variously. Values equal to or lower than 3 indicated that the respondents were to some extent in disagreement with the statements. Values of 4 and higher indicated that the respondents were to some extent in agreement with the statements. Most constructs measured a mean value above 3.0. Respondents showed interest and intent with respect to product features (mean – 4.97). They showed a high brand personality level of responsibility towards brand choice (mean – 5.08) and found brand's personality to be glamorous (mean – 4.84). Furthermore, they associated their smartphones brand personality outgoingness to match their preference and personality (mean – 4.74) as a result the brands personality made them feel very enthusiastic about their preferred smartphone brands (mean – 4.94). They perceived their brand loyalty as average (mean – 4.50) and their purchase intension easy (mean – 4.71).They also indicated the effect of social influence on their purchase (mean – 3.58) and saw themselves as having dependency on smartphones (mean – 4.28).

Table 4-7 explains the mean or average values for each construct found. Respondents proclaim to have sensitivity to product features, and made their purchase decisions mainly based on the ability to use applications. Furthermore, they felt their purchase decision was driven by social influence and dependency on the smartphone for various usage reasons. Respondents felt that the smartphone brands portrayed their enthusiasm and brand loyalty mirrored their characteristics, which leads to their purchase intention in the near future. Finally, respondents associated their preferred smartphone brand with their level of outgoingness in relation to their personality.

In Table 4-7 factors falling between the -1.0 and 0 values indicated a negative skewness in all seen constructs. This skewness was acceptable, as according to Jain (2018), if the skewness is between -1 and 0, the data is moderately skewed. The Kurtosis had 2 peaked values out of the 9 factors and was relatively flat for the remaining 7 factors. According to McNeese (2016) the value of the probability measured is often compared to the kurtosis of the normal distribution which is equal to 3, and if less than 3 then the dataset has lighter tails than a normal distribution. Therefore, all constructs values were between the acceptable parameters -1.0 – 2.3.

The next section focuses on the smartphone preference information of Generation Y, as per the questionnaire (Section B).

4.9 SMARTPHONE PREFERENCE

Section B of questionnaire measured respondents' smartphone preference information and level of switching. The data were collected on a selection criteria and questionable scale, which gave them the options of a yes or no answer and selection of choice. The next section reports on these results.

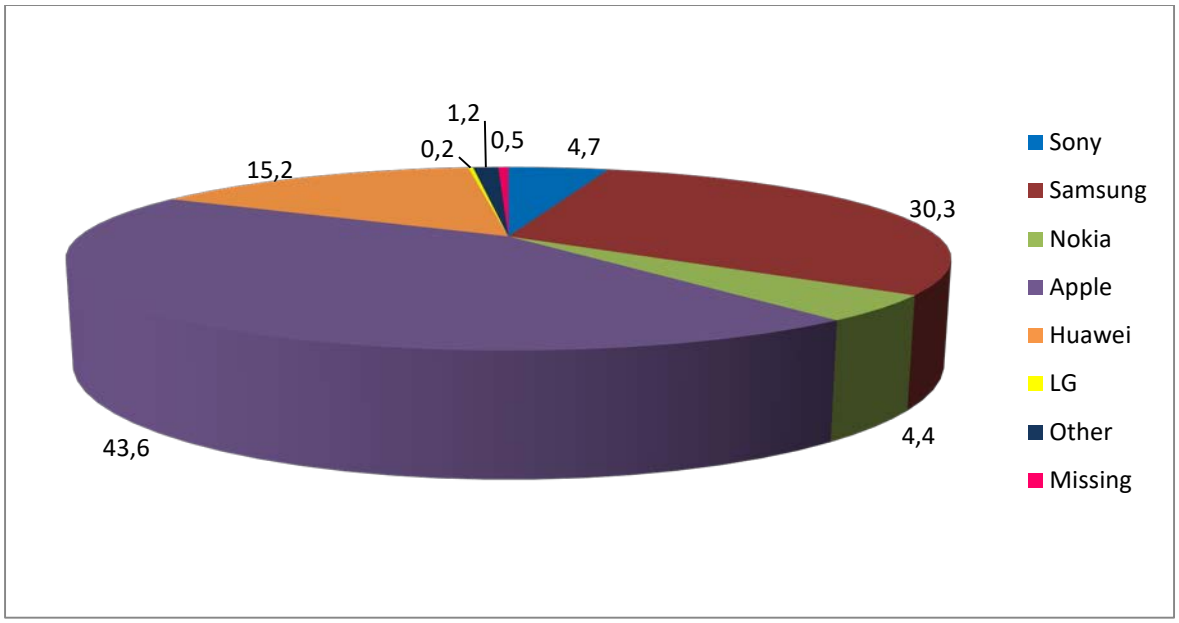

Figure 4-12: Smartphone preference

Figure 4-12 represents Generation Y students' preferred smartphone brand, addressing Section B Question 5. Respondents indicated that they mostly prefer Apple (43.8%), Samsung (30.4%) and the least preferred brand is LG (0.2%).

Figure 4-13, focuses on the amount of time that the students spent on a smartphone for various uses, addressing Section B, Question 2.

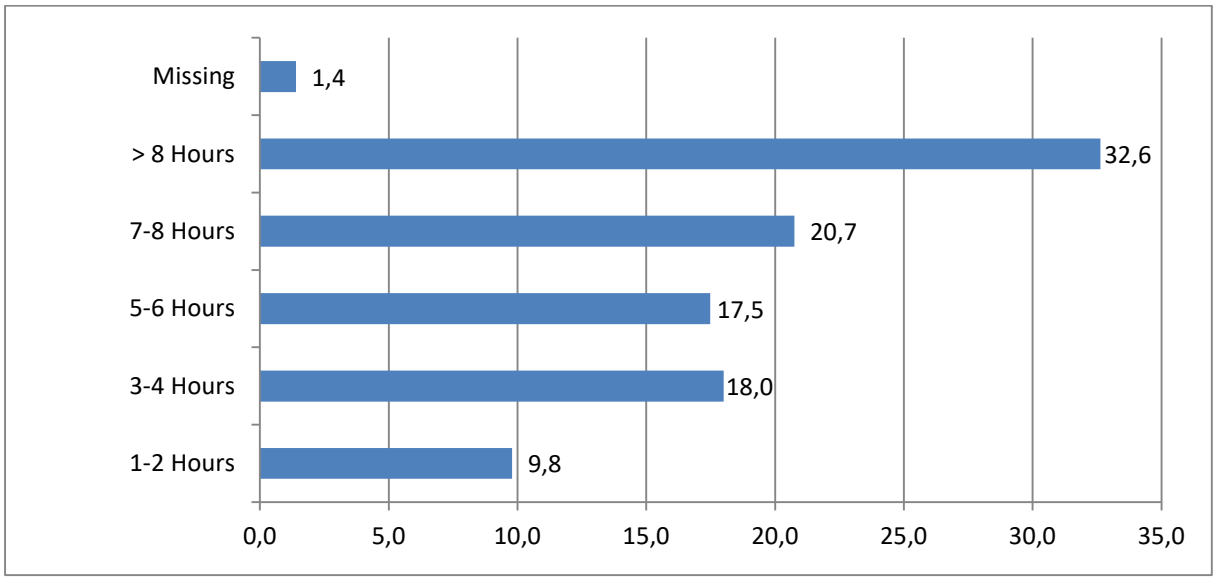

Figure 4-13: Amount of time spent on smartphone in a day

Figure 4-13 shows the amount for every time interval on usage. Respondents indicated that 32.6 per cent spend more than 8 hours a day on their smartphone, while 20.7 per cent spend between 7–8 hours, and 17.9 per cent spend 3–4 hours. Furthermore, 17.5 per cent spend between 5–6 hours and lastly 9.8 per cent spend a minimum of 1–2 hours on their smartphones on an average day. Missing data accounted for 1,4 per cent of the total respondents.

The next section discusses the correlation analysis.

4.10 CORRELATION ANALYSIS

Table 4-8 shows the correlation between the different constructs that were used in the study.

Table 4-8: Correlation analysis

	PF	BP	BL	PI	SF	D
Product Features (PF)	1					
Brand Personality (BP)	.500**	1				
Brand Loyalty (BL)	.302**	.419**	1			
Purchasing Intention (PU)	.396**	.402**	.349**	1		
Social Influence (SI)	-.068	.100*	.140**	.203**	1	
Dependency (D)	.154**	.156**	.152**	.306**	.305**	1

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

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

Table 4-8 shows the correlations between all constructs (PF, BP, BL, PI, SF, D) ranging between 1 ≥ *r* -1, proving that all constructs are significant and aligned, excluding the correlation between PF and SI. This could be explained by the fact that an individual who considers phone features to be an important factor does not care about what his/her social group thinks. As such, an individual who is very dependent on what the social group suggests would not pay any attention to actual product features. Consequently, the table suggests nomological validity in terms of all the factors, with exception of the PF and SI correlation. The next section focuses on the hypotheses tested from the regression analysis.

4.11 HYPOTHESES TESTING

The hypothesis testing was done using a regression analysis for the dependent variables: purchasing behaviour (H1) and independent t-test (H2) were also conducted. A significance level of α=0.05 was used. The following hypotheses were formulated based on the literature that was examined in this study.

Ha1a – Product features (C1) influences Generation Y students' purchasing intention of smartphones.

Ho1a – Product features (C1) do not influence Generation Y students' purchasing intention of smartphones.

Ha1b – Brand Personality influences Generation Y students' purchasing intention of smartphones.

Ho1b – Brand Personality does not influence Generation Y students' purchasing intention of smartphones.

Ha1c – Brand Loyalty influences Generation Y students' purchasing intention of smartphones.

Ho1c – Brand Loyalty does not influence Generation Y students' purchasing intention of smartphones

Ha1d – Purchase Intention influences Generation Y students' purchasing intention of smartphones.

Ho1d – Purchase Intention does not influence Generation Y students' purchasing intention of smartphones.

Ha1e – Social Influence influences Generation Y students' purchasing intention of smartphones.

Ho1e – Social Influence does not influence Generation Y students' purchasing intention of smartphones.

Ha1f – Dependency influences Generation Y students' purchasing intention of smartphones.

Ho1f – Dependency does not influence Generation Y students' purchasing intention of smartphones.

Ha2 – Male and female Generation Y students differ in their perceptions of product features, brand personality, brand loyalty, purchasing intention, social influence and dependency on smartphones.

Ho2 – Male and female Generation Y students' do not differ in their perceptions of product features, brand personality, brand loyalty, purchasing intention, social influence and dependency on smartphones.

4.12 REGRESSION ANALYSIS

This study conducted a regression analysis on each of the dependent variables of purchasing intention and smartphone preference.

4.12.1 Product features

Table 4-9 presents the results of a regression analysis together with an ANOVA test on the dependent variables of purchasing intention, with independent variables, PF, BP, BL, PI, SI, D.

Table 4-9: Regression model summary, Model 1

Standardised Beta coefficient	r^2	Adjusted r^2	Standardised error of the estimate	F	Significance level
0.555	0.308	0.300	.66753	37.671	0.000*

**Significance at the p<0.05(2-tailed)*

Table 4-9 presents the results from regression analysis and the ANOVA test. A coefficient of determination of 0.308 indicates that 30.8 per cent of the variation in purchasing intention among Generation Y students can be featured into the independent variables (PF, BP, BL, PI, SI, D).

An F value of 37.671 and a significance of 0.000 ($F = 37.671$, $p < 0.05$) suggest that the dependent variable is reliably predicted by the independent variables. This means that PF, BP, BL, PI, SI, D can be used as speculators of Generation Y students' smartphone purchasing intention. The next table shows the contributions of each independent variable to predict smartphone purchasing intention.

Table 4-10: Contribution of each of the independent variables, Model 1

Model 1	Standardised coefficients Beta	t-Value	Significance level
Dependent variable			
Purchase intention			
Independent			
Product features	0,238	4,972	0,000*
Brand personality	0,175	3,534	0,000*
Brand loyalty	0,157	3,464	0,001*
Social influence	0,134	3,134	0,002*
Dependency	0,193	4,521	0,000*

**Significance at the p < 0,05 level (2-tailed)*

Table 4-10 indicates that all five constructs have a significant influence on purchase intention. Product features (β = 0.238, p = 0.000 < 0.05), brand personality (β = 0.175, p = 0.000 < 0.05), brand loyalty (β = 0.157, p = 0.001 <0.05), social influence (β = 0.134, p = 0.002 <0.05), and dependency (β = 0.193, p = 0.000 < 0.05) have an important influence on purchase intention.

The following table gives an indication of the construct significance and whether the hypotheses coupled with the constructs were accepted or rejected. A p-value of less than 0.05 proved significance, therefore hypotheses with a p <0.05 were deemed viable. Hypotheses of a p >0.05 were rejected.

Table 4-11: Accepted and rejected hypotheses

Construct	Sig	Hypothesis used
Product Features	0.000	Ha1a
Brand Personality	0.000	Ha1b
Brand Loyalty	0.001	Ha1c
Social Influence	0.002	Ha1d
Dependency	0.000	Ha1e

Table 4-11 shows that the hypotheses make use of purchase behaviour as a dependent variable. Five independent variables influenced the dependent variable: product features, brand personality, brand loyalty, social influence, and dependency.

An additional regression analysis was conducted along with the ANOVA test on the dependent variables of purchasing intention, with the following independent variables; BP (responsibility), BP (glamour), BP (enthusiasm), BP (outgoingness) to determine which aspects of BP influence purchasing intention.

4.12.2 Brand Personality

Table 4-12: Regression model summary

Standardised Beta coefficient	r^2	Adjusted r^2	Standardised error of the estimate	F	Significance level
0.410	0.168	0.160	0.73126	21.359	0.000*

**Significance at the p<0.05(2-tailed)*

Table 4-12 gives the findings from the regression analysis and ANOVA test. This coefficient (0.16) determines that 16.8 per cent of the variation in purchasing intention among Generation Y students can be related to the independent variables (BP(Responsibility), BP(Glamour), BP(Enthusiasm), BP(Outgoingness))

An F value of 21.359 and a significance of 0.000 ($F = 21.359$, $p < 0.05$) propose that independent variables reliably estimates the dependent variable. This means that P(R), BP(G), BP(E), BP(O) can be used as predictors of Generation Y students' smartphone purchasing intention. The next table shows each independent variable's contribution to the prediction of smartphone purchasing intention.

Table 4-13: Contribution of each of the independent variables

Model 2	Standardised coefficients Beta	t-Value	Significance level
Dependent Variable			
Purchase Intention			
Independent			
BP (Responsibility)	0.211	3.850	0.000*
BP (Glamour)	0.113	1.760	0.079
BP (Enthusiasm)	0.113	1.661	0.098
BP (Outgoingness)	0.063	0.982	0.327

**Significance at the p < 0,05 level (2-tailed)*

Table 4-13 shows that out of all four constructs, only one has a significant influence on purchase intention. BP (Responsibility) ($\beta = 0.211$, $p = 0.000 < 0.05$) has a significant influence on the purchase intention. BP (Glamour) ($\beta = 0.113$, $p = 0.079 > 0.05$), BP (Enthusiasm) ($\beta = 0.113$, $p = 0.098 > 0.05$), and BP (Outgoingness) ($\beta = 0.063$, $p = 0.327 > 0.05$) do not have an influence on purchase intention.

The above table reports on an additional regression analysis to conduct a deeper investigation on which aspect of brand personality had the biggest impact on purchase intention. The results show that it is responsibility, which concludes the fact that students are more likely to purchase brands that they perceive as responsible.

4.13 TWO INDEPENDENT SAMPLE T-TEST

This section of the study utilised two independent sample t-tests to discover whether male and female respondents differ in their perceptions regarding the constructs. A significance of 0.05 was designed to test the significance of differences.

Table 4-14: Statistical differences in data between genders

	Male Mean N= 232	Male SD	Female Mean N= 195	Female SD	t-Vale	p-Value	Cohen's D
PF	4,9313	0,72665	5,0209	0,76141	-1,241	0,215	**
BP	4,8552	0,75957	4,9521	0,75141	-1,320	0,187	**
BL	4,5409	1,01953	4,4718	1,09995	0,673	0,501	**
PI	4,6613	0,82843	4,7590	0,75704	-1,262	0.208	**
SI	3,5586	1,32692	3,6000	1,24916	-0,330	0.742	**
D	4,1845	1,06487	4,3928	1,08967	-1,992	0,047	0.193*

** Small effect, practically non-significant*

***Cohen's D was not calculated as there were no significant p-value*

As per Table 4-14, Ho2 is accepted and Ha2 is rejected for all factors (product features, brand personality, brand loyalty, purchase intention, social influence) except dependency. It seems as though there was a slight statistically significant difference between male and female Generation Y students regarding their dependence on smartphones. The results show that females are more dependent on their smartphones than their male counterparts.

This study's final section concludes with a synopsis of the findings of the main study.

4.14 SYNOPSIS

This chapter presented the results of an analysis and interpretation of the data. The pilot testing results (Section 4.2) elaborated on how the questionnaire was tested and cleaned before distribution. Section 4.3 gave an explanation of how and from whom the data results had been gathered. The preliminary data analysis in Section 4.4 included the coding, data cleaning, and the tabulation of variables. The demographic analysis (Section 4.5) showed the demographic data in illustrations such as charts. Section 4.6 explained the EFA while Section 4.7 discussed the reliability and validity of the main questionnaire, which indicated how the data was tested to determine whether it is reliable and valid. Section 4.8 explained the

descriptive statistics that measured the skewness and kurtosis. Section 4.9 illustrated the dissimilarities in smartphone preference information between respondents. Section 4.10 indicated the correlations between factors and illustrated the factors using a table. In Section 4.11 the hypothesis testing was presented to analyse the hypotheses in this study. The regression analysis (Section 4.12) was discussed and showed the findings of correlations between different factors. Section 4.13 focused on the two independent samples t-test to determine whether there was a difference between male and female students' response regarding the factors in the study.

The next chapter presents the conclusion of the study and offers recommendations for further studies.

CHAPTER 5: RECOMMENDATIONS AND CONCLUSIONS

5.1 INTRODUCTION

Mobile phones have been around for years, with rapid developments leading to the current generation of smartphones. Smartphones have been the latest technological addition to our daily lives. Several studies have proven a rapid growth in the industry with an increased need to own these devices as a modification to our daily connection and convenience in life. The smartphone industry is very competitive with its common focus being to keep existing customers and convert new ones to their brand. It is vital for each manufacturer to stay ahead or in line with its competitors by providing customers with a range of products that will cater for different needs with the latest technology and competitive pricing.

The first wave of smartphone adoption accelerated in sales, which resulted in a high demand, leaving the manufacturer with the decision of how to gain a competitive advantage. This led to a great deal of innovation and marketing research to evaluate trends and customer needs. The importance of smartphones began to increase as different functions and features were developed, making consumers more prominent and dependent on the devices.

Since most smartphones offer similar features, consumers have to distinguish their range of choice through brand preference by identifying which brand better relates to them. This also includes the service providers they prefer and the offer at hand as all service providers have the same product ranges and brands. There are many factors that are taken into consideration when purchasing a smartphone.

This study measures Generation Y students' antecedents to smartphone purchasing behaviour. This was done to determine what pushes this consumer to certain purchase decisions. It is mostly determined by the product features, brand personality, brand loyalty, social influence and dependency. A brief overview of the study was provided to uncover main findings through a thorough discussion leading to final conclusions.

An outline of contributions of this study gives recommendations for future studies as set out by the empirical objectives derived in Chapter 1 (Section 1.3.3) to follow.

5.2 OVERVIEW OF THE STUDY

This section provides a brief overview to support the content of this chapter and address the previous four chapters. The primary objective of this study was to investigate the antecedents of Generation Y students' smartphone purchasing behaviour.

Chapter 1 provided a brief overview of smartphones and the Generation Y cohort, followed by a discussion on the problem statement in Section 1.2 to describe the sampling population of the study. One primary objective was set out in Section 1.3.1, seven theoretical objectives in Section 1.3.2, and ten empirical objectives in Section 1.3.3. The hypotheses were derived from the empirical objectives in Section 1.4, followed by the research design and methodology in Section 1.5., which discussed the literature review in Section 1.5.1. The empirical study was discussed in Section 1.5.2 under the following subheadings: target population (Section 1.5.2.1), sampling frame (Section 1.5.2.2), sample method (Section 1.5.2.3), sample size (Section 1.5.2.4), measuring instruments and data collection method (Section 1.5.2.5). In conclusion, the empirical study provided the statistical analysis in Section 1.5.3., followed by ethical considerations in Section 1.6, and an outline of chapters in Section 1.7.

Chapter 2 analysed the literature on the theoretical objectives mentioned in Chapter 1 (Section 1.3.2) with reference to the primary objective. Next, the historical background of smartphones was discussed in Section 2.2., followed by a definition of the term smartphone and its importance for this study in Section 2.3. The smartphone industry was presented in Section 2.4 and the decision making process in Section 2.5. The five steps of the process were discussed in detail as follows: problem recognition (Section 2.5.1), information search (Section 2.5.2), alternative evaluation (Section 2.5.3), purchase decision (Section 2.5.4) and post-purchase evaluation (Section 2.5.5). The factors affecting smartphone purchases were discussed in Section 2.6 to determine the basis of this study. The four marketing mix

elements were defined and discussed in Section 2.7 to provide an analysis of the marketing environment and its effect on smartphones. The chapter concludes with a discussion on the Generation Y cohort in Section 2.8 to highlight the importance of this cohort for the research topic and how marketers should address this cohort.

Chapter 3 focused on the research methodology set out for this study. Section 3.2 discussed the research design as a supporting structure for the research project. The research approach was outlined in Section 3.3 and the study selected a quantitative method. Section 3.4 examined the sampling strategy, which consist of a number of items. First, the target population (Section 3.4.1) identified for this research study was Generation Y students registered at one of the 26 HEIs in South Africa. Secondly, the sampling frame (Section 3.4.2) of three universities in Gauteng were selected: one traditional university, one university of technology and one comprehensive university. Thirdly, sampling methods (Section 3.4.3) were discussed and the method chosen for this study was non-probability convenience sampling. Finally, sample size (Section 3.4.4) which focused on research studies similar to the one conducted. Based on those studies, the decision to conduct a research questionnaire on 450 respondents was deemed sufficient for this study to be viable. The data collection method was set out in Section 3.5 and the questionnaire format (Section 3.5.1) selected for this study presented structured questions using a six-point Likert scale. The questionnaire's content and layout were discussed in Section 3.5.2, after which pre-testing and pilot testing (Section 3.5.3) were elaborated on, followed by administration of the questionnaire (Section 3.6).

Data preparation in Section 3.7 analysed the editing (Section 3.7.1), coding (Section 3.7.2), and tabulation (Section 3.7.3) processes. Statistical analysis (Section 3.8), reliability (Section 3.9), validity (Section 3.10), and factor analysis (Section 3.11) were briefly reviewed. The hypothesis testing, correlation analysis and regression analysis were laid out in Section 3.12, Section 3.13 and Section 3.14, respectively. The two samples t-test was explained in Section 3.15 and concluded with practical significance in Section 3.16.

Chapter 4 provided insight into the analysis and interpretation of the empirical findings of the study. Section 4.2 included the pilot testing results. Section 4.3 gave a description on the process in which the pilot data was gathered. Section 4.4 was dedicated to the data analysis process, which involved coding, data cleaning, and tabulation of variables. Section 4.5 comprised of the demographic data, which included charts to illustrate the data. The exploratory factor analysis was reviewed in Section 4.6. Section 4.8 was dedicated to the descriptive statistics used to analyse the data set in the study. Section 4.9 elaborated on Section B from the questionnaire, which investigated smartphone preference information. Section 4.10 and Section 4.11 provided a correlation analysis and the hypothesis testing. The findings of the regression analysis were discussed in Section 4.12, and those of the t-test in Section 4.13. The chapter was concluded in Section 4.14 with a synopsis of the findings.

5.3 MAIN FINDINGS OF THE STUDY

Section 5.3 discusses the main finding of the study in accordance with the empirical objectives laid out in Chapter 1.

Two different EFAs was conducted (Section 4.6). The first EFA was conducted for all items except brand personality (C14–C28). The data and sample was adequate for an EFA and five factors were extracted based on priori criterion. The items loaded as expected and explained a total variance of 48.52%. The second EFA was conducted on the brand personality items (C14–C28). The data and sample was adequate for an EFA and four factors were extracted based on priori criterion. The items were loaded as expected and explained a total variance of 70.97%. All of the factors showed satisfactory reliability in terms of Cronbach alpha and average inter-item correlation (Table 4-6).

The first empirical objective of this study was to determine Generation Y students' smartphone usage and brand preference. Section 4.9 showed that the students' most preferred brand was Apple, followed by Samsung. Respondents also indicated that most of them (32.6%) spend more than 8 hours a day on their smartphones.

The second empirical objective was to determine the product features that Generation Y students look for when purchasing a smartphone to ascertain whether this influences their intention to purchase their preferred smartphone brand. Descriptive statistics (Section 4.8) were calculated and returned a mean value (4.97) for the product features scale. The results suggested that Generation Y students regard product features as an important factor. The most important features were: ability to use smartphone application (mean = 5.30), the speed of internet connection (mean = 5.15), and camera quality (mean = 5.13). Furthermore, the regression analysis (Table 4-9) suggests a statistically significant relationship product features and purchase intention (Section 4.12). This suggests that product features may be used as a predictor of Generation Y students' smartphone purchasing intention.

The third empirical objective focused on investigating Generation Y students' brand personality perceptions of their preferred smartphone brand to determine if it influenced purchasing intention. The results (mean = 4.90) suggested that the respondents associated their preferred smartphone brand with the *Responsibility* (mean = 5.08) and *Enthusiasm* (mean = 4.94) brand personality dimensions (Section 4.7). Two regression analysis were conducted in Section 4.12. The first (Table 4-9) showed that the overall brand personality perception had a significant influence on purchasing intention. The second regression analysis (Table 4-12) suggested that the *Responsibility* dimension of brand personality may be used as a predictor of Generation Y students' smartphone purchasing intention.

The fourth empirical objective was to determine if brand name has an influence on Generation Y students' purchasing decision with respect to a smartphone. This factor was not measured in the main study as it was excluded after the pilot study (Section 4.2) based on reliability concerns.

The fifth empirical objective was to determine Generation Y students' brand loyalty towards their preferred smartphone and how it influences their purchasing decision. The mean value (4.5) in Section 4.8 of the study suggests that Generation Y students are brand loyal and that they would recommend their preferred smartphone brands to their friends and family (mean = 4.84). The regression analysis (Section

4.12) showed that brand loyalty had a significant influence on the smartphone purchasing intention.

The sixth empirical objective was to determine how price affects Generation Y students' purchasing decision with respect to smartphones. This factor was not measured in the main study as it was excluded after the pilot study (Section 4.2) based on reliability concerns.

The seventh empirical objective was to investigate Generation Y students' purchase intention of their preferred smartphone brand. The results suggested that Generation Y students intend to continue using smartphones (mean = 5.06) and want to make better smartphone purchasing decisions in the near future (mean = 4.95). The overall mean (4.71) in Section 4.8 showed a high level of purchase intention for respondents.

The eighth empirical objective was set out to determine Generation Y students' social influence regarding smartphone brands and its influence on their purchase intention. Social influence recorded the lowest mean (3.58) of all the factors, suggesting that it does not play such a big role with regard to their preferred smartphone choice. Furthermore, the results indicate that Generation Y students are slightly interested in knowing which smartphone makes a good impression on their friends (mean = 3.85) and indicated that the people around them stimulated them in using their preferred smartphone to some extent (mean = 3.79). Regression analysis (Section 4.12) suggests that social influence may be used as a predictor of Generation Y students' smartphone purchasing intention.

The ninth empirical objective was to investigate the level of dependency on smartphones by Generation Y students to ascertain whether it influences their intention to purchase their preferred smartphone brand. The results showed that these students have a high level of dependency (mean =4.28) on smartphones. The most influential aspects of dependency were the students' high levels of use of smartphone in their daily lives (mean = 4.87) and that they always use their smartphone for work (mean = 4.72). The regression analysis (Section 4.12) showed

that dependency on smartphones is a predictor of Generation Y students' purchase intention

The last empirical objective was to determine how Generation Y male and female students differed in their perceptions of product features, brand personality, brand name, brand loyalty, price, purchase intention, social influence and dependency regarding smartphones. The two independent-samples t-test results (Section 4.13) suggest that there is a small significant difference based on dependency on smartphones favoured towards the female respondents.

5.4 CONTRIBUTIONS OF THE STUDY

This study analysed Generation Y students' purchasing behaviour towards smartphones. The adoption of smartphones is increasing rapidly with new technology upgrades and the new brands that are entering the South African market. Marketers for smartphone brands have to stay competitive in the over-saturated market. Brands have to gain or retain competitive advantage and find a way to reach the lucrative Generation Y market. Marketers have discovered the importance of Generation Y students as an influential and profitable cohort based on their experience as the first generation to be born into technology. The findings of this study add data to the South African smartphone market, especially regarding Generation Y students' smartphone purchasing behaviour. This study focuses specifically on Generation Y's purchasing behaviour because of the buying power they have in the market and their development, which is aligned with technology advancements.

The data collected in this study can be used by producers, marketers and mobile operators of smartphone brands. The results will help to better understand the Generation Y cohort and what influences their purchasing decisions of smartphone brands. Consequently, marketing efforts can be altered to influence the buying behaviour of this cohort. Furthermore, researchers conducting similar studies could use these results as a point of reference and for comparison.

5.5 RECOMMENDATIONS

The goal of this study was to discover which factors influence South African Generation Y students' purchasing behaviour with respect to smartphones. In line with the objectives outlined, the study offers the following recommendations:

Respondents in the study showed that they prefer Apple iPhone and Samsung as their preferred smartphone brand. There are a number of other smartphone brands available on the market. These brands should find a way to improve their current perceptions among Generation Y consumers to become one of the top referred brands. Furthermore, the current leading brands (Apple and Samsung) should continuously aim to retain their position as market leaders. The smartphone industry is a very competitive market with a possibility for switching. These brands can look at the various aspects outlined in this study to gain / retain their competitive advantage.

This study also determined that the majority of Generation Y students spend more than 8 hours a day on their smartphones. This is a clear indication that smartphones are a major part of this cohort's life. All brands should strive to find out exactly how this time is spent and find a way to engage with this cohort through their smartphone. This may be via social media, mobile games or other mobile applications.

Respondents of this study showed a high preference for product features relevant to other research conducted on this cohort's smartphone behaviour. The first feature is the ability to use applications on the phone, which should be user-friendly, convenient and an on-going evolution. The second feature was speed of internet connection, as this cohort is comprised of curious beings that often rely on the internet for answers. Producers should aim to continuously develop new faster connectivity options. Furthermore, marketers and mobile operators should focus on marketing smartphones with a high internet speed connectivity (–4G+) to Generation Y students. The third highest preferred feature is the camera quality. The Generation Y cohort frequently take selfies and have a very high social lifestyle on different social media platforms. This allows marketers and mobile operators the opportunity to offer them high quality camera phones to capture every moment like a professional photographer and edit them with different filters. The fourth product

feature was security, as these students regard a smartphone as a personal accessory with everything saved for convenience and functionality. They also view security as a safety feature to recover their documents and information in case of theft, loss or damage. Marketers and mobile operators should attract these consumers with the latest technology security functions such as fingerprint access, face recognition and passwords. Smartphone brands should focus on being the market leader in these categories and also communicate the benefits of their smartphones in relation to these specific features.

Brand personality is one of the key concepts that can also assist smartphone brands to gain a competitive advantage. The results show that brands should aim to be more responsible, as a responsible brand strongly predicts greater brand trust and loyalty. Generation Y students find value in knowing that the brand is responsible enough to gain their trust and loyalty. The results showed that having a brand that is perceived to be responsible has a significant influence on the consumers' purchase decision.

Generation Y students are very loyal towards their preferred smartphone brands. They will highly recommend it to their peers and choose the same brand over other brands. Brand loyalty is one of the most important factors in marketing. Marketers aim to attract consumers and retain them by maintaining and in some cases exceeding their expectations, with the hope that it leads them to brand loyalty. A brand should be considered reliable to gain a consumer's loyalty. Having a loyal customer base gives the business a competitive advantage, which can be sustained through reward programmes.

Furthermore, consumers in general are social beings influenced by their surroundings. Generation Y students are more influenced by their peers than any other social group. Respondents indicated that they get a sense of belonging by purchasing the same smartphone as their friends, which shows that social influence is an important factor to consider in the decision making process when making a purchase. This is an opportunity for marketers to use influencer marketing on social media. The brands could approach already existing customers to act as

ambassadors. These influencers can be provided with limited edition branded content and products, with the aim of positively influencing their peers.

Lastly, dependency on their smartphones is considered a high priority for Generation Y consumers as respondents indicate that their use of smartphones in their daily lives is very high. They are totally dependent on their smartphone for both work and personal use. Marketers and mobile operators should understand the impact smartphones have on Generation Y students' daily lives and how dependent they are on these devices. Smartphone brands should ensure that their smartphones provide the best possible service to make the respondents' lives more convenient. Furthermore, brands should market the products by focusing on how efficient it can be used for work and daily lives. Marketing campaigns aimed at dependency should be focused on female consumers.

5.6 LIMITATIONS AND RESEARCH OPPORTUNITIES

This study focused on investigating the antecedents of smartphone purchasing behaviour among South African Generation Y students. As with other studies, this study had certain limitations that may stimulate future research. This study is a single cross-sectional study, which lacks the accuracy of a longitudinal study.

The sample was selected using a non-probability convenience sampling method. Several demographic questions were included to determine whether the sample represented the target population, but the results of the study are not entirely representative for the population at large. Future research should be conducted with consideration of other generational cohorts, ethnic groups and non-student respondents. Future research could also measure the perceptions of smartphone mobile operators and distribution channels. This study was only conducted in the Gauteng province. Future studies can be done across South Africa.

The study made use of selected scales to measure perceptions of smartphone brands. Future research should consider other factors as well. This study focused on smartphones, future research could focus on other devices as well.

5.7 CONCLUSION

The smartphone market is saturated with various brands. It is therefore important for these brands to find a way to connect with Generation Y consumers. Generation Y students' preference for specific smartphones is evolving and they show high intentions of better purchasing decision in the near future. Students are very dependent on these devices for both work and personal use. They also possess a high level of brand loyalty. They would even recommend their preferred smartphone brands to their primary social groups. As a group, Generation Y students are a very important market segment for smartphone brands and their buying power surpass those of other generations.

The future of smartphones is bright, as students continue to adopt technology from a very young age. Smartphones are becoming a basic need and tool based on its convenience in their daily lives and social interactions. There are many advantages to smartphones that people could benefit from. The smartphone market will continue to grow and remain a very lucrative business sector worldwide and in the South Africa.

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ANNEXURE A: QUESTIONNAIRE (PILOT STUDY)

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

Antecedents of smartphone purchasing behaviour amongst Generation Y students

Dear participant,

I am currently working towards my thesis under the supervision of Dr R. Muller and co-supervision of Prof. A.L. Bevan-Dye as part of the requirements for completing my MCom in Marketing Management at the North-West University (Vaal Triangle Campus).

The purpose of my research project is to determine Generation Y students' purchasing behaviour towards smartphones.

Please assist me by completing the attached questionnaire. The questionnaire is user-friendly and should take approximately 10- 15 minutes to complete. All responses are confidential and the results will only be used for research purposes, outlined in the form of statistical data.

Thank you most sincerely - your assistance and contribution is highly appreciated.

Lesego Olivia Thebyane
thebyanelesego@gmail.com
Faculty of Economic Sciences & IT

Definition of a smartphone:

A smartphone is a cell phone with advanced capabilities that execute an identifiable operation system which allows users to extend its functionality with third party applications that are available from an application repository (Theoharidou, 2012:445).

SECTION A: DEMOGRAPHICAL INFORMATION

Please mark the appropriate box with a cross (X) or write down your answer.

A1	**Name of your institution:**	North-West University	University of Johannesburg	Vaal University of Technology

A2	**Country of origin:**	South Africa	Other (Please specify):

A3	**Province of origin:**	Eastern Cape	Free State	Gauteng	KwaZulu-Natal
	Limpopo	Mpumalanga	Northern Cape	North West	Western Cape
	Other (please specify):				

A4	**Registered:**	Full-time	Part-time

A5	**Current year of study:**	1st year	2nd year	3rd year	4th year	Post graduate

A6	**Gender:**	Male	Female

A7	**Ethnic group:**	Black/African	Coloured	Indian/Asian	White
	Other (please specify):				

A8	**Please indicate your mother tongue language:**		Afrikaans	English	IsiNdebele	IsiXhosa
	IsiZulu	Sepedi	Sesotho	Setswana	SiSwati	Tshivenda	Xitsonga
	Other (please specify):					

A9	**Age at your last birthday:**	<18	18	19	20	21	22	23	24	25	>25

SECTION B- SMARTPHONE PREFENCE INFORMATION

B1	Do you own a smartphone?	Yes	No

B2	How much time in a day do you spend using your smartphone?				
	1-2hours	3-4hours	5-6hours	7-8hours	more

B3	Are you satisfied with your current smartphone brand	Yes	No

B4	Which brand of smartphone do you currently own?					
	Sony	Samsung	Nokia	Apple	Huawei	LG
	Other (please specify):					

B5	What is your preferred smartphone brand?					
	Sony	Samsung	Nokia	Apple	Huawei	LG
	Other (please specify):					

B6	Would you like to switch to another brand with in the near future?	Yes	No

SECTION C- SMARTPHONE PURCHASING BEHAVIOUR

My preference towards my preferred smartphone is based on the following features:		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
C1	Ability to use applications on the phone	1	2	3	4	5	6
C2	Operating system	1	2	3	4	5	6
C3	Internal memory/ storage	1	2	3	4	5	6
C4	Battery life	1	2	3	4	5	6
C5	Security	1	2	3	4	5	6
C6	Speed of internet connection	1	2	3	4	5	6
C7	Screen size and resolution	1	2	3	4	5	6
C8	Camera Quality	1	2	3	4	5	6
C9	GPS/ Mapping	1	2	3	4	5	6
C10	Video Calling	1	2	3	4	5	6
C11	Gaming capabilities	1	2	3	4	5	6
C12	Design of the phone	1	2	3	4	5	6
C13	Weight of the phone	1	2	3	4	5	6

My preferred smartphone brand is:		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
C14	Reliable	1	2	3	4	5	6
C15	Responsible	1	2	3	4	5	6
C16	Trustworthy	1	2	3	4	5	6
C17	Supportive	1	2	3	4	5	6
C18	Glamorous	1	2	3	4	5	6
C19	Classy	1	2	3	4	5	6
C20	Stylish	1	2	3	4	5	6
C21	Sexy	1	2	3	4	5	6
C22	Upper-class	1	2	3	4	5	6
C23	Outgoing	1	2	3	4	5	6
C24	Outdoorsy	1	2	3	4	5	6
C25	Outspoken	1	2	3	4	5	6
C26	Energetic	1	2	3	4	5	6
C27	Enthusiastic	1	2	3	4	5	6
C28	Entertaining	1	2	3	4	5	6

		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
C29	I prefer to buy an internationally recognized smartphone brand.	1	2	3	4	5	6
C30	I prefer to buy a trustworthy smartphone brand.	1	2	3	4	5	6
C31	I will only buy my favorite smartphone brand.	1	2	3	4	5	6
C32	Brand name is a major factor that often influences my decision towards purchasing a smartphone.	1	2	3	4	5	6
C33	I would still choose my preferred smartphone brand over other brands, regardless that they have the same functionality as my preferred smartphone.	1	2	3	4	5	6
C34	I would recommend my preferred smartphone brand to my friends and family.	1	2	3	4	5	6
C35	I consider myself to be loyal to my preferred smartphone brand.	1	2	3	4	5	6
C36	I would not consider another brand when purchasing a smartphone.	1	2	3	4	5	6
C37	I consider price as an important factor when purchasing a smartphone.	1	2	3	4	5	6
C38	I compare prices of other smartphones brands and store brands before I make a purchase decision.	1	2	3	4	5	6
C39	I will only buy a smartphone during a price reduction period.	1	2	3	4	5	6
C40	I think that using a smartphone is expensive overall.	1	2	3	4	5	6
C41	I measure the value of a smartphone according to its price.	1	2	3	4	5	6
C42	I intend to purchase my preferred smartphone brand in the near future.	1	2	3	4	5	6
C43	I search for information regarding my preferred smartphone brand from time to time.	1	2	3	4	5	6
C44	I always talk about my preferred smartphone brand with my friends.	1	2	3	4	5	6
C45	Purchasing my preferred smartphone brand is beneficial for my daily life.	1	2	3	4	5	6
C46	I intend to continue using a smartphone in the near future.	1	2	3	4	5	6

		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
C47	I intend to make a better purchasing decision of a smartphone in the near future.	1	2	3	4	5	6
C48	Overall my positive experience outweighs my negative experience with smartphones.	1	2	3	4	5	6
C49	Almost all of my friends/family members make use of my preferred smartphone brand.	1	2	3	4	5	6
C50	The purchasing decision towards my preferred smartphone brand is influenced by my family/friends.	1	2	3	4	5	6
C51	People around me have stimulated me in using my preferred smartphone brand.	1	2	3	4	5	6
C52	I have interest in knowing which smartphone makes a good impression on my friends.	1	2	3	4	5	6
C53	I achieve a sense of belonging by purchasing the same smartphone as my friend's.	1	2	3	4	5	6
C54	It is important that my friends like the smartphone that I purchase.	1	2	3	4	5	6
C55	I make smartphone purchase decisions based on other people's advice or comments.	1	2	3	4	5	6
C56	I always use my smartphone to deal with my work.	1	2	3	4	5	6
C57	I'm totally dependent on my smartphone.	1	2	3	4	5	6
C58	I cannot do anything related to my work without a smartphone.	1	2	3	4	5	6
C59	I feel insecure when my phone is not with me.	1	2	3	4	5	6
C60	In my daily life, the use of a smartphone is very high.	1	2	3	4	5	6

Thank you for your time!

ANNEXURE B: QUESTIONNAIRE (MAIN STUDY)

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

Antecedents of smartphone purchasing behaviour amongst Generation Y students

Dear participant,

I am currently working towards my thesis under the supervision of Dr R. Muller and co-supervision of Prof. A.L. Bevan-Dye as part of the requirements for completing my MCom in Marketing Management at the North-West University (Vaal Triangle Campus).

The purpose of my research project is to determine Generation Y students' purchasing behaviour towards smartphones.

Please assist me by completing the attached questionnaire. The questionnaire is user-friendly and should take approximately 10- 15 minutes to complete. All responses are confidential and the results will only be used for research purposes, outlined in the form of statistical data.

Thank you most sincerely - your assistance and contribution is highly appreciated.

Lesego Olivia Thebyane
thebyanelesego@gmail.com
Faculty of Economic and Management Sciences

Definition of a smartphone:

A smartphone is a cell phone with advanced capabilities that execute an identifiable operation system which allows users to extend its functionality with third party applications that are available from an application repository (Theoharidou, 2012:445).

SECTION A: DEMOGRAPHICAL INFORMATION

Please mark the appropriate box with a cross (X) or write down your answer.

A1	**Name of your institution:**	North-West University	University of Johannesburg	Vaal University of Technology

A2	**Country of origin:**	South Africa	Other (Please specify):

A3	**Province of origin:**	Eastern Cape	Free State	Gauteng	KwaZulu-Natal
	Limpopo	Mpumalanga	Northern Cape	North West	Western Cape
	Other (please specify):				

A4	**Registered:**	Full-time	Part-time

A5	**Current year of study:**	1st year	2nd year	3rd year	4th year	Post graduate

A6	**Gender:**	Male	Female

A7	**Ethnic group:**	Black/African	Coloured	Indian/Asian	White
	Other (please specify):				

A8	**Please indicate your mother tongue language:**			Afrikaans	English	IsiNdebele	IsiXhosa
	IsiZulu	Sepedi	Sesotho	Setswana	SiSwati	Tshivenda	Xitsonga
	Other (please specify):						

A9	**Age at your last birthday:**	<18	18	19	20	21	22	23	24	25	>25

SECTION B- SMARTPHONE PREFENCE INFORMATION

B1	Do you own a smartphone?	Yes	No

B2	How much time in a day do you spend using your smartphone?				
	1-2hours	3-4hours	5-6hours	7-8hours	more

B3	Are you satisfied with your current smartphone brand	Yes	No

B4	Which brand of smartphone do you currently own?					
	Sony	Samsung	Nokia	Apple	Huawei	LG
	Other (please specify):					

B5	What is your preferred smartphone brand?					
	Sony	Samsung	Nokia	Apple	Huawei	LG
	Other (please specify):					

B6	Would you like to switch to another brand with in the near future?	Yes	No

SECTION C- SMARTPHONE PURCHASING BEHAVIOUR

My preference towards my preferred smartphone is based on the following features:		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
C1	Ability to use applications on the phone	1	2	3	4	5	6
C2	Operating system	1	2	3	4	5	6
C3	Internal memory/ storage	1	2	3	4	5	6
C4	Battery life	1	2	3	4	5	6
C5	Security	1	2	3	4	5	6
C6	Speed of internet connection	1	2	3	4	5	6
C7	Screen size and resolution	1	2	3	4	5	6
C8	Camera Quality	1	2	3	4	5	6
C9	GPS/ Mapping	1	2	3	4	5	6
C10	Video Calling	1	2	3	4	5	6
C11	Gaming capabilities	1	2	3	4	5	6
C12	Design of the phone	1	2	3	4	5	6
C13	Weight of the phone	1	2	3	4	5	6

My preferred smartphone brand is:		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
C14	Reliable	1	2	3	4	5	6
C15	Responsible	1	2	3	4	5	6
C16	Trustworthy	1	2	3	4	5	6
C17	Supportive	1	2	3	4	5	6
C18	Glamorous	1	2	3	4	5	6
C19	Classy	1	2	3	4	5	6
C20	Stylish	1	2	3	4	5	6
C21	Sexy	1	2	3	4	5	6
C22	Upper-class	1	2	3	4	5	6
C23	Outgoing	1	2	3	4	5	6
C24	Outdoorsy	1	2	3	4	5	6
C25	Outspoken	1	2	3	4	5	6
C26	Energetic	1	2	3	4	5	6
C27	Enthusiastic	1	2	3	4	5	6
C28	Entertaining	1	2	3	4	5	6

		Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
C29	I would still choose my preferred smartphone brand over other brands, regardless that they have the same functionality as my preferred smartphone.	1	2	3	4	5	6
C30	I would recommend my preferred smartphone brand to my friends and family.	1	2	3	4	5	6
C31	I consider myself to be loyal to my preferred smartphone brand.	1	2	3	4	5	6
C32	I would not consider another brand when purchasing a smartphone.	1	2	3	4	5	6
C33	I intend to purchase my preferred smartphone brand in the near future.	1	2	3	4	5	6
C34	I search for information regarding my preferred smartphone brand from time to time.	1	2	3	4	5	6
C35	I always talk about my preferred smartphone brand with my friends.	1	2	3	4	5	6
C36	Purchasing my preferred smartphone brand is beneficial for my daily life.	1	2	3	4	5	6
C37	I intend to continue using a smartphone in the near future.	1	2	3	4	5	6
C38	I intend to make a better purchasing decision of a smartphone in the near future.	1	2	3	4	5	6
C39	Overall my positive experience outweighs my negative experience with smartphones.	1	2	3	4	5	6
C40	Almost all of my friends/family members make use of my preferred smartphone brand.	1	2	3	4	5	6
C41	The purchasing decision towards my preferred smartphone brand is influenced by my family/friends.	1	2	3	4	5	6
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Thank you for your time!