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Master thesis

School of Economics and Business Sciences



Factors Influencing the Purchase Intention of Smart Wearable Technology

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Factors Influencing the Purchase Intention of Smart Wearable Technology

A Research Report Submitted to the Faculty of Commerce, Law and Management

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School of Economics and Business Sciences

In partial fulfilment of the requirements of a Master Degree in Marketing

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Supervisor

Mr. Norman Chiliya

Johannesburg, May 2017

Declaration

I hereby declare that this thesis is my own original work and that, to the best of my knowledge and belief, it has not been previously published by another party in fulfilment of a degree at another University or Institute of higher learning, except where due acknowledgement is made in the text.

Evelyne Kasongo Nkonko

31/05/2017

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I dedicate this thesis to the glory and honour of Jesus Christ, the Blessed Virgin Mary, and all the Saints; and with love and gratitude to my parents, Augustin and Oscarine Kalenda, who have always supported and encouraged me and gave me the greatest gifts of all: life, financial and emotional support. May God reward you.

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Abstract

The consumer market of Smart wearable technology has shown a massive growth, therefore convincing that Smart wearable technology will be the next great thing, with market analysts forecasting its market to be worth over $30 billion by 2020. However this belief is mainly driven by major new technology manufacturers to produce Smart wearable devices that commoditise cellphones, tablets, and portable computers to influence consumer purchase intention.

Consumers purchase intention is crucial for every business survival, therefore cannot be overemphasised. With the increasing number of Smart wearable technology brands on the electronics market, South African consumers have to make a choice on which brands to purchase. This study examines the factors influencing the purchase intention of Smart wearable technology in South Africa, with a special focus on product quality, design, price, and consumer attitude.

From the academic side, the study makes a significant contribution by exploring the impact of product price and consumer attitude on consumer purchase intention. As a result, manufacturers in the wearable technology industry may apply this study information to develop proper strategies that will help influence more people to purchase wearable devices and ensure Smart wearable technology market growth.

The study data were collected through the aid of a self-administered hardcopy questionnaire, which was circulated by the researcher in the University of the Witwatersrand Johannesburg. The research findings show that both consumer attitude and product price have a significant positive effect on the intention to purchase Smart wearable devices. Nevertheless, to be more precise, the effect of consumerôs attitude on purchase intention goes through the positive effect of a product design on consumerôs attitude. Both product quality and price are found to extend the effect of positivity of consumerôs attitude toward the product or brand, and the price tag of the product. These scenarios are fully supported in hypotheses one, two, and three. Although both quality and design positively influence product price, Product design is found to have an enlarging effect on product price. Generally, it can be stated that the design of a product successfully influence the price set for product.

Key words*: Smart wearable technology, wearable devices, Smartwatches, fitness bands, product quality, design, price, consumer attitude, consumer purchase intention*

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Chapter One (1) BACKGROUND/OVERVIEW OF THE STUDY

1.1 Introduction

Given the substantial growth and increased competition in today's technology industry, consumersô needs are unceasingly growing, thereby presenting manufacturers with the need to understand consumersôpurchase intention and ensure the organisationôs success and survival. The wearable technology market has effectively established an ecosystem of more than 30 000 companies covering both market leaders and great innovative companies. This market has gained popularity at a very fast pace and has gone beyond more than just connected eyewear and Smartwatches with new products such as Smart shoes, wristbands or Smart apparel (Grant, 2015). The ówearableôterm is often applied to several products. However, for a product to be termed óSmartô, the wearable needs to contain active electronics, which could be a sensor, some form of haptic, audio or visual feedback, as well as a way of communicating data via a wireless link (Hunn, 2015).

Technology has been integrated into different industries and is perceived as the new differentiator, the main means of grabbing consumersôattention and a source of competitive advantage of the present crowded fashion marketplace (Arthur, 2015). Firms are battling to attract consumersô attention toward their respective products. Influencing consumersôpurchase intention toward a brand or product is not an easy task. According to Rizwan, Jamal, Abidin, Zareen, Khan, Farhat, & Khan (2013), predicting consumer behaviour is one of the most difficult tasks for any business, as it keeps on altering under the influences of unknown and doubtful factors; thereby leading to a purchase intention which is deadly to measure under different conditions. Therefore, it is of growing concern to look at factors that influence consumersô purchase intention of Smart wearable technology.

Singh & Khan (2012) noted that the importance of consumersô purchase intention in a marketplace cannot be overemphasised, due to the impact it has on business sales and profitability and that consumersô intention to buy any product results in higher profit margins, competitive advantage, and faster business growth.

Chaniotakis, Lymperopoulos, & Soureli (2010), in their study, cited that, consumersôattitude, extrinsic factors and intrinsic factors of the products, are factors influencing consumersôpurchase intention in the first place. Therefore, manufacturers ought to be familiar with the impact that each factor may have on the consumersôminds because a thorough understanding of the interdependency of each factor will help any business to market its inventory, attract more customers and close more deals.

Studies on factors influencing consumersô purchase intention are many. In their study, Chaniotakis et al. (2010) noted that product quality is an important competitive issue in marketing which most influences consumersô purchasing decision, Therefore, overlooking quality in product development results in a lack of sales. According to Technavio (2014), quality constraints represents a challenge in the global Smart wearable technology market. Consumers are reluctant to buy wearable technology devices because of high power consumption, short battery life and risk of data breach, which are reducing quality levels of wearable technology devices, thus, justifying the slow market growth and consumersôadoption of Smart wearable technology devices.

Thakor & Katsanis (2007) noted that, overall, company sales will be slow if the quality of its products is perceived to be low and that product quality does influence consumersôintention to purchase. Despite the growing awareness of the influence that quality has on consumersô intention, few scholars have covered the major role it plays in the Smart wearable technology market.

According to Bloch (2011), the issue of product design has been widely overlooked, and one of the reasons is that many producers view design as superficial styling, therefore, minimizing the impact of product design on buyersô buying decision and obscuring its relationship with other areas that are of interest to consumers such as quality, consumersôattitude and involvement. According to Robert & Veryzer (2009), poor design can have a significant impact on consumersôresponse to products, and, as such, product design is a legitimate marketing interest that merits the attention of output manufacturers because high-end design is associated with high prices.

Price is an inevitable factor in determining productsô and services value, as it represents an essential factor to marketers because it portrays an organisationôs assessment of the value customers see in their goods and services and are willing to pay. According to Owusu (2013), it has long been identified that consumers perceived price as an indicator of product or service quality and evaluate the cost regarding perceived benefits derived from the consumption of the offering. A firm that desires to indicate that its goods and / or services are of the highest quality will charge a high price, since a high price is a predictor of both good quality and design. In most cases, when consumers are given the opportunity to choose from a variety of offerings, the price is one of the comparative indicators upon which consumersôpurchasing decisions are based.

According to Chaniotakis et al. (2010), consumersôattitude and way of thinking are important factors that influence consumersôpurchase intention. Customersôattitude toward a brand will play a significant role in determining the growth of any business (Poole, 2010). According to Jaafar, Lalp & Mohamed (2012), consumersô attitude toward a brand or product may result in purchasing the product or not. Reichheld & Sasser (2007) mentioned that, consumersôdecision to

make a purchase often occurs when their attitude toward a particular product is positive.

Consumersôpositive attitude toward a firmôs product can be a great asset to the company because consumers who hold a positive attitude of the product are willing to pay any price for that product. Cant, Brink & Brijball (2009) noted that, a firm that invests in changing consumersô attitude through enhancement of product quality and design, is more likely to be recognised among competitors, and is liable to gain more consumers who will purchase and talk positively about the product with friends and relatives. In essence, this free word-of-mouth advertising enables companies to increase sales, lower cost of promotion and set a favourable price for its products.

1.2 Research gaps

There appears to be a void in the academic body of knowledge regarding the Smart wearable technology market in South Africa. Most academic studies on Smart wearable technology have mostly been conducted in countries such as Korea, Turkey, England and the United States of America. Therefore, there is a need to construct a model that will suit the South African market and also highlight reasons that influence South Africansô purchase intention of Smart wearable technology. In addition, several scholars have proved that product quality, design, price and consumersôattitude have a significant and positive relationship toward consumersôpurchase intention (Jalilvand et al., 2011; Llusar et al., 2010; Moore, 2010; Munnukka, 2008; Khraim, 2011; Chandon, 2011; Ibrahim, Kassim, & Mohamood, 2013). However, despite the growing awareness of the influence that product quality, design, price and consumersô attitude have on consumersô purchase intention, little research has covered the major role that they could play in the Smart wearable technology market. The importance of design, especially, has been largely overlooked due to the

manufacturersôconceptions of product design as a superficial styling (Berlyne, 2014).

This study attempts to fill in these gaps by studying product quality, design, price and consumersôattitude, as four significant factors that influence consumersô purchase intention of Smart wearable technology ó also known as the internet of thingsô(IOF) in the South African context. The remaining part of the study is structured as follows: problem statement; purpose and objectives of the study; research questions; and lastly, providing the justification for, or importance of, the study.

1.3 Problem statement

In his study, Juniper (2015) showed that there is no doubt that the Smart wearable technology market is the next great innovation that offers many benefits to its users, but it is important to note that this market is still in its infancy, and therefore has much growing up to do.

Past studies on the wearable technology market pointed out that it is a narrow market because it is mostly identified by early adopters and early abandonment. This observation is strengthened by the research from Endeavour Partners in the US, which found that one-third of consumers who have owned a Smart wearable technology have stopped using it within six months (Ledger, 2014).

Song (2014) noted that more than 60% of people think that Smart wearable technologies are not mainstream products which one should purchase or possess. The author also pointed out that this market of Smart wearable technology lacks critical marketing points that create a real market for any product. Firstly, regarding design concerns, manufacturers in this market seem to be more focused on technology rather than design issues that influence consumersô purchase intention, since they do not reflect on the consumersô fashion

preferences and choice, and therefore delay consumers from purchasing them.

Secondly, the price of Smart wearable technology is very high but is perceived to offer little value compared to Smartphones, which are affordable but still offer greater value to consumers. According to Technavio (2014) the prices of Smart wearable watches from top brands such as Apple, Samsung and Sony are too high and of little value therefore and prevent many consumers from seeing the innovation and paying a dear price for a Smartwatch. Last but not least, Privacy and Security issues are other challenges that are hindering consumersô purchase intention of Smart wearable technology. Information on Smart wearable technology devices can be easily retrieved by cyber criminals; also the size of these devices presents a significant risk because they can easily be displaced or stolen. However, this will not be part of this research because it has already been studied by Song (2014) & Thierer (2014).

According to Berger, Akselrod, Gordon, Cohen (2007), although Smart wearable technology has been around for many years, it is only in its infancy, therefore those involved in this revolution need to make a significant investment in research and development, because success in the wearableôs markets will be driven by companies that continually put consumersô needs first (Lewren, 2015). Moreover, these companies should consider why consumers want technology connected to their bodies and how it could augment their lives. In fact, adding information accuracy and device stability, companies can successfully create beautiful, intuitive products that consumers will want to buy.

1.4 Purpose of the study

The aim of the study was to investigate the factors influencing the purchase of Smart wearable technologies (Smartwatches, Wristbands and Smart Glasses) within the South African market.

1.5 Objective of the study

1.5.1 Theoretical objectives

The following theoretical objectives were developed:

- To review literature on product quality
- To review literature on product design
- To review literature on consumersôattitudes
- To review literature on product price
- To review literature on consumer purchase intention

1.5.2 Empirical objectives

- To investigate the influence of product quality on price
- To investigate the influence of product design on product price
- To investigate the influence of product design on consumersô attitude.
- To investigate the influence of product price on consumersô purchase intention.
- To investigate the influence of consumer attitude on consumersôpurchase intention.

1.6 Research questions

To address the identified research gap and satisfy the study objectives, this thesis was guided by the following research questions:

- To what extent does quality influence the price of Smart wearable technology?
- To what extent does design influence the price of Smart wearable technology?
- To what extent does product design influence consumer attitude toward Smart wearable technology in South Africa?
- To what extent does price influence consumersô purchase intention of Smart wearable technology in South Africa?
- To what extent does consumersôattitude influence consumersô purchase intention of Smart wearable technology in South Africa?

1.7 Contribution or Justification of the study

South Africa has a broad range of wearable technology devices, and its population is the major responsible factor for the sales of any products.

The importance of this study will be two-fold. Firstly, the research aimed to contribute to the discussion on the four listed variables, identified as factors influencing the purchase intention of wearable technology, namely: quality, design, price and consumersôattitude, to fill the gap that currently exists.

On the academic side, the study made a significant contribution by exploring the impact of quality on design, the impact of design on consumer attitude, the influence of design on price, the effect of price on consumer purchase intention and, lastly, the impact of consumer attitude on customer purchase intention with regards to Smart wearable technology devices in the South African context - a country where the sales of new technology products is without a doubt growing and regarded as one of the most promising African markets where western devices are constantly imported. Secondly, the research aspired to be of particular value to new technology manufacturers in the wearable industry, by assessing product quality, product price, product design, consumer attitude and consumer purchase intention from a South African viewpoint.

Hence, Smart wearable device manufacturers may apply this information to develop proper strategies that will help influence more customers to buy wearable devices, as well as find proper ways to attract more clients and ensure wearable technology market growth.

Chapter Two (2) OVERVIEW OF THE SMART WEARABLE TECHNOLOGY MARKET

2.1 Introduction

The next great wave of innovation has arrived and it is poised to transform the way people interact with each other and the world around them. This chapter encompasses an overview of the wearable technology, the factors that influence adoption of wearable technology and the South African market of Smart wearables. The chapter further highlights some of the opportunities and challenges faced by the wearable technology industry and, lastly, the future of Smart wearable technology industry.

2.2 Overview of wearable technology

Wearable Technology is the pioneer, a world-leading market development and innovation platform for new technologies that a user wears close to the body, on the body and even in the body. Though wearable connected products are not new, at present there is massive excitement in the consumer market of electronics with the increased development of wearable technology.

Wearable technology has been around in various forms for almost forty years. The invention of wearable devices can be traced back to the 16th century with the invention of the first portable watch. However, it wasnôt until the 20th century that wearable technology started to be popular, with the Pulsarôs calculator wristwatch being the first consumer wearable device to achieve worldwide success (Song, 2014). For decades, medical, military forces and business professionals have been using wearable technology. However, it is only recently that the private consumer market has started to feature items such as Smart glasses, Smartwatches, wearables, fitness and health trackers or even Smart jewellery and fashion.

Since the year 2006, the wearable technology platform has effectively established an ecosystem of more than 30 000 companies covering both market leaders and large innovative companies.

At present, the wearable technology market has gained popularity at a very fast pace and has gone beyond just connected eyewear and Smartwatches, to new products such as Smart shoes, wristbands or Smart apparel (Grant, 2015). According to Ledgard (2015), the worldwide wearable market is estimated to reach a value of 19 billion U.S. Dollars in 2018, which represents more than ten times its value five years ago.

The giant technology producers such as Google, Nike, Samsung, Apple and other numerous start-ups are delving into wearable devices (Song, 2014). The wearable technology industry has become more of a trend that every company desires to join and be counted in, to prove their innovation ability. According to Dunne & Raby (2014), Tesla, an automobile company, recently joined the wearable technology industry, claiming that the firm HMI system within its cars is a wearable new technology device.

The interesting chart of wearable technology global market share presented below in Figure 10, records a steady increase in the wearable devices global shipments, and it is expected to double in volume over the next two years (Cisco VNI Mobile, 2014).

Wearable technology global market share

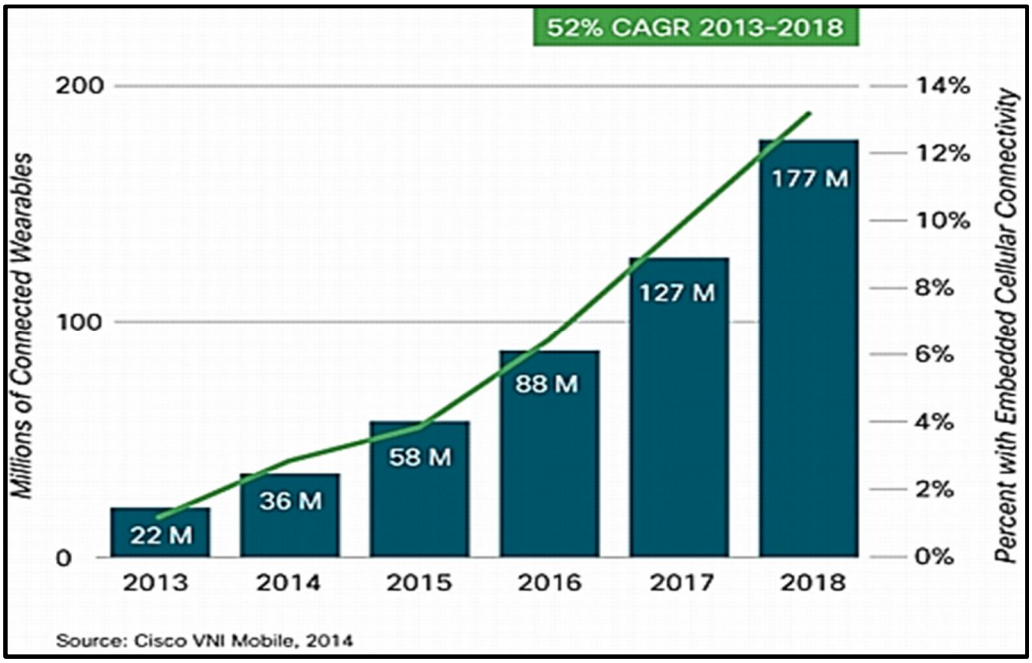

Fig 1 : Wearable technology global market share
Source: Cisco VNI Mobile, 2014

As seen in Figure 2, companies manufacturing wearable technologies are numerous as mentioned earlier and are categorised into four: fitness and wellness, infotainment, healthcare and medical, and lastly, industrial and military. However, the most innovative producers of Smartwatches are Sony, Samsung, Lenovo, LG, Apple, Pebble and Fitbit, while the most successful fitness trackers so far are produced by Nike, Fitbit and Jawbone. Although manufacturers in this industry use different strategies to produce wearable devices, they share the same main objective, which is to create apparel, accessories and fitness wear that is able to do anything for its users, from monitoring usersô heart rate to charging a Smartphone irrespective of brand names (Grant, 2015).

Giant Smart wearable technology producers



Fig.2: Giant Smart wearable technology Producers
Source: Song, 2014

2.2.1 The expanding world of Smart wearable technology

the U.S. National Science Foundation (2002) report, titled Converging Technologies for Improving Human Performance, had predicted that, within the next two decades, ñComfortable, wearable sensors and computers will improve every creatureôs awareness of his or her health condition, environment, chemical pollutants, potential hazards, and information of interest to local businesses, natural resources, and the likeò(Mihail, Roco & Sims, 2002).

About 12 years later, the future that the National Science Foundation predicted is beginning to emerge. Even though basic wearable technologies such as Bluetooth-enabled communications headsets, calculator wristwatches and hearing aids for many years have already been introduced on the market, it is until recently that this market has started to expand quite rapidly (Thierer, 2014). Even though ôSmart wearables are still looking for their killer appõ, the health and fitness wearable devices are already widely used today. The most popular

examples include the Fitbit and Jawbone wearable fitness bracelets, which have been on the market for several years and command the bulk of market share (Kerr, 2014).

Wearable technologies are gaining more widespread public visibility and currently even have their product section on the main online top sellers such as Amazon.com (Tsukayama, 2014). According to research firm Canalys (2014), there was a 70% growth in the global market for Smart wearable bands in the second half of the year 2013 (Clinch, 2014). According to 2014 IDC reports ñSmart wearable devices have taken a huge step forward over the past years, and shipment volumes exceed 19 million units in 2014, more than tripling the sales of 2013.

2.2.2 What is Smart wearable technology?

Before looking at Smart wearable technology in detail, it is essential to define a Smart wearable, as the wider ówearableô term is often applied to several products. For a product to be termed ñSmartò, the wearable needs to contain active electronics, which could be a sensor, some form of haptic, audio or visual feedback, as well as a way of communicating data via a wireless link (Hunn, 2015). Also, Smart wearable requires autonomous connectivity, but that excludes wired headsets, fitness devices that use USB cables to connect and LED T-shirts and shoes (Hunn, 2015).

According to CSS Insight (2015) nowadays, whenever people hear or think about wearable technology, they automatically think of sports aids that help people to monitor and track their movements or assist people with GPS during physical exercises. However, wearable technology extends beyond these concepts to all sorts of new products with a range of focuses and capabilities, including eyewear, wristbands, jewellery clip-ons, Smartwatches and wearable cameras like GoPros.

According to Nagtegaal et al. (2015), wearable technology can be referred to as a type of technology that is incorporated into electronics,

which can be worn on human bodies, either as an accessory or as part of materials used in clothing. Moreover, one of the main features of wearable technology is its ability to connect to the Internet, enabling data to be exchanged between a network and the device (Dervojeda et al., 2015).

More recently, Morrison (2014) defined wearable technology as ñthe network of everyday physical objects which surround us and that are increasingly being embedded with technology to enable those objects to collect and transmit data about their use and surroundings.ò These supposed low-power devices certainly rely on sensor technologies as well as existing wireless networking systems and protocols (Wi-Fi, Bluetooth, near field communication, and GPS) to facilitate those objectives. In turn, this reliance will fuel the creation of even more ólarge datasô(Amy, Adam, Fleisher & Alistair, 2014). Moreover, several of these technologies and capabilities operate in the background of consumersô lives and are almost invisible to them.

According to Thierer (2014), wearable technologies are networked devices that collect data, track activities and customise experiences to usersôneeds and desires. Wearable technologies are a subset of Internet of Things, which comprises networked ósmart devicesô equipped with microchips, sensors, and wireless communications capabilities (Thierer, 2014). Song (2014) defines wearable technology as products that need to be worn on the userôs body for an extended period, promising to enhance the userôs experience as a result of the product being worn.

2.2.3 Applications of Smart wearable technology in the consumer market

Just as Smartphonesô applications are continuously increasing, applications of Smart wearable technology are continuously increasing and are closely connected to new developments in software and the emergence of the Internet of Things, the larger trend encompassing wearable technology (Nagtegaal et al., 2015). The various applications of Smart wearable technologies can be seen in Figure 3; some of the

main applications are light embodiment, identity recognition, emergency services, brain and eye movement, weight/energy monitoring, fitness monitoring, and decorative display.

According to Adapta (2016), having fitness apps in smartwatches is one more added bonus functionality which makes users feel it is worth the money spent and because more and more people are taking to fitness route. As a result, fitness app has become a major influencing factor for users to adopt smartwatches. Insurance companies, educational institutions and other workplaces have been encouraging and providing incentives to their clients and employees to keep fit while using these fitness trackers as a measurement (Adapta, 2016). So having fitness apps and trackers built into a smartwatch is definitely an important motivation for users to buy smartwatches.

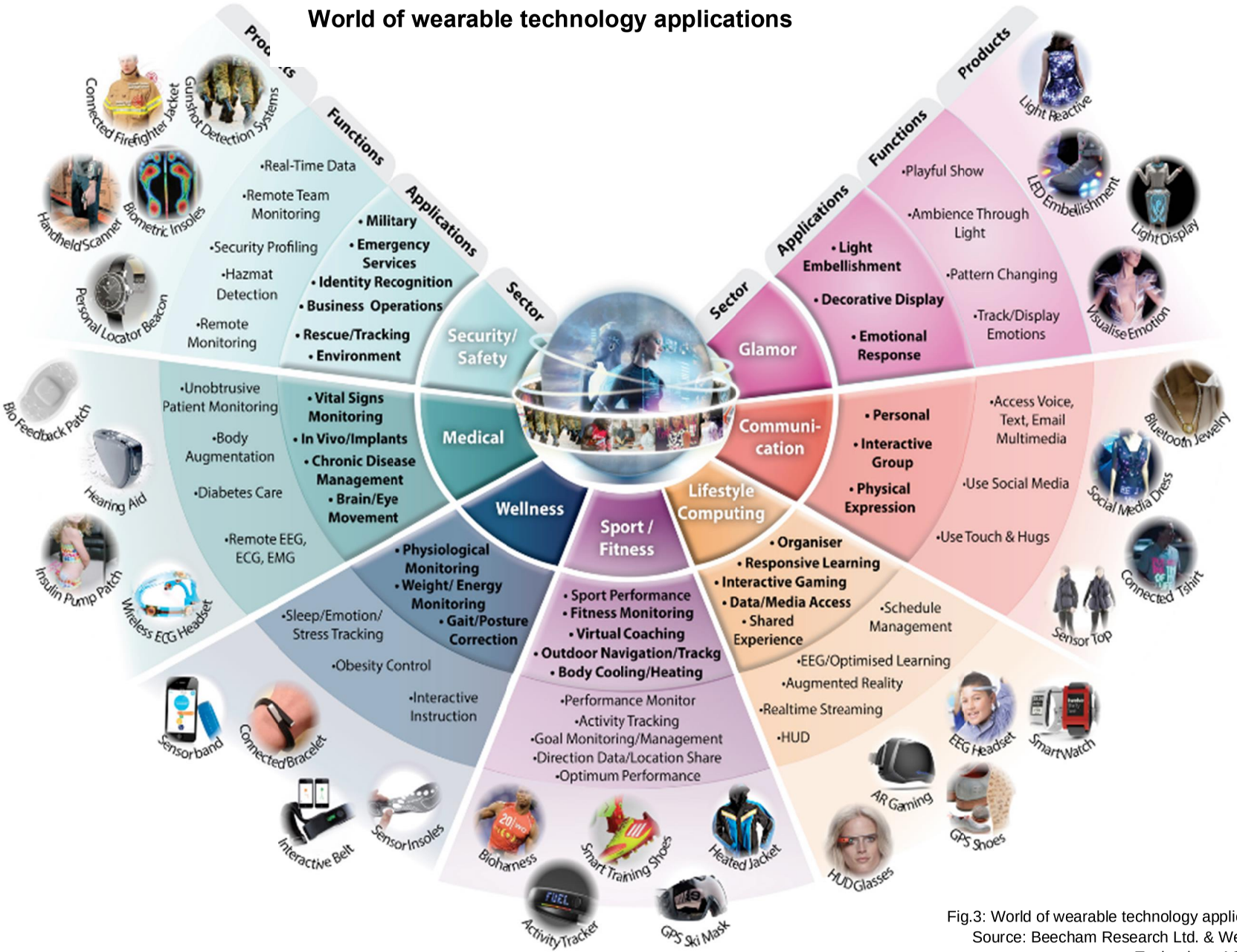

Fig.3: World of wearable technology applications
Source: Beecham Research Ltd. & Wearable Technology AG, 2013

2.2.4 Types of Smart wearable Technologies

For the past few years the most popular wearable technologies on the consumer market appear to be and will continue to be, those that consumers wear around their wrist, such as Smartwatches and health and fitness trackers, which are expected to account for nine out of 10 wearable devices bought worldwide. In addition to established technology companies such as Samsung, Sony, Google and more, there is an increasing number of new entrants with potentially disruptive technologies that are looking to gain a place in the market. The wearable technology market has already been established, and major devices available on the markets are :

- **Smartwatches:** from Sony, Samsung, Apple Watch, LG Watch, Urbane, Pebble
- **Fitness Trackers/ Wristbands:** from top technology developers Jawbone, Misfit, Fitbit, Garmin, etc.
- **Smart Glasses:** from Google, Microsoft, CastAR, Moverio BT-200

2.2.4.1 Smartwatches

Smartwatches are simply effectively wearable computers and are sophisticated, with the majority of Smartwatches running on mobile applications, while a minor number of them still run on mobile operating systems and are functioning as portable media player devices, offering audio, playback of FM radio, and video files to the consumers via a wireless connection of Bluetooth headsetô Moreover, Smartwatches also have the ability to perform calls or answer calls, a full mobile phone device. The characteristics of Smartwatch devices included many features such as calculator, camera, altimeter, accelerometer, thermometer, barometer, GPS navigation, compass, chronograph, cell phone, map display, graphical display and the wearable Smartwatches are touch screen technology.

According to Higginbotham & Ishmael (2014), main developers of Smartphones and tablets such as Apple and Samsung have become

more active in the wearable technology space, with their constant upgrade of applications and services that are more likely to give Smartwatches even greater visibility on the market. Beyond their touch screens and wireless networking capabilities, Smartwatches include sensors, accelerometers, cameras, microphones, and other capabilities that can be used to collect and transmit various types of user information.

2.2.4.2 Fitness Tracker and Google Glass

According to Makarechi (2014) Wearable Fitness Trackers are a type of Smart wearable device that are often used for medical purposes. Such devices are synced wirelessly to computers and Smartphones for data tracking and ensure 24/7 health monitoring. In addition, the wearable fitness trackers enable users to monitor and track their fitness report such as distance covered during the walk.

They are often used during soccer games to determine the distance covered by each player and monitor usersô calorie consumption, and heartbeat. Google, not long ago, made a major splash in the wearable technology space by developing Google Glass and patented ñSmart contact lensesò also known as ophthalmic electrochemical sensors that help diabeticôpatients to easily monitor their blood sugar levels and that could also lead to other wearable medical applications in the future (Makarechi, 2014).

Also, doctors and nurses are using Smart glasses for scanning the patientôs personal tag to confirm cure routes and instantaneously access records, while surgeons are using Smart glasses during operations consulting with co-workers within the organisation or experts overseas. According to Cisco wearable forecast (2014) in Figure 4, the consumer wearable technology market survey worldwide showed that healthcare devices and sport and wellness trackers dominate and will continue to be consumersô choice of wearable technologies, followed by Smartwatches, Smart glasses, wearable cameras, wearable 3D motion

and Smart clothing respectively. Also, the ranking is estimated to remain the same until 2019.

As mentioned before, the wearable technology platform has successfully established an ecosystem of more than 30 000 companies since 2006. The chart ranks Pebble technology as the top Smart wearable bands selected by wearable technology users, followed by Samsung and Sony respectively. Figure 4.

Smart wearable bands, worldwide, units' percentage by vendor

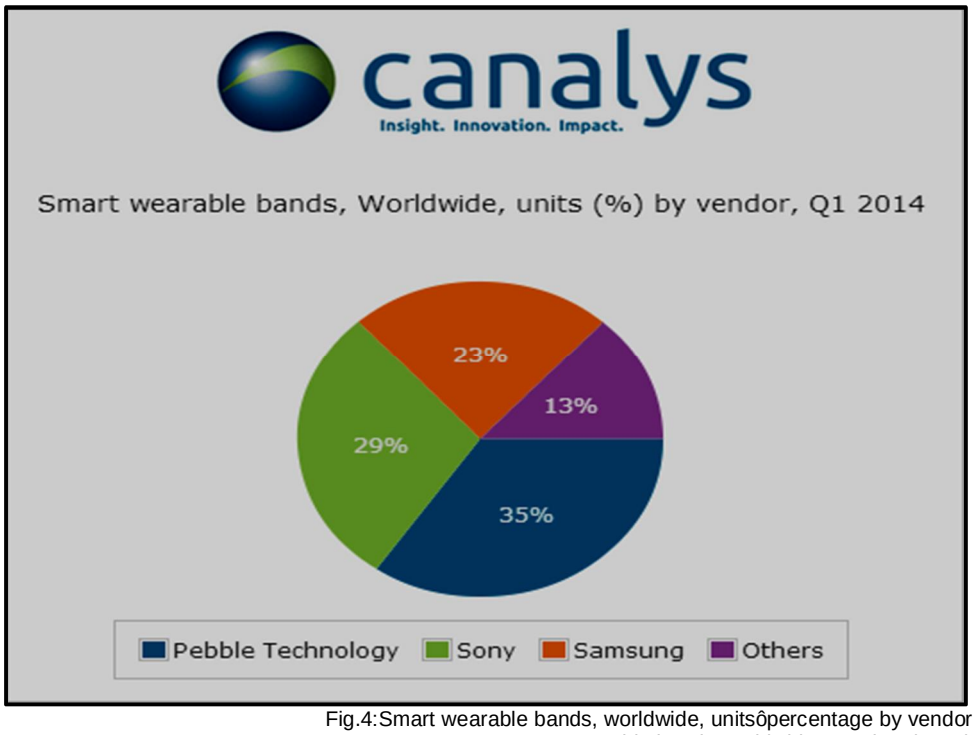

Fig.4:Smart wearable bands, worldwide, unitsôpercentage by vendor
Source: Smart wearable bands worldwide Canalys, (2014)

Wearable technology forecast

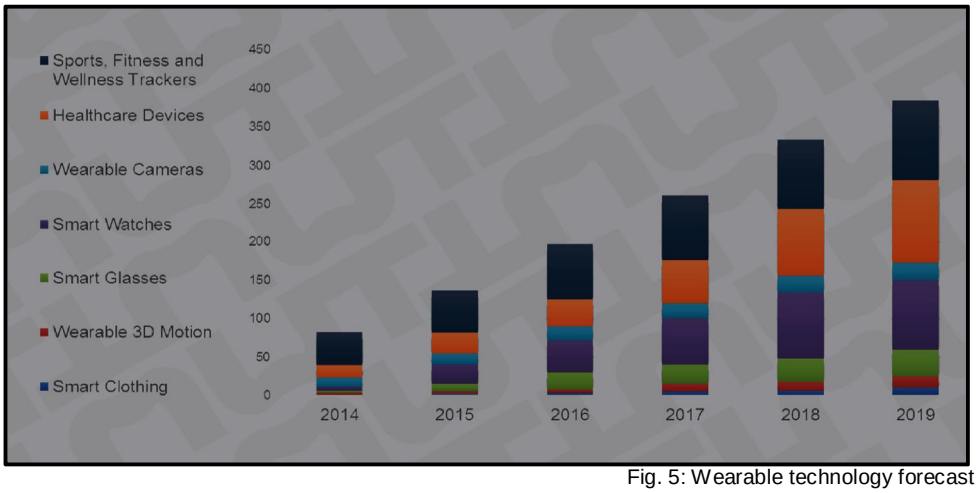

Fig. 5: Wearable technology forecast
Source: Cisco wearable forecast (2014)

2.2.5 Wearable technology market in South Africa

The Smart wearables industry is very much a technology based industry, where products are often created ahead of the recognition of existing recognised consumer needs. Therefore, Smart wearables devices development relies on consumersôpossible future needs. According to Karjaluoto et al. (2005) the companies that best predict the technologies and features of the future are more likely to be the leaders in the industry, thus, a clear understanding of future consumer needs is critical in matching supply and demand.

According to several leading research institutes, the wearable technology market could be the next mega technology trend across the world and South Africa is not an exception. Wearable technology is no longer an international trend; African countries have also ventured into the world of wearable technology and in South Africa wearable technologies are among the fastest-growing sector of innovation products, which promise to have widespread societal influences in the coming years.

Recent study conducted by TNS found that South African consumers need more time before totally embracing wearable technologies. 75% of consumers in the country are aware of wearable computing devices. However, only 10% of respondents have purchased them. Also, people in South Africa are enthusiastic about wearable technologies health-related features, but more than 55% of people mentioned that wearable technologies are very costly and wish not to purchase another device to add to their existing collection (Mielach, 2013).

2.2.6 Factors influencing adoption of Smart wearable technologies

There are some new entrants into the Smart wearable industry. However, the mainstream companies with significant market share are Samsung, Apple, Sony, Google and LG. Each company adopts different strategies to influence buyersôintention. According to Dicey, (2015) South Africans are clearly comfortable using mobile technology and just recently the

country was named the most developed digital economy in Africa by MasterCardôs Digital Evolution Index.

One of the most important aspects when launching a new product involves identifying features of the product that allow it to garner a huge market share (Floyd & Lydia, 2012). From the surveyed customers in South Africa, Casey (2013), who has investigated the factors influencing the demand for Smart wearable devices amongst South Africans, suggested that three main factors affect the demand for Smart wearables, namely: brand preference, reliability and camera.

2.2.6.1 **Brand preference:** The world is comprised of consumers who are brand conscious and aware. Brand names influence both consumersô purchase intention and decision-making. Peopleôs need to purchase branded products is the need to fit in with peers and fulfil a need to belong (Mallory & Katalin, 2011). Just like Smartphones, brand preference is one reason for peopleôs adoption of Smart wearable technology, as it is often aligned with status, with buyers perceiving that the device brand name lifts their status amongst their peers. Smartwatches and fitness bands are being used in ways to suit individual lifestyle and personas (Mallory, 2011). People purchase luxury products to reinforce or strengthen their status in society (Oôcass & Frost, 2002).

2.2.6.2 **Reliability:** Smart wearable technologyôs reliability is held in high esteem by customersô purchasing decisions of Smartwatches and glasses. Product reliability is defined as the probability that a device will perform its required functions, subject to stated conditions, for a period (Oôcass & Frost, 2002). Reliability is a crucial element for consumers who need the product to work without failing. It has become more important as product maintenance becomes more expensive. Nowadays consumers seem to be well informed on product features, attractiveness even before it hits the shelves. Apple is identified as the most reliable brand on the planet concerning technology-based products because it offers comfort to consumers, admits fault and takes ownership even after the sale and

this results in more consumers trusting the brand. In South Africa, the Apple brand has been rated as the most reliable brand.

2.2.6.3 **Camera:** The sale of built-in camera phones has contributed to an increase in mobile data usage and also enhanced device sales. The quality of the mobile camera influences smartphone usersô purchase decision (Lay-yee, Kok-Siew, & Yin-Fah, 2013). Nowadays cameras have become more sophisticated; causing smart wearable users to consider these devices as their primary photography object (Casey, 2013). At present Smart wearable devices such as Google Glass and Smartwatches from top brands feature incorporated cameras that are similar to standalone digital cameras.

This similarity explains the reason why consumers are interested in wearable technologyôs megapixels. Cameras on Smart wearables are the key driver of Smart wearable technologies purchased and are the third most used function on the devices, after calling and messaging (Ambrose, 2012). In addition, sharing photos has become a favourite distraction for many people. This reason also supports why people pay attention to camera quality before purchasing Smart technology devices, for instance, Smartwatches.

2.2.7 Most used Smart wearable technology in South Africa

The introduction of a variety of Smart wearable technology in South Africa has already been seen. However, the affordability of the devices is still the greatest challenge. From fitness monitoring devices to Smartwatches which are retailing between 1000 and 4000 Rand each (Abramovish, 2014).

For South Africans, wearable technology is more than just fitness (Segev, 2015). The top five wearable technologies used by South Africans are: Google Glass, Apple watch, Samsung Galaxy Gear, Smarty Ring and lastly the Ralph Lauren Tech Shirt. According to Juniper Researchôs recent survey (2015) in Table 1, Smartphone users in South Africa, regardless of their mobile brand preference, chose the Apple

brand as the ñcoolestò brand for wearable technology, followed by Samsung, Google, LG and Sony respectively.

Table 1: Coolest wearable brand ranking 2015.

1. Apple	8. UnderArmour	15. Adidas
2. Samsung	9. TAG Heuer	16. Omega
3. Google	10. Ralph Lauren	17. Breitling
4. LG	11. G-Shock	18. Huawei
5. Sony	12. Chanel	19. Garmin
6. Nike	13. Microsoft	20. Pebble
7. Rolex	14. Motorola	21. Xiaomi

Source: Juniper, 2015

In South Africa, one in six consumers currently own or use wearable technology in their daily activities. As seen in Table 1, the Smartwatch from top brand Apple and Samsung have gained more popularity and are the most well-known type of Smart wearable technology recognised and purchased (Juniper Research, 2015). Although there is a massive uptake of fitness bands on the South African market from Fitbit, Smartwatches market is more popular. The consumer wearable technology market survey in South Africa shows that it is Smartwatches and Wristbands that dominate the wearable market of new technologies. As can be seen in Figure 6 below, in 2015 more Smartwatches and wristbands were sold. It is also predicted that 2016 will see even more Smartwatches and wristbands being sold.

Wearable technology sales forecast

Device	2015	2016	2017
Smartwatch	30.32	50.40	66.71
Head-mounted display	0.14	1.43	6.31
Body-worn camera	0.05	0.17	1.05
Bluetooth headset	116.32	128.50	139.23
Wristband	30.15	34.97	44.10
Smart garment	0.06	1.01	5.30
Chest strap	12.88	13.02	7.99
Sports watch	21.02	23.98	26.92
Other fitness monitor	21.07	21.11	25.08
Total	**232.01**	**274.59**	**322.69**

Source: Gartner (January 2016)

Fig.6: Wearable technology sales forecast
Source: Garter, (2016)

2.2.8 Factors influencing acceptance of Smart wearable technology

The current consumer market development has led industries to focus on developing new and innovative products that can satisfy consumersô demands, enhance firmsôcompetitive positions and increase profitability.

Consumersôacceptance of wearable technologies is an important issue that can guarantee successful diffusion. According to Buenaflor & Kim (2013) peopleôs acceptance of wearable technology is significantly influenced by technological and human factors. Additionally, human factors significantly influence usersô acceptance of wearable Smart devices. In their study, Buenaflor & Kim (2013) identified six human factors that play a fundamental role in consumersô acceptance of wearable technology namely: basic needs, cognitive activity, physical aspect, social dimension, demographic characteristic and technical experience.

2.2.8.1 Fundamental needs

Humansôbasic needs are associated with the physiological requirements of the Maslowôs hierarchy of requirements. These requirements or

motives are necessary for any human beingôs biological functioning and survival such as the need for good health (Cant et al., 2009). Consumersô fundamental needs are the most prominent motives of all human behaviour. That individual will strive to fulfil the most basic needs (lower level) before the higher level needs (Cant et al., 2009).

According to Duval et al. (2010) individuals are strongly attracted by Smart clothes that have the ability to monitor sport activities, regulate body temperature, analyse the air and control the environments which satisfy physiological needs. Therefore, manufacturersô recognition and integration of usersôneeds in the development of meaningful services that wearable technologies can offer is essential to guarantee its mass acceptance (Buenaflor & Kim, 2013).

2.2.8.2 Cognitive Attitude

New technologies will significantly affect any consumersôperception and acceptance. However, any negative perception of the device will present a barrier to its adoption (Bergmann & McGregor, 2011). Vankatesh & Davis (2000) created the Technology Acceptance Model to explain consumersôacceptance of newly introduced technologies. The model is commonly used in the evaluation of systems and software for organisational applications.

The model shown below in Figure 7 highlights two crucial factors that influence consumersô perception of wearable devices, which are perceived usefulness and perceived ease of use.

2.2.8.2.1 Technology Acceptance Model

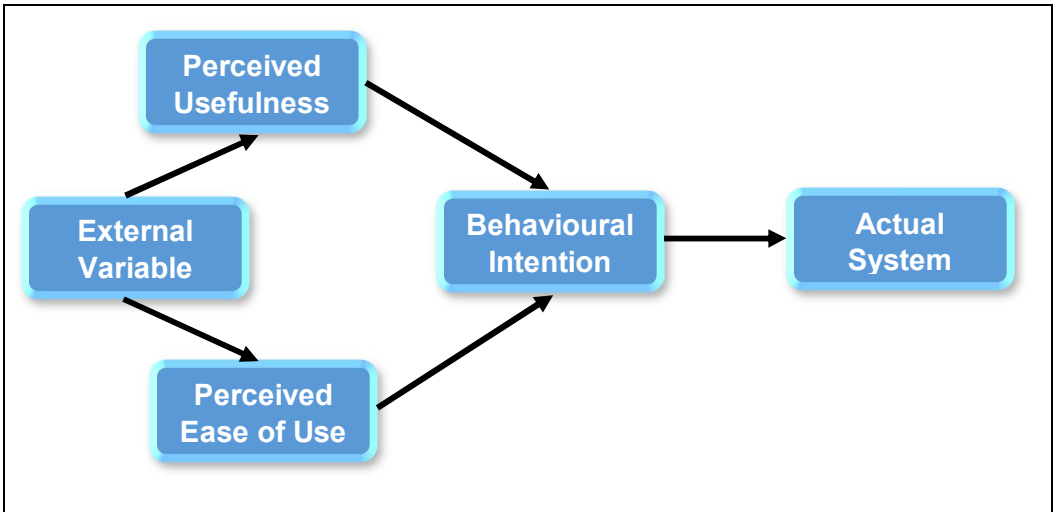

Fig.7 : Technology Acceptance Model
Source: Vankatesh & Davis (2000)

- **Perceived usefulness**

Perceived usefulness refers to the degree an individual believes that using a particular system will improve his performance of a certain assignment. According to Buenaflor & Kim (2013), wearable usersô perceived usefulness is the usersô belief that the purchased device will be efficient and provide a practical solution to current situations or existing problems.

Very often consumersôdecision to purchase innovations, depends on the product reliability, usefulness and whether it can offer unique benefits compared with existing products. In his study of challenges in the wearable market, Technavio (2014) presented that despite serious design issues that might dissuade consumers from using Smartwatches, many people still expressed willingness to purchase them if they provided significant benefits other than that already given by Smartphones.

- **Perceived ease of use**

Perceived ease of use is viewed as the degree to which an individual believes that using a particular system would involve free physical and mental effort (Buenaflor & Kim, 2013). A study on cliniciansôand patientsô preferences regarding Smart wearable technologies with sensor systems

found that both groups emphasised the need for a simple-to-use device (Bergmannand & McGregor, 2011). Furthermore, the healthcare institutions are growing at a fast pace, therefore requiring devices that are direct, quick and easy to access data for clinicians to attend to patients in need of immediate care.

According to Bergmannand & McGregor (2011), Smart wearables ought to be easy to use, to allow users to utilise them without having to ask for guidance all the time, and paying attention to finding out how it can be manipulated will waste more time and delay the performance of the usersô tasks. When a technology is easy to learn and operate, users tend to be more comfortable and confident using it. Thus, it is more likely to be accepted. However, if a system is perceived to be complex, difficult or complicated to use, this causes users to tend to be anxious and worried, as theyôre afraid of making mistakes that might cause harm to their bodies, especially in the case where the devices are to be worn or attached to the body. Far too often this expected danger is more likely to lower consumersô confidence in using the device. This result is accurate for studies conducted on the effects of the perceived benefits and fears on the acceptance of smart shirts (Schaaf & Ziefle, 2011).

2.2.8.3 Social Aspect

2.2.8.3.1 Personal Privacy and Security

Confidentiality and safety issues are critical regarding the usage of wearable Smart technologies and pervasive computers (Kurkkovsky & Bhalodi, 2008). Smart Wearable technologies can gather a massive amount of information, therefore, usersô concerns about privacy and security increase as these devices and services proliferate (Thibodeau, 2014 & Vijayan, 2014). According to Singh, Powles & Vijayan, (2014) wearables users enjoy the personalization and customization that wearable technologies offer, yet those same capabilities that are so highly demanded also worsen digital privacy and data security risks that already existed for traditional technologies and online services. Al Sacco (2014), noted that confidentiality and safety related concerns often arise

when the device is lost or stolen and when information is shared over Wi-Fi or other wireless systems. Therefore, this causes more users to be sensitive toward sharing relevant information about themselves especially if giving such information could potentially bring harm to them.

2.2.8.3.2 Social influences

People value their relationships with those close and around them, especially family members, friends and colleagues. Furthermore, people always value the opinions and beliefs of the people closest to them, and that is often a primary consideration in making decisions (Buenaflor & Kim, 2013). In their study Kortuem, Bauer & Segall (1999) showed that women, compared to men, are less willing to use Smart clothing if their social network or environment did not favour the technology. Panic alarm systems designed in necklace form and wrist pendants are usually rejected by elderly people, the reason being that they are ashamed of wearing them and want to avoid looking dependent and old (Steele, Loa, Secombe & Wong, 2009).

2.2.8.4 Physical Aspect

Wearable computers are to function in human bodies. Consequently, the physical side of the devices on the wearer will without a doubt influence acceptance.

The physical appearance and design of wearable technologies are essential considerations and the most influential factors impacting on consumersôacceptance and adoption of Smart wearable technologies. Duval, et al. (2010), noted that good and unique designs tend to make users feel more pleasant and impact on the usersôself-image. Therefore, enhancing how users are viewed by their surroundings and also the way they feel about themselves, will increase self-confidence. Also according to Bodinea & Gemperle (2003), most people prefer a portable to be of minimal weight and size to facilitate portability.

2.2.8.5 Demographic Characteristics

It is evident that people experience changes as they grow up. The experienced changes could be physical, cognitive, emotional, or social changes. For instance, elderly people are not comfortable with new technology and tend to be sceptical prior to accepting them. According to (Steele, Loa, Secombe & Wong, 2009) elderly people find new technology systems difficult to comprehend and learn.

Gender also influences the acceptance and adoption of wearable devices. Schaaf & Ziefle (2011) in their study evaluated the acceptance of Smart shirts and found that men were more willing to accept the technology than women. After assessing the differences in perceptions of males and females over Smart shirts, the authors established that men are willing to purchase Smart T-shirtsô technology more than women, because women are more fearful concerning the deviceôs safety, ease of use, a feeling of being controlled, and an assumed danger to the body. Rudell, (1991) stated that although both men and women are equally interested in scientific discoveries, women appear to have less knowledge about science and technology than men.

2.2.8.6 Technical Experience

Despite being exposed to various forms of technological applications, new technologies will still impact on their acceptance and adoption. However, people who have had substantial technical experience tend to be more confident and are more willing to purchase wearable computers than those with less technical experience (Buenaflor & Kim, 2013).

According to Kurkkovsky & Bhalodi (2008), the degree of technological experience is an essential factor in determining anxiety levels in using wearable systems. Similarly, Duval et al. (2010) stated that the critical features of Smart clothes stimulated greater interest and were more accepted in Japan than in France, which may be explained by the more dynamic and increased availability of technology in Japan.

2.2.9 Challenges and opportunities in Smart wearable technology industry

Various technology analysts consider Smart wearable technology as the next big object of consumer technology markets, replacing the success of last decade technologies such as laptops, Smartphones and tablets. According to Buenaflor & Kim (2013), analyses of new technologies consider Smart wearable technology to be a ótechnology tsunamiô and ña revolutionary forceô Smart wearables offer some benefits to the users, for instance, Smartwatches are being designed to enhance Smartphone usage as the two work hand in hand. However, despite offering so many advantages, Smart wearable technology also faces obstacles that are hampering their uptake and diffusion. These challenges have impacted on wearable producers, service providers related to wearable technologies and the consumers for whom the products are being developed.

2.2.9.1 Opportunities

As new Smart technologies continue to emerge in the marketplace, consumers are given more options from which to choose. These devices come in various forms and are changing peopleôs daily life activities. Users can respond to their messages without fiddling with their phones, check their emails, take pictures and even stay fit. These are some benefits of owning a technology that can be worn on the body anywhere and anytime. At present, the growth of the wearable technology market is driven by the penetration level of Smartphones, as mentioned earlier the majority of Smart wearables work hand in hand with Smartphones. In developing countries, Smartphone penetration is more than 50%, compared to developed countries where penetration is much higher (Nagtegaal et al., 2015).

One of the reasons the Smart wearable industry is a potential and promising market, where adoption in the next few years is likely to grow significantly, is that manufacturers are working on making Smart wearable devices a stand-alone appliance (Nagtegaal et al., 2015).

Another essential opportunity driver for Smart technology, promising growth, is the technological advancement of battery life and size. However, the extent of battery life depends on the consumerôs usage. As with Smartphones, both the size and life of batteries are critical determinants, especially in this current market where function and fashion go hand in hand, it is important for manufacturers to keep the battery size as small as possible, because the smaller the battery, the less the deviceôs weight (Dervojeda et al., 2015).

For example, Glass Up have developed two versions of their glasses: one glass that is a small and sleek version for the consumer market and one bigger version for professional users that require longer battery life.

Another opportunity for the Smart wearable market is that the wearable technology industry is taking an integral part in the business world by targeting the workplace environment and, so far, the industry has proved to be successful. Recently a study conducted by Bauer (2015) found that the presence of wearable technologies in workplaces, especially those enabling users to monitor physical and mental activities, have improved employeesôproductivity by 8.5% and staff satisfaction by 3.5%. In the retail industry, the use of Smartwatches is being used as a quick checkout option because of the devicesôPayPal capability. Moreover, Field service workers are using Smart Glasses to take pictures and record videos as a major way to increase productivity by solving issues faster (Balasubramanyam, 2015).

For advertising companies and agencies, Smart wearable technologies like Smart Glasses offer a variety of benefits. Smart Glassesôsensors facilitate and improve data collection on consumer feedback, which helps to reduce the cost of traditional market research in labs and enhance the accuracy of consumer research. Furthermore, Balasubramanyam (2015) noted that the integration of Smart wearables in organisationsô daily activities have led to improved work efficiency and increased labour productivity. For instance, in healthcare, Smart wearable technologies are put to use for increased automation of health care metrics collection.

2.2.9.2 Challenges

There is no doubt that wearable technology is an incredible innovation that is slowly growing to become one of the major contenders in the consumer electronics markets. In fact, this industry has been the subject of considerable publicity, driven by Smart wearablesô ability to make human lives and jobs easier. However, the wearable industry has been of even greater scepticism, caused by speculation of whether or not these new devices will have an adverse impact on human bodies (Buenaflor & Kim, 2013).

Issues about cost, design, privacy and security risks and high power consumption are holding consumers back from purchasing Smart wearables. According to Gownder (2014), 90 million Smart wearables devices are shipped, but 80 to 90% have failed. Here are some of the biggest physical obstacles preventing the Smart wearable industry from growing to the level as predicted by ABI research.

2.2.9.2.1 High initial cost

Shugan (2009) defines price as a surrogate measure of a productôs quality because very often products in the premium product category seem to be expensive, thus reflecting their high quality. Though this cannot be applicable all the time, numerous researchers have provided evidence that many consumers use price as a signal that indicates product quality. Therefore, higher prices positively affect purchase probabilities (Tellis & Gaeth, 2009).

Grunert, Bredahl & Brunso, (2014) agree that product quality has always been an important competitive issue because it helps producers determine the price of any product. The main reason product quality is a critical factor to consider in a product pricing strategy, is that consumers often associate low price with low quality, consequently if a product is priced too low, the consumers tend to feel that the materials used in producing the goods are either inferior or of a lower quality, and the product is perceived to be of a low quality. The high cost of Smart

wearables is one crucial obstacle that hinders the growth of the Smart wearable industry market during the forecast period. Past research conducted on the Smart wearable industry points out price as the biggest barrier to Smart wearablesômarket growth.

According to Nielsen (2014), 55% of consumers said wearable technologies are very expensive for one to purchase, while 24% of them believe that they already own too many devices to invest again in Smart wearables. At the same time, in a separate survey, devices high costs were outlined as the most critical barrier to entry 72% of Smart wearable (Wearable World News, 2014).

Technavio (2014) noted that, when it comes to wearable technologyôs prices, for instance Smartwatches from top brands such as Apple, Samsung and Sony are expensive therefore, prevent many consumers from seeing the innovation to pay a high price for a Smartwatch, In fact, consumers seem to be more attracted to reduced cost fitness shoes and bracelets.

Despite the fact that there are more companies joining the technology industry the price of Smart wearables remains high. Present producers in this market are struggling to balance the price of wearables, with their added value to users (Nagtegaal et al, 2015). Purchasing a Smart wearable as an individual or consumer, is extremely cost-effective. In his study Chandok (2014) noted that Smart wearable technologies are made for consumers within the early adopter stage since they are more adventurous and ready to take risks. The price of branded devices is very high, like the Google Glass which retails at 1,500 USD. Consequently, the mass adoption of such devices is very low because a large number of the consumer market is unable to afford them.

2.2.9.2.2 Design Constraints

More recently, analyst Tolentino (2014) noted that wearable technologies raise a variety of challenges in term of design concerns because popular manufacturers in this market are more focused on technology than on

design. This does not reflect the consumer fashion preferences, which delays consumers from purchasing them. According to Robert (2009) poor design can have a significant impact on consumersôresponse to products and, as such, product design is a legitimate marketing interest that merits the attention of outputs manufacturers.

The design has always been a crucial factor in determining the success of mainstream electronics; however, design challenges could be preventing Smart wearable technology from being part of consumersô everyday life activities. According to Technavio (2014), one of the major obstacles in the global consumer market of Smart wearable technologies is design constraints. Consumersôdecision to purchase Smart wearables like wristbands, watches, glasses and jewellery is driven by usersôdesire to make a statement about their personal identity to reflect their fashion trend.

Presently, the majority of Smart wearable device producers are more focused on technology rather than design issues. This does not reflect the consumer fashion preferences, which delays consumers from purchasing them (Tolentino, 2014). For instance, most Smartwatches from top brands like Samsung and Apple run on processors and components that are designed for Smartphones. As a result, Smartwatches are bulkier and more square than normal watches, which consequently does not match the fashion preferences of the users.

2.2.9.2.3 Privacy and Security Risks

Many Smart wearable technologies are small in size but have the capacity to store a large amount of data. The question of data security is a significant issue since Smart wearable devices can record all sorts of data that, given the trendôs relative newness, do not have all of the security measures of older devices (Buenaflor & Kim, 2013). The size of these devices presents an enormous risk for users, because they can easily be misplaced or stolen, hence causing users to lose a significant amount of stored sensitive information and causing disruption in work (Technavio, 2014). Also, Smart wearable devices use GPS navigation

systems for location purposes and users sometimes have to share their location to acquire certain information; this information can easily be retrieved and used by advertisers, and cyber criminals have the opportunity to exploit any stored information on the device.

With wearable technologies gaining ground so rapidly, privacy concerns is another major challenge slowing sales growth of Smart wearables. According to Pedersen (2015) when introduced to a companyôs infrastructure, both cyber criminals and employees have the opportunity to exploit any security shortcomings and pose many threats to the enterprise. For instance, several companies, casinos and restaurants had banned Google Glass in their premises before the official release, because of the deviceôs front mounted camera that allowed users to be potentially recording video at all times.

2.2.9.2.4 High power consumption

One last, but not least, major challenge faced by vendors in the market of Smart wearables is the high power consumption of Smart wearable devices. Technavio (2014) stated that many of these devices use wireless networks, GPS and other technologies that consume much power. Thus, the short battery life and high power consumption of the devices is reducing usage and adoption, which is expected to hamper the growth prospects of the consumer market during the forecast period.

Consumers are reluctant to buy wearable technology devices because of high power consumption, short battery life and risk of data breach, which are reducing quality levels of wearable technology devices thus justifying the slow market growth and consumersô adoption of Smart wearable technology equipment. Currently, the battery life of Smart wearable technologies lasts for about one to two days. However, in the case of intensive usage, the battery could last for less than a day.

Thakor & Katsanis (2007) noted that the overall company sales will be slow if its productsôquality is perceived to be low; that product quality does influence consumersô intention to purchase, consequently

confirming that there is a correlation between high quality and consumersôdecision to purchase regardless of price. (Cameran, Moizer & Pettiniccbio, 2010) noted that it is important for manufacturers to recognise that product quality plays a much bigger role in consumer purchasing decision and raises sales of the product whenever consumers need it.

2.2.10 Future of Smart wearable technology industry

Mihail, Roco & Sims (2002) in National Science Foundationôs massive report predicted that, within the next two decades, ñComfortable, wearable sensors and computers will enhance every personôs awareness of his or her health condition, environment, chemical pollutants, potential hazards, and information of interest to local businesses, natural resourcesò and 12 years later, the future that the National Science Foundation predicted is slowly starting to emerge.

The future of the Smart wearable technology industry is more certain now than it was before, when people considered the idea of a Smartwatches as something out of a movie. It is evident that the wearable technology market is already enjoying substantive penetration in the health and fitness arena with companies like Sony, Google, LG, Apple, Samsung, With Qualcomm and Microsoft making strategic moves within this sector. According to Nagtegaal et al. (2015) to answer the question as to whether the current developments of the industry are any indication for a prosperous future, it appears that the wearable technology market is going to be a crowded landscape with competition. According to Metz (2014) although ñSmart wearable technologies are still looking for their killer app, still health and fitness wearables are being widely used todayò According to Kerr (2014), the popular examples are the Fitbit and Jawbone wearable fitness bracelets, which have been on the market for several years and commanded the bulk of market share.

ABI Research estimates the global market for wearable technology in health and fitness to be the largest component of wearable technology products to be shipped in the next 5 years and that this industry alone

could reach 170 million devices by the year 2017. Juniper Research predicts global Smart Glass shipments to exceed 10 million units per year by 2018, along with substantially lower prices. Various reports suggest that first-generation applications for Smart Glasses would include video documentation, but the potential of this technology would shine when diagnostics, surgical assistance, and remote monitoring are enabled (Flextronics, 2014 & McKinsey, 2013).

2.2.10.1 Future potential benefits of Smart wearable technology

According to Probst (2015), the potential socio-economic benefits of Smart wearable technologies market are enormous and impact on multiple sectors. Nagtegaal et al. (2015) stated that an effective implementation of Smart wearable technologies can benefit both companies and users involved in the market. Even though these technologies have not yet caught up as mass-market consumer products, wearable technologies may come to be more widely used in a variety of businesses and organisations in the coming years (Wilson, 2013). Some of the more interesting potential professional uses of Smart wearable technologies include the following:

- **Training Agency**: Nagtegaal et al. (2015) noted that Smart wearable technologies can be beneficial in workplace environments; for instance, when training agents, Smart wearable devices can be used to speed up the training process through which new employees can be introduced into organisations
- **Retailing:** In retail, these innovations are more likely to facilitate point of sale processes, improve customer service and customer attitude to the store, which will increase and speed up consumersô buying decisions. According to Benton (2014), retailers using Smart wearables will be able to target shoppers with personalised services and promotions either inside their stores or before the customers even arrive. Since Smart wearable devices are gaining more popularity and becoming more integrated into peopleôs everyday life, these devices will help retailers to establish a strong

connection with their customers and also provide a unique and improved shopping experience (DeMeo, 2013).

- **Manufacturing:** In his study, Pedersen (2015) highlighted that Smart wearable devices can be used to accelerate and increase production in manufacturing companies by providing hands-free guidance tools. Also in service industries, wearable devices have the capacity to quicken access to information and enable seamless action.

- **Medical:** In medical centres, Smart wearable devices could improve the accuracy of information, streamline procedures and increase clinical trials. Smart wearable technology can drive significant decreases in healthcare costs through the use of Smart fitness devices and similar incentives that allow users to exercise (Pedersen 2015). Already in operating rooms, surgeons are using wearable technology such as the Google Glass to perform complex procedures, moreover, in future, other wearable devices might be of great help to surgeons do this remotely (Mead, 2013).

  Still in medical, and more specifically in Emergency care, ambulances can be equipped with various Internet of Things devices to allow emergency teams to diagnose quickly what ails patients and later provide immediate treatment in the precious minutes after accidents or other health emergencies (Regan, 2014).

- **Job creation**: According to Nagtegaal et al. (2015) the introduction of Smart wearable technologies has the ability to create new jobs. To explore the demand for Smart wearable devices skills, employment websites can provide a graphic picture with full information of the type of organisation and the kind of competencies required. According to Wanted Analytics (2014), a total of 1,018 advertisements worldwide referred to Smart wearable devices alone. The research also made clear that companies based in the United States of America are especially

recruiting wearable technology specialists. McKinsey Global Institute (2013) in their study showed that most of the online jobs in America are aiming at recruiting software and web developers, marketing managers, and electrical engineers. According to the New York Times (2015), marketing managers with wearables experience are the most sought after compared to software developers and electrical engineers.

- **Sports:** In sports such as soccer, basketball, rugby, cricket and golf, both teams and players may use wearable Smart devices to improve their abilities and at the same time use these devices as communication tools, which will enable them to give fans additional ways to see how they practice or even play their games (Miller, (2014).

- **Law enforcement:** According to Thierer (2014) Smart wearables could transform the field of law enforcement but could also raise some surveillance concerns in the process. However, on average, these devices could allow people to use wearable technologies as objects that can help monitor the activities of those same law enforcement officials (Mann, 2012). According to Lautt (2011/2012) more devices of this new technology are likely to provide a powerful check on abusive behaviour by law enforcement officers, while giving officers the ability to corroborate their account of incidents and altercations (Cushing, 2014).

- **Entertainment services:** Just like wearables are promising to be beneficial in retailing, so they will be for the entertainment industry. According to Thierer (2014), the entertainment industry, amusement parks, and vacation providers will also be able to use Smart wearables to tailor services that inform users on who visits their establishments or uses their services. Disney in the United States of America has already created Magic Band, which can help those who visit Disneyôs entertainment parks to personalise

their experiences before they even get to visit the facilities (Panzarino, 2013).

- **Financial services:** In his study of potential future benefits of wearable technologiesôadoption in the workplace, Nader (2014) stated that providers of personal finance and investment services are in the process of studying how wearable technologies might be adapted to keep consumers well informed about superior spending and investment opportunities.
- **Political campaigning:** According to Gonyea (2014) both politicians and political professionals are eagerly exploring how Smart wearables like Google Glass could be employed as a powerful campaign tool and how another form of Smart wearable technology could help engage potential voters.

2.2.10.2 Smart wearables market prediction

In general, the Smart wearable technology industry is quickly changing and highly competitive. This new market is characterised by rapidly evolving technology and innovative features. Therefore, no particular firm in this industry holds a permanent amount of market power. Each firm is vying for a greater piece of the market opportunities, resulting in strong rivalry and competition.

The future wearable technologiesômarket looks very promising and is expected to become the future of computing, however that future has yet to arrive.

According to Danova (2014), the global market of Smart wearables is likely to grow at 35% compound annual rate in the next five years and hit 148 million devices being shipped by 2018; this can be seen in Figure 8 below. It is predicted that Smartwatches will be the leading product category and take an increasingly large share of smart wearable shipment. Moreover, as can be seen in Figure 9 below, the Apple brand will be the most expensive Smartwatch available while fitness bands and diverse device types such as eyewear will continue to cater for the niche

market audiences and see their share of the wearable device market grow to a 20% share of the global market in 2019.

Global wearable device unit shipments forecast

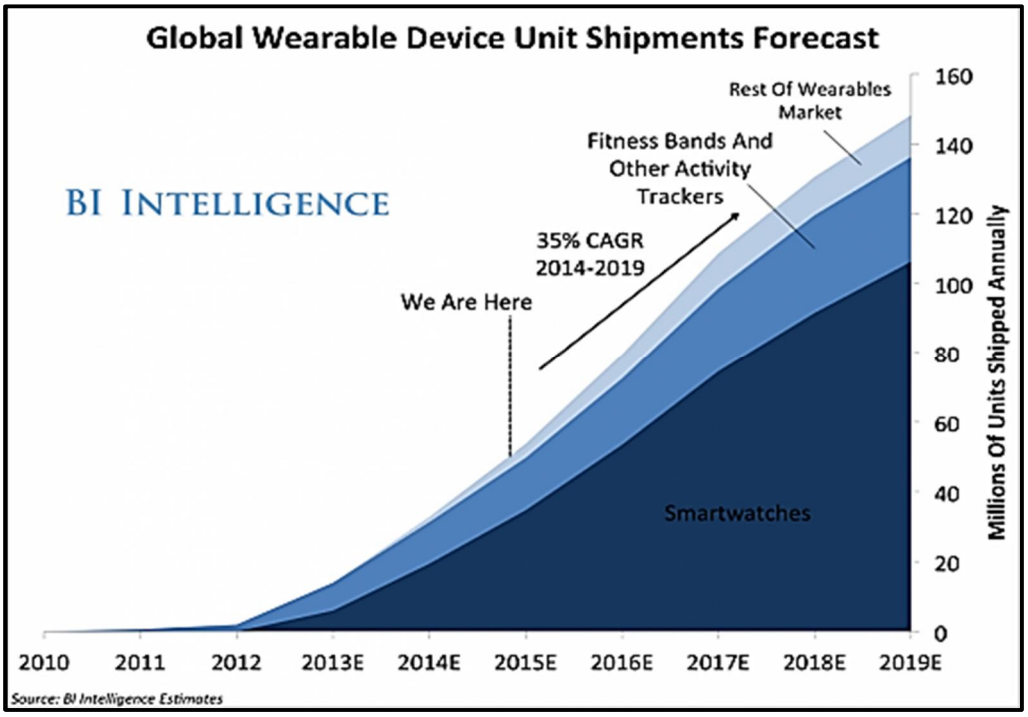

Fig.8: Global wearable device unit shipments forecast
Source: BI intelligence Estimates (2015)

Smartwatch annual shipment forecast

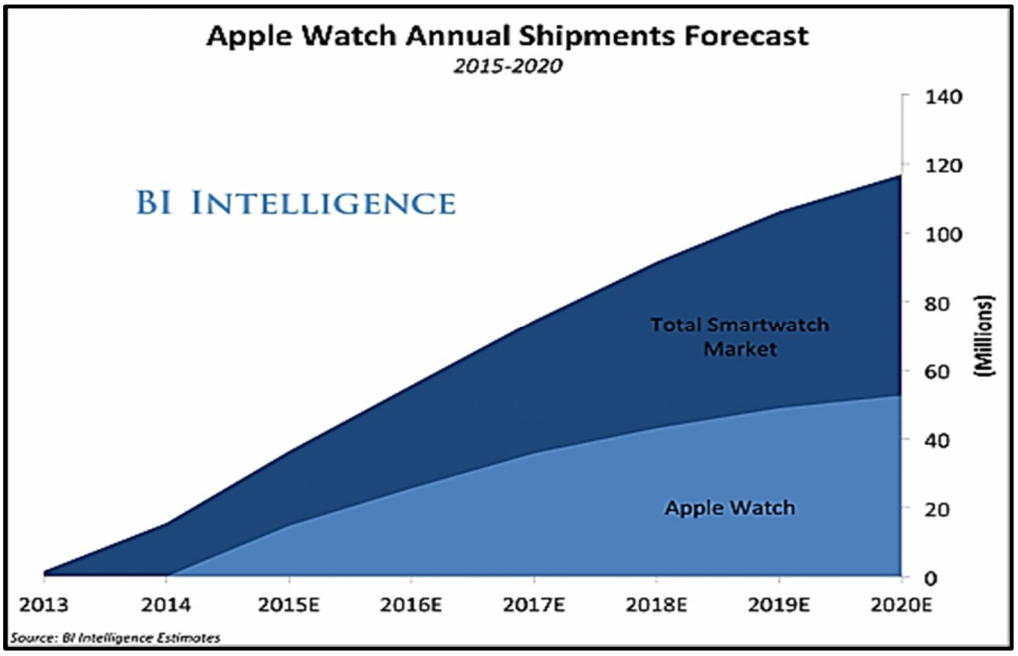

Fig.9: Smartwatch annual shipment forecast
Source: BI Intelligence Estimates

Looking at the past and current statistics from the above Figure 9, it is clear that Smartwatchesôusage will continue to increase year after year, and the future of Smartwatchesôusage or purchase in South Africa is inevitable.

2.2.11 Conclusion

Wearable technology has been around in various forms for many years. Presently, the wearable technology market appears to be a world-leading market development and innovation platform for new technologies. The wearable technology industry has become more of a trend that every company desires to join and be counted in, to prove their innovation ability. Manufacturers of wearable technologies are numerous and are mainly focused on fitness and wellness, infotainment, healthcare and medical, and lastly, industrial and military. The most innovative producers of Smartwatches are Sony, Samsung, Lenovo, LG, Apple, Pebble and Fitbit. While the most successful fitness trackers so far are produced by Nike, Fitbit and Jawbone.

The important factors influencing the demand for Smart wearable devices in South Africa are mainly brand name preference, reliability and

camera. Buenaflor & Kim (2013) have identified six human factors that play a fundamental role in consumersô acceptance of wearable technology namely: basic needs, cognitive activity, physical aspect, and the social dimension, demographic characteristic and technical experience. The wearable industry offers a number of benefits to users. However, this industry has been of even greater scepticism, caused by speculation of whether or not these new devices will have an adverse impact on human bodies. Cost, design, privacy and security risks and high power consumption represent the main issues holding consumers back from purchasing Smart wearable devices.

The future wearable technologies market looks very promising. Presently, however, no firm in this industry holds a permanent amount of market power. Each firm is vying for a greater piece of the market opportunities, resulting in strong rivalry and competition.

Chapter Three (3) LITERATURE REVIEW (THEORETICAL AND EMPIRICAL REVIEW)

This section of the paper focuses on the theoretical and empirical review. A literature review on research variables: product quality, product price, product design and consumer attitude as factors influencing the purchase intention of Smart wearable technologies are explored thoroughly.

3.1 Theoretical and Empirical review

3.2.1 Research variables

3.2.2 Product Quality

In the consumer market offering, a product is a major element that promises to add more value to consumersôeveryday life. According to Shaharudin et al. (2011), a product is more than just a tangible object, which includes design, performance quality, brand name, service features and packaging.

Product quality is rapidly becoming an important competitive issue in marketing, and, therefore, reflects a strong interest in academic research (Texeira, 2010). According to Miradi, Akbariyeh & Tahmasebifard (2015), product quality is a key factor in assessing purchase intention. In a recent study of the business units of major North American companies, managers have ranked producing to high-quality standards as their current main concern (Garvin, 2012).

Bennet & Thiele (2003) also agree with the fact that product quality is one of the marketerôs superior product positioning strategies and that it is a key factor in assessing purchase intention (Mirabi, Akbariyeh & Tahmasebifard, 2015). Product quality has two dimensions, namely, quality level and quality consistency. However, consumers perceive other dimensions of product quality: performance, features, reliability, conformity, durability, serviceability, aesthetics and perceived quality.

The ultimate goal of firms to produce a high-quality product is to improve customer satisfaction and value, keeping in mind that the

quality of a product is critical, but it is probably the most difficult of all the image-building features to define (Kotler, 2010). Previous studies that have investigated the effect of product quality on product price have found that product quality has a significant and positive effect on product price. Also that the positive influence that exists between perceived product quality and purchase intentions is mediated by price and consumersôsatisfaction. (Llusar et al., 2010).

Product quality is one of the marketerôs major product positioning tools and has two dimensions, namely quality level and quality consistency. Marketers have a vested interest in both dimensions of quality, because creating and holding on to consumers means providing the quality of product that consumers want and also supporting the product with quality administrative, technical and after sales service. For this reason, it is important for marketers to evaluate quality through the eye of the consumers. When developing a product, the manufacturers first choose a quality level that will support the productôs position in the target market. In this case, product quality simply means performance quality, which is defined as the ability of a product to perform its functions.

Companies hardly offer the highest possible performance quality level, because the consumer market has a small number of consumers who can afford the high levels of quality provided in products. Instead, companies choose a quality level that matches the needs of the target market and the quality levels of competitive products available on the market. Here product quality means conformity quality that is viewed as freedom from defects and consistency in delivering a targeted level of performance.

Product quality has attracted the interest of many academic practitioners and researchers because they all share the same belief that product quality has more of beneficial effects on marketing performance; also high quality leads to repeated purchases and

represents the bedrock of any business success (Tsiotsou, 2006). According to Kotler & Armstrong (2010), a productôs quality has a significant impact towards its performance, which can be linked with customerôs value and satisfaction. According to Tellis, Yin, & Niraj (2009), product quality has a direct correlation to a positive effect on market share. Thus, improving insights of the quality of goods motivates customer satisfaction (Cameran, Moizer, & Pettiniccbio, 2010).

Hence, quality impact on customer satisfaction affects higher lifetime value for consumers and businesses (Fetscherin & Toncar, 2009; Verhoef, & Lemon, 2013). Therefore, it is vital for every organisation to strive for high levels of conformity quality. Although products from different companies cannot perform the same, they can consistently deliver the quality that consumers expect.

Currently, various companies recognise the importance of quality and are striving to adopt the philosophy of total quality management (TQM), which means that every employee within the organisation must take responsibility to build quality into whatever they do. Total quality management requires continuous improvement of product quality, enhancement of products with additional features as the product ages. The ultimate goal of total quality management is to improve customer satisfaction and value to influence consumer purchase of the product. For instance, Siemens in 1980 introduced its total quality management and defines quality this way: ñquality is when the consumers come back and our products donôtò

As more and more companies have moved toward such customer-driven definitions of quality, their total quality management programs are evolving into consumer satisfaction and consumer retention programs. Therefore, nowadays many organisations have turned customer-driven quality into a potential strategic weapon, as they create customer satisfaction and value by consistently and profitably

meeting customersôneeds and preferences for quality. In fact, in the twenty-first century quality has become a major competitive necessity, only companies with the best quality will succeed. Besio & Pronzini, (2010); Fetscherin & Toncar, (2009) agree with the idea that superior product quality leads to good reputation of firms, hence quite a number of CEOs establish strategic goals for quality improvement and performance monitoring to improve product quality (Yen- Ku & Kung-Don (2009); & Joanna, Lockee, & Bass, 2008). Therefore, taking corrective actions to improve customer perception of quality changes, is of paramount importance because the strategies motivate consumer behaviour to incremental revenue acquisitions (Iyer & Kuksov, 2010).

In their studies Dunk (2002), Kotler & Armstrong (2010) defined product quality as the key element that satisfies the needs of consumers and enhances the performance of any product. Product quality is there to help producers understand and measure the requirements of the consumers. There exist quite a few factors that influence consumersô purchase intention, namely psychological, individual, social and literary factors. It is crucial for manufacturers to take into consideration all the named factors, to accomplish their business goals (Kotler et al. 2010). It is crucial for marketers to recognise the whole concept so they can more readily conclude what influences consumers to buy. Product quality without a doubt does influence consumersôpurchase intention.

In their study Llusar et al. (2010) exposed the positive impact that exists between perceived product quality and purchase intentions through mediating variables of customer satisfaction. According to Llusar et al. (2010), customers have some perceptions about the product quality, price and styles before and after purchasing the product. Also, that consumersôintention to purchase can increase as well as decrease based on quality level. Thus, when the quality is high, purchase intention of a customer is also great.

Thakor & Katsanis (2007) agree that product quality has always been an important competitive issue because it helps producers determine the price of any product. The main reason product quality is a critical factor to consider in a product pricing strategy, is that customers often associate low price with low quality, consequently if a product is priced too low, the consumers tend to feel that the materials used in producing the goods are either inferior or of a lower quality, and the product is perceived to be of a low quality.

3.2.2.1 Dimensions of quality

Product quality is a key element that influences consumersôdecision-making; therefore, consumers will compare the quality of alternatives concerning performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality within a category (Jin & Yong, 2011). These eight elements presented in Table 2, are well-known as the eight dimensions of product quality on which consumers base their decision to purchase.

McDaniel, Lamb & Hair (2011), state the rank that consumers in the United States placed on product quality are reliability, durability and easy maintenance, ease of use, a trusted brand name and low price. According to McDaniel, Lamb & Hair (2011), nowadays customers find themselves surrounded with many options to choose from, consequently causing consumers to look for reliable products, which suit the purpose and can stand the intended functions.

Major changes dominate the competitive market environment in which businesses operate, therefore increasing consumersô expectations regarding the level of product quality being offered.

Product manufacturers ought to place a greater amount of emphasis on clearly understanding the needs and attitudes of consumers to satisfy them, and to maintain and grow market share and profitability (Jin & Yong, 2011).

According to Shaharudin et al. (2010) product quality is the most important factor that influences the selection of each brand or model especially in a market environment where the level of competition is intense and price-competitive, but it is often difficult for producers to fully meet the expectation of their consumers on quality because their understanding is varied and inconsistent.

Wankhade & Dabade (2006) in their study have argued that, for organisations to have a better understanding and perspective of product quality, it is necessary for manufacturers to explore the quality dimensions to identify the gaps between how the product should be and how it will be seen from a customerôs point of view. Because of the nature of quality perception as a complex phenomenon that involves social, cultural, economic and technical aspects. Subsequently, the result can be used to benchmark the óactual performanceôagainst the óperceived requirementô so that the discrepancies or differences discovered can be channelled for immediate improvement (Wankhade & Dabade, 2006).

Table 2: Quality Dimension

Quality Dimension	Definition
Performance	The primary has to do with basic operating characteristics of a product.
Features	Are secondary product characteristics that are designed to enhance or supplement the basic product performance features.
Reliability	Is the probability of a productôs success within a given period.
Conformity	Is the degree to which a productôs design & operating characteristics meet pre-established standards.
Durability	Is a measure of product life: Amount of time of use one obtains from a product before it physically deteriorates.
Serviceability	Is concerned with the speed and ease of use of obtaining maintenance and repair services.
Aesthetics	Has to do with the look, feel, sound, taste or smell of a product.
Perceived quality	Relates to the customerôs subjective opinion of the productôs or companyôs reputation.

It is critical to keep in mind that the quality of a product is vital and beneficial for the success of any organisation. However, it is probably the most difficult of all the image-building features to define. That it is through reducing product defects, the main role of total quality management is to improve customer satisfaction and value to influence purchase intention (Herrington & Weaven, 2009).

According to Batty (2008), a firmôs profitability is enriched through improvement of product quality and efficiencies. Quality can be improved with the improvement of design quality through collaborating with supply chain partners (Yanmei et al. 2009), through adaptation of new technology (Fisher-Vanden &Terry 2009), through inter- and intra-organisational coordination (Carr, Muthusamy & Lee 2008), and lastly through multiple inspections (Chun 2009). Companiesô efforts to improve quality will always result in reduced costs, higher customer satisfaction, lower prices or increased reliability (Rosenfeld 2009; Scheeres 2010).

3.2.3 Product Design

The marketplace is flooded with similar products from different brands and the only thing that can differentiate one product from the other is the product design (Yoder, 2014). Furthermore, it is the role of product design to communicate the meaning to the consumers effectively. In this day and age, product designs have forever changed the way consumers view products. With all the increasing competition on the market, physical differentiation is critical for any companyôs product to stand out. Distinctive product design is another way that enables manufacturers to add customer value.

Design is often confused with Style. Though these two concepts could explain each other, design is a larger concept than style. Style simply describes the appearance of a product, which may capture attention and produce pleasing aesthetics, but does not necessarily make the

product perform better (Du Plessis et al., 2009). Different to style, design is more than skin deep as it goes to the very heart of the product. Good design contributes to a productôs usefulness as well as to its look that can attract customersôattention, improve product performance, cut production costs, and give the product a strong competitive advantage in the targeted market (Kotler & Armstrong, 2010).

For many years, product design has been recognised as a major opportunity for differential advantage in the marketplace (Creusen & Schoormans, 2011). The appearance of a product influences consumer product choice in several ways. Design can be one of the most powerful competitive weapons in a companyôs marketing arsenal. Today, companies like Apple achieved record profits during a major recession because of leadership in design (Michaels, 2010). Even the mass media has become attuned to design issues with the creation of many websites, videos, and publications, which critique new designs from the Consumer Electronics Show, Tokyo Auto Show, or New Yorkôs Fashion Week (Bloch, 2011).

According to Moore (2010) product design provides the added value that customers cherish so much and benefit from, which in turn serves as a slingshot for any company, because the more a companyôs product increases in desirability and perceived value, the more it can help the company to charge a higher price for that product. Consequently, this will result in a definite win-win situation. This observation can be strengthened by the research conduct on the Apple Company in 2014. It is no surprise that Apple is on top because of the companyôs ability to master the art of aesthetics. For many years now, in the world of technology, the Apple brand has been known to be the major brand that implies physical advancement in the technology industry, therefore allowing the firm to set a high price for its product, which is not disputed by consumers (Moore, 2010).

Product design is viewed as another way that enables marketers to add customer value through distinctive product style (Baker, 2000). Despite the increasing attention given to product design, academic research on product design has remained a topic of modest activity when compared to its relevance to consumer decision-making, overall marketing success and brand building. Bloch (2011) noted that the lack of academic research on product design is because marketing academics are still relative outsiders to the aesthetic and engineering issues that strongly connect to design. According to Chitturi, (2009) design is a large topic that can be studied from different perspectives; one may choose to explore the design process, business and engineering constraints on design, or the fit of design within overall marketing strategy, among other issues.

Boztepe, (2007); Chitturi, (2009); Schifferstein & Zwartkruis, (2008); Van Rompay, Pruyn, & Tieke, (2009) define design as the form characteristics of a product that provide the utilitarian, hedonic, and semiotic benefits to the product users. Design is often confused with style. Though these two concepts could explain each other, design is a larger concept than style. Style simply describes the appearance of a product, which may capture attention and produce pleasing aesthetics, but does not necessarily make the product perform better (Du Plessis et al., 2009). Different to style, design is more than skin deep as it goes to the very heart of the product. Good design contributes to a productôs usefulness as well as to its look that can attract customersôattention, improve product performance, cut production costs, and give the product a strong competitive advantage in the targeted market (Kotler & Armstrong, 2010).

According to Orth, Campana & Malkewitz (2010) in the formation of price expectation based on product design, the authors state that consumers form an expectation of a productôs price based on visual cues inherent in the design. It depends on the product and supporting

market program ability to deliver information that can successfully capture the consumersôattention and, therefore, influence their buying decision. The uniqueness of a product is the overall mind reflection and belief of consumers toward a particular brand with its unique qualities such as design, packaging, colour, texture and another abstract dimension that is not possessed by other competing firms (Lee, Lee & Wu, 2011).

Product design has often been used as an external factor that influences purchase decision-making (Richardson, Dick & Jain, 2012). Consumers are willing to pay a premium price for any well-designed product within the product category because they believe that the product is unique compared to other competing products. According to Lee, Lee & Wu (2009) product design helps consumers to decide which brand gives them more value. Ezeh, (2012) found that consumers will always go for a brand that is well-designed rather than those with an unattractive design because consumers perceive that product with good design and image will certainly provide them with greater quality, which matches the amount of money sacrificed. A successful design increases the likelihood of consumer purchase intention toward a brand and, therefore, help consumers to recognise their needs and satisfaction (Cosmos, 2013).

3.2.3.1 Steps in product design

In a global environment, product design represents a crucial activity for firms competing, as it drives organisational success because it directly and significantly impacts nearly all of the critical determinants of achievement (Mital, 2008). Product design is more important than ever because its process selection influences product quality, product cost, and customer satisfaction. When a product is not well-designed, or the manufacturing process is not real to the product design, this may cause the quality of the product to suffer. Additionally, the product has to be manufactured using materials, equipment and labour skills that are efficient and affordable, otherwise its cost will be too high for the

market. This is often referred to as the productôs manufacturability - the ease with which the product can be made. Lastly, if a product is to achieve customer satisfaction, it must have the combined characteristics of good design, competitive pricing and the ability to fill a market need; this idea is consistent whether the product is pizzas or cars.

Product design is strategically essential to a company that wishes to stand out in the marketplace because it shapes the productôs price and its quality and also defines the way that good and service functions and how much it is worth (Elliot, 2009). It is crucial for a companyôs product design to match the needs and preferences of the customer group initially targeted by the firmôs business strategy. If not, the company will end up losing its clients base and eroding its market position. The steps in the development of most product designs are presented in Table 3: Idea development, product screening, preliminary design and testing and final design.

Elliot (2009) noted that in the fast-paced, high-technology business environment of the twenty-first century, customers demand greater product variety and are quick to shift to new, innovative, full-featured products. Also, customers make purchase decisions based on a growing list of factors that are affected by product design. Previously consumers made purchase decisions based on either price or/and quality. Although price and quality are still important factors that influence consumersô intention to buy, nowadays consumers are adding other dimensions such as unique design, customizability, order to delivery time, product safety, and ease and cost of maintenance.

Presently organisations are embracing the concepts of mass customization, design for manufacturing and assembly, product disposal, quality function deployment and time-based completion with the unique objective of more clients and to ensure a top place in the market. Companies have begun to use new technologies such as rapid

prototyping and computer- aided design to help them examine how products function, how much they may cost to produce and how they may impact the environment (Elliot, 2009).

Table 3: Design Steps

Design Steps	Definition
1.Idea development	Every product design begins with an idea. Someone thinks of a need and a product design that would satisfy it.
2.Product screening	Once an idea has been developed, it needs to be evaluated. Often a business comes up with numerous product ideas. At this stage, the organisation needs to screen the ideas and decide which ones have the greatest chance of succeeding.
3. Preliminary design and testing	This third stage is where the initial design of the product is made, and market testing and prototype analysis are performed.
4. Final design	The last stage is where the final design of the product is made. It is in this final stage of product design that the organisation studies, in a little more detail, the design to be launched.

It is important to note that creating a beautiful design is more than inspiration or a great idea, it is simply about understanding the fundamentals of the subject. Product design involves various features such as colour, shape, size, form and texture. A well-designed product must have the ability to satisfy customers regarding real product requirements such as quality, performance, reliability, durability, and serviceability. It is essential that the product creates confidence among consumers for them to become loyal and to trust its company. Therefore, this will lead to repeated sales and increased profits.

Consumer evaluation of products is mainly based on what is seen with the eyes: size, color and shape. Consequently if a firmôs product does not differ from those of competitors when a consumer has to choose between two similar products, it is most likely that the consumerôs judgment and decision would be based on price.

Many recent studies are suggestive of designûs influence on product price, in that a purchaser is more likely to choose a better-designed product when given the choice of two products regardless of its high price (Walsh et al., 2008). The study carried out in the United Kingdom found that conscious design firms set a high price for their products which resulted in 3% higher return and 28% higher turnover growth than non-conscious design firms.

In addition consumers in the United Kingdom showed more willingness to pay beyond the premium price set for a well-designed product, because of the belief that another product could not provide the same feature and performance quality; consequently showing that product design has a significant positive influence on both price and consumer attitude (Walsh, 2008). A strong design has advantages since it gives consumers the ability to recall, distinguish a firmûs product from others, thus helping the consumer link the design to the brand name, logo, jingles and so on, to certain associations in memory.

3.2.4 Product Price

The term Price refers to the size of the financial sacrifice that a customer has to make to acquire the product. Thus, the price is what a consumer is prepared to pay to acquire a product or service. The term is not synonymous with value since the price is expressed in currency terms like the South African Rand, while the term value is what a product or device is worth to the consumer (Brijball, 2009). Moreover, the value of a product or service can be reflected in the price of the product; therefore, if a customer values a product, he or she is willing to pay more than the client who does not value that product.

Price is as important for the customer as it is to the organisation. For the customer, price reflects how much has to be sacrificed to obtain a product, while for the organisation the selling price indicates not only the income but also the profits that can be achieved. Some factors

affect the price of the product, as well as right price strategies that can be selected by the firm namely: leader, bait, odd, and bundle prices.

According to Isabella, Pozzani, Chen, & Gomes (2012), the price is a factor that influences the product evaluation process, as it is presented in every purchasing situation. Munnukka (2008) & Khraim (2011) research results indicated that a significant and positive relationship exists between customersôprice perceptions and their intention.

Price is a certain factor in determining product and services value, as it represents an essential factor to marketers because it represents organisationsôassessment of the value customers are seeing in their goods and services and are willing to pay. Levy & Weitz (2012) noted that it is important for a company to retain loyal customers who are willing to pay higher prices for their favourite brand and do not buy based on lower price.

Wickliffe & Pysarchik (2011) introduced product aspects as features that have an inherent impact on customer behaviour like brand and price. These two factors cover the major part of product features. According to Kotler (2011) price is defined as the total amount being exchanged by the customer to obtain a benefit of the product or service. According to Isabella, Pozzani, Chen, & Gomes (2012), the price is a factor that influences the product evaluation process, as it is presented in every purchasing situation, and represents the amount of economic effort that has to be made to ensure a satisfactory purchase. It can also be said that price is simply the total sum of money that customers are willing to sacrifice in exchange for products and service.

Price is one element of the marketing mix. However, the other items, product, place and promotion may seem to be more glamorous than price and thus get more attention, but determining the price of a product or service is, in fact, one of the most important management decisions. Price can lead to a companyôs survival or demise since it is the only factor that affects business revenues and profits. Therefore, marketersô

adjustment of price has a profound impact on the marketing strategies, and depending on the price elasticity of the product or service; the price will regularly have an effect on demand and sales. It is important to note that both high and low price can limit firmôs growth, especially a wrong price which can have a tremendously adverse impact on sales and cash flow.

Price contributes to how customers perceive a product or service. According to Owusu (2013), it has long been known that consumers usually perceive price as an indicator of product or service quality and evaluate the cost regarding the perceived benefit derived from the consumption of the offering. A firm that desires to indicate that its goods or services are of the highest quality will charge a high price as a high price is indicative of high quality. In most cases, when consumers are given the opportunity to choose from a variety of offerings, the price is one of the comparative indicators upon which consumersô buying decision is often based.

The major determinant of prices is none other than what the consumer is prepared to pay, which is in turn related to some other factors including quality (Owusu, 2013).

In their study, the authors Isabella, Pozzani, Chen, & Gomes (2012) noted that the use of price as a quality indicator depends on the availability of other variables that can interfere with the quality such as brand, price variation in a product category or the consumerôs awareness of the price, and his/her capacity to distinguish between the variations of the quality in a product group. High priced goods and services require a rich story behind them that can justify the companyôs choice of a premium price; in fact, the story needs to come through in the enterpriseôs strategies and tactics employed to capture clientsô attention in hope for them to make a purchase (Moore, 2014).

Owusu (2013) cited price as one of the managersôbiggest marketing headaches - that is where they feel more pressure to perform a good

job and less certain of doing the right thing. How a firmôs products are priced in comparison to competitors, will significantly affect the companyôs marketing plan. Also, if a companyôs product price is similar to those of competing firms, the more difficult it becomes for the business to earn more purchase for its products. However, the responsibility lies on the marketersô ability to generate creative strategies and tactics that can break through the cluttered competitive landscape (Moore, 2014). Marketersôpricing decisions should consider both customer and competitor reactions, but the fact remains that a brand, no matter if its price tag is high or low, can still get customersô interests.

Manufacturers may decide to either increase or lower the price of products or services whenever they want. Sandu (2014) study noted that psychology reveals the importance of pricing. Consumers show greater interest and trust towards products tagged with high prices because they tend to associate high price with high quality.

In marketing, psychological pricing is used as majors to influence customersô purchase intention and decisions. According to Kotler (2009), pricing strategies are designed to appeal to customersô emotions and influence both their intentions and decisions. Sandu (2013), argued that price does not relate to figures alone, but it is also a game of perceptions. Thus, it is the consumerôs perception of the price that influences him/her to buy the product and not the product price itself. The psychology of prices and price perception are more essential than the numerical value of price, therefore, managers who understand this can make a significant profit. According to Stivings (2010), it is critical for managers, when determining the price of products and services, to select the right strategy because a poor pricing strategy can cost much money.

There exist numerous pricing strategies. However, psychological price strategy is the most frequently used. The psychological pricing strategy

refers to prices with digits ending with two decimals such as R1.99, R99.99 or R99.95. This strategy is believed to have more power to influence consumersôperception of productsôprice, particularly women consumers (Sandu, 2013).

3.2.4.1 Price - Purchase intention relationship

Price is what helps consumers decide on what, how and where to purchase their desired product, and take decisions as fast as possible. Munnukka (2008), research results indicated that a significant and positive relationship exists between customersôprice perceptions and their intention and that the formation of price perceptions is significantly caused by satisfaction with pricing and service.

Hermann, Xia, Monroe, & Huber (2007) studies showed that price is one important factor in customer purchase. Thus, it has a significant impact on customer satisfaction. Also, consumer satisfaction is affected by price perception directly and is affected by price fairness indirectly.

Another research of Lee AbdouIllia & Assion (2010) studied the effects of consumer perception of price fairness on its purchase decision and referred to it as a proper predictor for purchase decision of the consumer. Kurdsholi & Bozjani (2012) also cited good value in exchange for received money among the criteria that consumers take into consideration. According to Khraim (2011), the price has a significant impact on brand loyalty which in turn effects on customersô purchase intention.

According to Satit, Tat, Rasli, Chin, & Sukati (2012) price is one of the marketing mix elements which affects customer buying decision the most. Based on the author's research, the results showed that travel agents can retain existing customers by offering both attractive and competitive prices, and giving special discounts. Kotler (2009), explain that many consumers use price as an indicator of quality. Image pricing

is especially effective with the ego (self) sensitive product such as perfumes and expensive cars.

A study conducted to test the relationship between price and quality with regards to cars found the relationship to be significantly positive in a reciprocal manner. Ahmetoglu, Fried, Dawes, & Furnham, (2010) in their studies as well, found that price has a significant influence on customerôs purchase intention, especially when consumers have to compare the price of brands.

3.2.5 Consumer Attitude

Attitudes influence every human beingôs lives, and they greatly impact on the ways in which people often judge and react towards each other, objects and events. Although the term attitude is often used during a conversation, probably only a few can accurately define what it means. The concept attitude has been widely used in present social culture. The popular Oxford Dictionary of 2013 defines attitude as ña way of thinking or behavingò(Chen, 2007).

According to Chandon (2011) Attitude is considered to be an important concept of consumer behaviour, which is defined as a set of beliefs, experiences and feelings forming a predisposition to act in a given direction. Attitude-behaviour is a function of how strongly individuals believe that an action will lead to a specific outcome favourable or unfavourable (Rainbowlink, 2011).

According to Kumar & Zhang (2009) consumersôattitudes are learned and developed through experience, this includes both consumersô attitude towards an object and consumersôattitude towards a certain behaviour, since they are all predictors of behavioural intention. Palani & Sohrabi (2013) found that consumer attitude can be formed towards known and unknown products, but this attitude is often heightened towards a specific brand with which he/she is familiar and satisfied. The purchase and usage of the same brand or product tends to create a

positive attitude towards the brand or product, which leads to a formation of a favourable attitude towards the brand or product.

From a business perspective, Solomon (2004), based on a psychological definition, describes attitude as a lasting, general evaluation of people (including oneself), objects, advertisements, or issues. In marketing terms, an attitude is defined as an overall assessment of a product or service formed over time (Solomon, 2008). In this paper attitude will be treated as the knowledge that is formed by consumers, which allow for creating beliefs towards a product that will influence purchasing intention.

An attitude satisfies a personal motive and at the same time, affects the shopping and buying habits of consumers. In his study Penner (2010) cited consumer attitude as a composite of a consumerôs beliefs, feelings, and behavioural intention towards some object within the context of marketing. A consumer can hold negative or positive beliefs or feelings toward a product or service. A behavioural intention is defined by the consumerôs belief or feeling on the product or service.

According to Cant, Brink & Brijball (2009) attitudes fulfil essential functions as they help consumers to adjust to a difficult situation, express their values, organise their knowledge and lastly defend their egos in most threatening situations. The functional theory of attitude developed by Daniel Katz offers an explanation as to the functional motives of attitudes to consumers (Solomon, 2010). Katz (1937) theorises four functions of attitudes. Each function attempts to explain the source and purpose a particular attitude might have to a consumer. Marketersôunderstanding of the purpose of a consumerôs attitude is an imperative step toward changing an attitude.

The utilitarian function of attitudes is one of the most recognised of the four functions. According to the utilitarian function, a consumer will make decisions based entirely on the product or service producing the greatest amount of happiness. Consumersô attitudes guide their

behaviour to gain either positive or negative reinforcers. According to Carvalho (2011) consumers form a positive attitude towards the rewarding products, the ones that have satisfied their needs and develop a negative attitude towards the products that have failed to satisfy.

The knowledge function is seen as a means to organise beliefs about an object or an event. According to Solomon (2008), this feature is prevalent in individuals who are careful about organising and providing structure regarding their attitude or opinion of a product or service. Marketers can change consumersôknowledge function by using fact-based comparisons and real-world statistics in the message strategy. However, vague and non-relevant marketing campaigns could be ineffective against the audience knowledge attitude.

Value-expressive function, on the other hand, is when peopleôs attitudes are formed and are used as majors to express individualsô central values and self-concept. This feature is mostly used when consumers are basing their attitudes about products and services on self-concept or central values. For instance, when consumers tend to accept goods and services with the intention of affecting their social identity.

Lastly the Ego-Defensive Function, which occurs when people form attitudes to defend their egos and self-images against threats and shortcomings. Furthermore, this feature is apparent when consumers feel that the use of a product might compromise their self-image. According to Narayan (2010), the ego-defensive attitude is hard to change. Therefore, marketers need to tread carefully when considering a message strategy addressed to consumers with attitudes based on the ego-defensive function.

3.2.5.1 Attitude formation and consumer involvement

According to (Hawkins, Best & Coney, 2004) Attitudes are formed by different influences, but one of them plays a more important role. Furthermore, the authors noted that attitudes are formed by three main components namely: Cognitive Component that is related to consumersô beliefs about products or services, which can usually be evaluated; the affective component which relates to the feelings or emotional reactions toward an object and, lastly, the behaviour component which refers to the tendency to respond in a certain manner to a particular object, event or activity. According to Cant et al. (2009), all three components of attitude are relevant. However, they often tend to vary depending on the degree of importance.

Aghdaie & Honari (2014) define consumer involvement as referring to consumersô motivation to process information or the process to perceive personal importance. The authors noted that when consumers are more involved with a firmôs brand and its marketing communication, consumers will certainly pay more attention to the product knowledge as they become more motivated to gather, comprehend, elaborate, and assimilate information about the products (Aghdaie & Honari, 2014).

In his study Solomon (2013) stated that consumersô involvement helps shape consumersô attitude and decisions to make a purchase. A consumer with a high level of participation tends to have more consistent attitudes, consequently making the áattitude changeô process harder for marketers. On the other hand, low involvement consumersô attitudes can easily be modified, as they require less information, and tend to evaluate just a few attributes of the product before making the purchase.

According to Solomon (2013) the more marketers engage consumers into their brands, the easier marketers will be able to understand consumersô behaviour regarding how decisions are made and what

product characteristics consumers are mainly interested in. There are some useful strategies that attempt to boost the level of consumer involvement and attitude**.** Myer, Kwon & Forsythe (2013) study provided evidence that consumers are more likely to respond more favourably to brand attitude if the company brand advertising campaigns are highly engaging people into an immediate feeling of involvement. Therefore, gaining positive brand attitude provides a huge long-term benefit to the firmôs brand as consumers perceive the brand motivations and eventually increase purchase intentions, which helps reduce the number of consumers switching to competing brands.

3.2.5.2 Factors influencing consumers' attitude

Consumer attitudes represent both an obstacle and an advantage to marketers. Therefore, marketersô choice to discount or ignore consumersô attitudes towards a certain product or service while developing a marketing plan guarantees the limited success of a product campaign. On the contrary, perceptive marketers leverage their understanding of attitudes to predict the behaviour of consumers. Such savvy marketers are aware of how to distinguish the differences between beliefs, attitude, and behaviour while leveraging all three in the development of marketing strategies.

The evaluation of a consumerôs attitude towards a particular object mainly depends on the consumerôs beliefs about the objectôs attributes. Marketing researchers imply that an attitude towards a product or brand can be predicted through the identification of the consumerôs specific beliefs, identity and values, which can be used in turn as majors to derive measures of the consumer's overall attitude. Salomon (2008) noted that the accessibility of an attitude from an individual's memory can moderate the extent to which the attitude guides product selection.

Also, the author found that consumerôs disused behaviour is most likely to occur when his attitude is highly accessible from his memory.

In their study, Chen & Sadeque (2007) noted that it is important to mention that attitudes are formed not only by intrinsic factors, resulted through direct experience with the products, but also, attitudes are formed and can be influenced by extrinsic factors. Some factors can interfere with a person's control over their behavioural goal. Salomon (2008) noted that some of these factors are internal to the individual (skills, knowledge), while others are external (money, time). It is certain that resources and opportunities available to consumers will to some extent determine behavioural achievement.

According to Chaniotakis (2010), two dimensions are used to establish attitude toward private label brands. These can also be referred to as internal and external stimuli. The external stimuli notably play a major role in influencing consumersô beliefs, which change and lead consumersô attitudes. The external stimuli are product or brand reputation, price, packaging, labelling, product style and word of mouth advertising; while the internal stimuli include product quality, trust in the product, ófamiliarityôand ópperceived economic situationô(Chaniotakis et al.,2010).

3.2.5.3 Consumers' attitude and purchase intention

There has been much argument on how a positive attitude towards a company or a brand can influence consumersô intention (Chen & Sadeque, 2007). The authors noted that consumer attitude towards a company and its products would significantly influence the organisationôs success or failure of marketing strategy. However, Solomon (2004) argues that there is no evidence that such a relationship can be established. An individualôs attitude alone will not affect his/her intention, but will depend on other factors namely: the consumerôs level of involvement or elaboration, knowledge and experience, accessibility of attitudes, situational factors and also personality variables.

Chandon (2011) new study on consumer attitude towards private label brands found that attitude greatly influences consumersô purchase intention and consumer behaviour because it has a basic psychological function. A positive attitude towards a certain brand leads to repurchase intention. Various authors state that consumers who have a positive attitude towards a product influence their purchase decision of the next purchase, that satisfaction from the previous purchase will greatly impact on the next decision, thus increase familiarity of the product and reduce risk (Chandon, 2011).

According to Anic, (2010) attitude is usually viewed as a variable that affects behavioural intention and specific personsô behaviour. Consumers often tend to show preference or a lack of preference for brands, advertisements and other typical marketing stimuli, through the expression of either a favourable or unfavourable attitude. Whenever an individualôs attitude towards engaging in behaviour is positive**,** the person is more likely to participate in that behaviour (Anic, 2010).

Past study has found a positive relationship between attitude and patronage behaviour (Moye & Kincade, 2003). Consumers with a favourable attitude towards a particular brand will be most likely to patronise the stores and buy their products, whereas consumers engage in opposing behaviour if they have an unfavourable attitude (Moye & Kincade, 2003). Also, as mentioned earlier, consumersô attitudes have been found to affect consumer purchase intention (Chen, 2007) positively.

3.2.6 Purchase Intention

In today's competing and changing business environment the retailersô influence and the customersôdemand level are unceasingly growing, therefore organisationsôneed to develop a long-term relationship with consumers is crucial for the organisationôs success and survival. Consumersôbuying decision is very complex and very often purchasing

intention is related to consumersô behaviour, perception and their attitude (Mohaini, 2011). The purchase is the only visible part of a more complex decision process created by consumers for each buying decision they make (Perreau, 2011).

For marketers purchase intention is perceived as a common tool that helps predict the sales of existing goods and services (Armstrong, Morwitz & Kumar, 2010). According to Shah et al., (2012) purchase intention is a kind of decision-making that studies the reason to buy a particular brand by the consumer. Chinomona, Okoumba, & Pooe (2013), note that purchase intention is the possibility and willingness of the consumer to purchase a certain product or service in future.

The main fundamental aspect of consumer behaviour is their purchase intention which in literature is defined as the situation in which a customer is agreeable to make a transaction with the retailer (Rizwan, Qayyum, Qadeer, & Javed, 2014). According to Rizwan et al. (2014), purchase intention comes into deliberation when a customer is most likely attempting to buy some product or service. For marketers purchase intention is a broad meaning as their forecasted consumer behaviour depends heavily on this purchase intention of the customers.

Predicting consumer behaviour is one of the most difficult tasks for any business as it keeps on altering under the influences of unknown and doubtful factors, therefore leading to a purchase intention which is deadly to measure under different conditions (Rizwan, Jamal, Abidin, Zareen, Khan, Farhat, & Khan, 2013).

The Chaniotakis et al. (2010) study cited that consumersô attitudes, extrinsic factors and intrinsic factors of the products are factors influencing consumersôpurchase intention in the first place. Giovanis et al., (2013) have found that price is a key element that affects consumersôminds, however beside price other predictors of purchase intention are product and service quality, consumersôattitude, design, and brand image are also vital elements in the process of customersô

purchase decision. Ibrahim, Kassim, & Mohamood (2013) cites that, todayôs competitive marketplace has caused marketers to become more interested in understanding consumersôpurchase intentions to segment the market correctly. The analysis of consumersôintention is effective as it allows one to detect the orientation of consumersô behaviour and decision. (Thapa, 2011). Both market researchers and organisations spend a significant amount of money on consumer research to identify the predictors of consumer decisions.

3.2.6.1 Factors influencing purchase intention

Ghosh (2010) stated that intention is an effective tool often used in predicting purchasing process since consumersô decision to buy a product is driven by their intention. Some studies on purchase intention found that a personôs intention to buy a product or service is based on his/her previous experience, preference toward the product and the external environment where information about the product is collected Schiffman & Kanuk, 2010; Yang, 2014). Consumersôbehaviour will be driven by the physiological motivation that stimulates their response which brings them to the retail store to fulfil their need (Kim & Jin, 2011).

3.2.6.2 Extrinsic factors of the product

The free dictionary of 2015 defines extrinsic as not an inherent part of the thing or not contained in something. Richardson (1997 as cited in Jaafar et al., 2012) research shows that extrinsic cues play a more essential role in influencing consumersô purchase intention than intrinsic cues. Extrinsic factors of the product refer to elements such as perceived price, product or brand image, packaging, labelling, store image, product style/design and advertisement.

According to Grunert et al. (2014), consumer intention is influenced by monetary cost. Also, Munusamy & Wong (2008) proved that there is a significant positive relationship between price and consumersômotives towards the purchase of private label products. Consequently, the

majority of consumers will make their decision by referring to low price product (Boutsouki et al., 2008).

Besides price, the physical appearance of the product (regarding design and packaging) is also important because of its ability to attract consumersôattention and so influence their decision-making process. Ampuero & Vila (2009) noted that consumers usually examined the product by simply looking at the exterior of the product and also the provided information on the packaging.

3.2.6.3 Intrinsic factors of the product

Intrinsic factors are linked to physical product features, which include perceived quality, risk and value (Jaafar et al., 2012). The Longman Dictionary (2012) defines intrinsic as being part of the nature of something.

Product quality and safety related issues have become so important to both organisations and consumers. Many consumers are more concerned with the quality part of the product especially those requiring them to sacrifice an enormous amount of money.

Despite the fact that consumers sometimes are willing to take risks, however, according to Jaafar et al. (2012) the authors noted that risks do occur due to mistakes or uncertainty about the product, and that uncertainty happens due to the physical appearance of the product. Sudhir & Talukdar (2014) cited that, consumers often associate low price with poor design, quality and simple packaging. Compared to products with high prices, these are always perceived to be of high quality, therefore, lower consumersôrisk of making the wrong decision. Batra & Sinha, (2010) noted that consumers will always use price and brand to determine the quality of the product.

Previous studies on purchase intention have provided evidence that brand image, product quality price, product design, feature and attitude positively influence purchase intention (Lin & Lin, 2007; Ibrahim,

Kassim, & Mohamood, 2013). In their studies Zeithaml, (2008) & Grewal et al., (2008) noted that purchase intention might be altered by the influence of price, quality perception and value perception. That consumersôintention to purchase is interrupted by internal impulse and external environment during the purchasing process.

Wang (2013) found that in purchasing apparel products, both quality and price are critical factors because of their major effects on consumersô preference and intentions to buy or to repurchase. Furthermore, product quality does have a direct influence on consumersô willingness to pay a high price and recommend the particular brand or product to friends, peers and family members.

Hashim & Muhammad (2013) agree that there is a significant relationship between price and purchase intention, that product quality represents the major feature that increases the image of a brand or product, which in turn influences its price. Consumers who buy the brand or product often resist switching to another brand. Product quality is a key factor in assessing product price and purchase intention (Mirabi, Akbariyeh & Tahmasebifard, 2015).

It is an important element that any company needs to take into consideration before setting a price for its product. Quality should be improved every moment because it is through the continuous process of improvement that a productôs performance can be improved and consequently increases the satisfaction of customersôneeds (Tariq et al., 2013). Chi et al. (2008) noted that if a product has a better quality, a customer will be more inclined to purchase it regardless of how much it may cost. Tsiotsou (2006) in his study found that higher quality products influenced price and created higher purchase intention.

Chandon (2011) cited that consumersô intention to buy the same product or brand is caused by the belief that they have the right price-quality relationship. Very often satisfied consumers have a positive attitude towards the product, which will later impact on their purchase

intention. According to Khan et al. (2012), positive response to a brand increases the likelihood of its positive evaluation. In their study Wee et al. (1995) concluded that the more favourable consumer attitudes towards a brand, the higher the chances that consumers will purchase the brand. Attitude-construct is often used as a predictor of consumer intentions and behaviour. According to Byoungho & Yong (2009) there is a positive relationship between attitude and purchase intention, because whenever consumers have a positive attitude towards the brand, this will continually increase purchase intention and actual purchase.

According to Chang & Albert (2010), frequently marketers use product price as the main predictor that influences the consumersô evaluations of products and purchase intention. Each product in respect of product categories has its respective price range, however when the actual price exceeds the acceptable price range within its category, it often tends to reduce consumersô purchase intention. Regardless of the major impact that price has on consumer purchase intention, Kassim & Mohamood (2013) cited that attitude also plays a central role in consumersô purchase intention. Also, that consumersô attitudes towards a brand have a high impact in attracting consumers to buy a Smartphone.

In reality, the success of any business depends on marketersô understanding of their particular target consumersôneeds and wants.

Soriano (2012) stated that consumers have specific reasons as to whether to purchase a certain product; although the perceived quality is often associated with consumer decision to buy, there are many factors other than quality that can influence intention. Some research on purchase intention has revealed that customer satisfaction is directly linked to customer purchase intention. However, satisfaction can be achieved through the experience of extrinsic forces such as product image, quality and unique features and style. Thus, a consumerôs

positive emotion or response may lead to satisfaction while negative emotions or response will result in increased dissatisfaction of customers (Noone, Kimes, & Mattila, 2007).

Consumersô intentions may be influenced largely by promotional efforts to help recall their positive memory (Um, Chon, & Ro, 2009). According to Latif & Abideen (2011) advertising is one of the strategies of promotion and it is an important tool in creating awareness and changing the attitude of potential customers to make the decision to buy the product. When consumers pay attention to advertising, they create or recall a feeling toward it, which leads to a change in attitude and those who have a good feeling toward a product are more likely to develop the desired attitude toward it (Kurdsholi & Bozjani, 2012). Furthermore, advertising acts as a communicator that informs consumers about products and services (Uusitalo, 2011).

Steinberg & Jules (2009) propose consumersô definition of a successful advertisement is often based on the right image. This statement is in line with the previous studies conducted by Liljander et al. (2009) who revealed that product and brand image influence consumersô purchase intention on private label products.

3.3 Conclusion

The main fundamental aspect of consumer behaviour is their purchase intention. Purchase intention is perceived as a common tool that helps predict the sales of existing goods and services. Todayôs competitive marketplace has caused marketers to become more interested in understanding consumersô purchase intention to segment the market correctly.

Consumersô attitudes, extrinsic factors and intrinsic factors of products are identified as the main factors influencing consumersô purchase intention. Extrinsic factors involve perceived price, product or brand image, packaging, labelling, store image, product style/design and

advertising, while the intrinsic factors are perceived quality, risk and value.

The success of any business depends on marketersôunderstanding of their targeted consumersôneeds and wants. Researchers on purchase intention have revealed that customer satisfaction is directly linked to customer purchase intention and that satisfaction can be achieved through the experience of extrinsic and intrinsic elements of products and services.

Chapter Four (4) Conceptual Model AND Hypotheses Development.

This section of the paper focuses on the theoretical framework, in which the theory of planned behaviour and the consumer price perception theory are discussed; furthermore provide the conceptual model and hypotheses are developed.

4.1 Theoretical Framework

4.1.1 Theory of planned behaviour

The theory of planned behaviour (TPB) was proposed to improve the predictive power of the theory of reason action (TRA). The TPB initially developed by Ajzen (1991) helps to understand how one can change the behaviour of people. This theory has been applied to studies of the relationship among beliefs, attitudes, behavioural intentions and behaviours in various fields, for instance in advertising, public relations, advertisement campaigns, and healthcare.

According to Ajzen & Fishbein (2005) one major assumption of the TPB is that attitudes guide behaviour. It assumed that human behaviour is reasoned and that an individual considers the likely consequences of performing or not performing that behaviour. According to TPB (Ajzen, 1991), human behaviour is determined by intention and perceived behavioural control (PBC). Conner & Norman (2005) noted that intention is the proxy determinant of behaviour. Intentions represent a personôs conscious motivation or decision to exert effort to perform the behaviour. Peopleôs intentions are mainly influenced by their attitudes towards the behaviour, subjective norms and perceived control over the behaviour (Conner & Norman, 2005). Hence in combination, attitude towards behaviour, subjective norms and perception of behavioural control, lead to the formation of a behavioural intention. As a general rule, the more favourable the attitude, subjective norm and the greater the perceived control, the stronger is the personôs intention to perform the behaviour in question.

For the purpose of this study, the focus will only be on one aspect of the TPB, which is the influence of attitude on intention. In respect of that, authors Fishbein & Ajzen (2005) suggest that to understand behaviour, one must first identify intentions of performing the behaviour. Fishbein (2005) & Ajzen (1991) highlight attitude as the first determinant factor of intention. The authors Valler, Cuerrier, Pelletier & Mongeau (1992) argue that the more a person has a favourable attitude toward the behaviour, the stronger is his/her intention to perform the behaviour under consideration. From here, the conceptual model is being shaped.

4.1.2 Consumer price perception theory

The consumer price perception theory used by Burtton, Lichtenstein, Netemeyer & Folse (1998) states that they are three factors that constitute this dimension namely: price consciousness, value consciousness, and price-quality association or perception. According to Sengupta (2014), consumer price perception theory states that consumers already have a predefined price range for any product category, which is only acceptable to them for purchasing a product. Consumers often tend to correlate price with both product/service value and quality, therefore emphasising on product value and quality are successful strategies for manufacturers to set a competitive price, which is more likely to impact on consumersôpredefined price of the product and influence their intention, thereby increasing sales.

The model also illustrates that pricing strategy affects a personôs intention to purchase. Price is a significant determinant of consumersô purchase decisions. Martin & Kuehnl (2015) agree that the price of a product /service leads to perceived value, which is a primary factor influencing purchase intention.

Though many studies noted that a price/quality relationship cannot be applicable all the time, numerous researchers have provided evidence that many consumers use price as a signal that indicates product quality.

Therefore, higher prices positively affect purchase probabilities (Lichtenstein, Boch & Black, 2008; Tellis & Gaeth, 2009). From here, the conceptual model is being shaped.

4.3 Conceptual research model / Framework

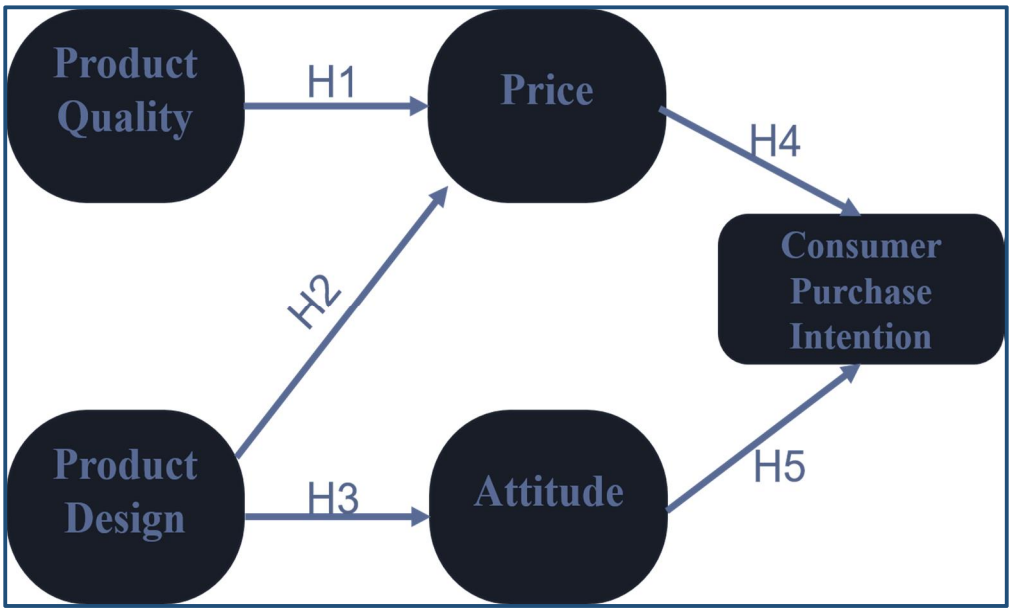

Fig.10: Conceptual research model / Framework

There are five elements in the conceptual model shown in Figure 10 above, where Product Quality and Design were treated as independent variables in this research. It also shows the three dependent variables that are Product Price, Consumer Attitude, and Consumer purchase intention.

4.4 Hypotheses Development

Product quality is a key factor in assessing purchase intention (Llusar, Zornoza & Tena, 2010). It is an important element that any company needs to take into consideration before setting a price for its product. Quality should be improved every moment because it is through a continuous process of improvement that a productôs performance can be improved and consequently increase the satisfaction of customersô needs (Kotler & Armstrong, 2010). Tsiotsou (2006) noted that, if a product has a better quality, the customer will be more inclined to purchase it regardless of how much it may cost. Also, the authorôs study

emphasised that product quality has a positive impact on customersô purchase intention. Tsiotsou (2006) in his study found that higher quality product creates higher purchase intention.

Jin & Yong (2011) investigated the effect of product quality on purchase intention and product price. After collecting 242 questionnaires, they found that product quality has a significant and positive effect on both purchase intention and product price. Llusar et al. (2010) agree that product quality has always been an important competitive issue because it helps producers determine the price of any product.

The main reason product quality is a critical factor to consider in a product pricing strategy is that customers often associate low price with low quality. When a product is priced too low, the consumers tend to feel that the materials used in producing the goods are either inferior or of a lower quality, and the product is perceived to be of low quality**.**

Studies that have explored the relationship between product quality and product price as factors influencing sales growth have found positive relationships between product quality and product price. The recent study on why the Apple brand is the most valuable technology company despite having highly priced products concluded that the quality of Apple products is one of the cores to Apple company success (Michaels, 2010). As a result, based on the above discussions, it can be hypothesised that:

H1: Product quality positively influences product price.

Product profits are determined by both revenues and costs. The design of a product acts as the representative of the manufacturer and through this position, it can be used as the carrier of advertising messages, organisationôs motivation tool, and the carrier of company slogans (Rahimniya, Alavi & Siyahrudi, 2012). Nowadays, there is no doubt that more attractive and unique designs can help a firm to distinguish itself from competitors. At present many companies tend to put more focus on the different aspects of style because they recognise that even with

a minor change in high style, profitability can be gained in product sale (Yang, 2014).

The design of a product is more likely to influence consumers, thereby, leading to changes in market share and price (Ulrich & Pearson, 2008). This influence may come about because of designôs role in defining the features of a product, its performance quality, its reliability and its aesthetic appeal. Many recent studies are suggestive of designôs influence on product price in that a purchaser is more likely to choose a better-designed product when given the choice of two products regardless of its high price (Walsh et al., 2008).

The study carried out in the United Kingdom found that conscious design firms set a high price for their products which resulted in 3% higher return and 28% higher turnover growth than non-conscious design firms. In addition consumers in the United Kingdom showed more willingness to pay beyond the premium price set for a well-designed product, because of the belief that other products could not provide the same feature and performance quality, consequently showing that product design has a significant positive influence on both price and consumer attitude (Walsh, 2008).

Candi (2010) believes that the aesthetic design of a product can have significant momentary effects on consumersô attitude because consumers are easily affected by appearance aspects of a product especially its unique style, design and packaging in unplanned purchases. Rahimniya et al. (2012) in their study concluded that visual and functional aspects of style impact on the acquisition of foods. According to Khraim (2011), the design of a product has a significant impact on brand loyalty which in turn effects on consumer attitude, and purchase intention. Thus, it can be hypothesised that:

H2: Product design positively influences product price.

H3: Product design positively influences consumer attitude.

According to Kotler & Armstrong (2010), the price is defined as the money that customers exchange regarding service or product, or the value they receive. Levy & Weitz (2012) state that it is critical for a firm to retain loyal customers who are willing to pay higher prices for their favourite brand and donôt buy based on lower price. Wickliffe & Pysarchik (2011) introduce brand and price as features that have an inherent impact on customer behaviour, which covers the major part of product features.

The Hermann, Xia, Monroe & Huber (2007) study showed that price is one important element in customer purchase and also has a significant impact on customer satisfaction. Also, consumer satisfaction is affected by price perception directly and is affected by price fairness indirectly. In another research, Lee, Abdoullia, & Assion (2010) studied the effects of consumer perception of price fairness on its purchase decision and referred to it as a proper predictor for purchase decision of the consumer. According to Khraim (2011), the price has a significant impact on brand loyalty, which in turn effects on customersôpurchase intention.

According to Pesin (2011), it takes a combination of favourable market trend, product quality, price and consumer liking to influence consumersô purchase intention. The price of a product is one of several factors that can affect consumers. Hence, the price is the cost that consumers can best determine, and thus plays a major role in their decision (Tood & Kenesei, 2011). For example, in a recent study of consumersôselection of shopping outlets where to make a purchase, the price was consistently selected as the major factor influencing consumersô decision to visit the outlets (Tood & Kenesei, 2011).

Numerous researchers have provided evidence that many consumers use price as a signal that indicates the level of quality, and very often higher prices positively affect purchase probabilities (Lichtenstein, Boch & Black, 2008; Tellis & Gaeth, 2009). As a result, according to the above discussions, the fourth research hypothesis can be proposed:

H4: Product price positively influences consumer purchase intention

The Theory of Planned Behaviour (TPB) states that purchase behaviour is determined by the purchase intention, whereas purchase intention is determined by attitudes (Phau & Teah, 2009). According to Phau & Teah (2009) attitude toward the product is a better predictor of behaviour. Attitude is a learned predisposition to respond to a situation in a favourable or unfavourable way; although attitudes cannot be observed directly, they can be determined through other measures that can determine consumer attitudes.

Voon, Ngui & Agrawa. (2011), noted that attitude exercises substantial affirmative effect on consumer decision to buy, thus, influencing consumersô attitude can work as a resource that can be used to increase consumersô purchase intention. According to Latif & Abideen (2011) advertising is one of the promotion strategies which is an essential tool in creating awareness and changing the attitude of potential customers to make the decision to buy the product.

When consumers pay attention to advertising, they create a feeling toward it that leads to a change of attitude, and those who have a good feeling toward the product are more likely to develop the desired attitude toward it (Kurdsholi & Bozjani, 2012).

According to Tang et al. (2007), positive response to brand increases the likelihood of its positive evaluation (Khan, Ghauri & Majeed, 2012). In his study Wee et al. (1995) concluded that, the more favourable consumer attitudes towards a brand, the higher the chances that consumers will purchase the brand and that the attitude construct is often used as a predictor of consumer intentions and behaviour. As a result, according to the above discussions, it can be hypothesised that:

H5: A positive attitude positively influences consumer purchase intention.

Chapter Five (5) RESEARCH METHODOLOGY AND DESIGN

5.1 Introduction

This chapter describes the research methodology used in the study. The geographical area where the study was conducted, the study design and the population and sample are described. The instrument used to collect the data, including methods implemented to maintain validity and reliability of the instrument are described.

5.2 Research philosophy

5.2.1 Quantitative Research

To achieve the objectives of this study, the research followed a quantitative research methodology. Malhotra (2015) defined quantitative research method as a research that involves large samples; structured data collection measures, the purpose of which is to gain perspective and understand issues from the viewpoint of the research participants, quantifies the data collected numerically and frequently uses statistical analysis to gather conclusions from the research. Additionally, findings from this type of research methodology can be generalised to other settings (Zikmund, 2011). Therefore, for that reason, the quantitative research method was utilised for this study.

Quantitative research method was used to provide numerical measurement and analysis of the adoption dynamic. Quantitative research method was utilised because this approach provides data that is descriptive, anything can be counted - even purely verbal responses. Furthermore, in quantitative research the data is in a numerical form, therefore, easy to apply statistical tests in making statements about the data.

5.3 Research setting and unit of analysis

The study was conducted in Johannesburg, Gauteng Province (RSA), more precisely, at the University of the Witwatersrand. To better understand individuals purchase intention towards Smart wearable

technologies, the research was only limited to the Witwatersrand students. It included both Witwatersrand students who were aware and owned any type of Smart wearable devices and those aware of SWT existence though do not possess them yet.

The unit of analysis was Smart wearable devices from top manufacturers such as Apple, Samsung and Sony. A sample unit is a single element or group of elements subject to selection in the sample (Zikmund, 2011).

5.4 The study population and sample

5.4.1 Target population

The identification of the study population is necessary for the formulation and running of any trial. A population is defined as all elements (individuals, objects, and events) that meet the sample criteria for inclusion in a study (Malhotra, 2015). According to Malhotra (2015), the target population is the collection of elements or objects that possesses the information sought by the researcher and about which inferences are to be made.

The target population must be defined precisely and the researcher should indicate clearly the characteristics of the target population that applies directly to the study (Malhotra, 2015). The targeted population should be defined in terms of elements, sampling units, extent, and time.

For this study, the population were students of the Witwatersrand University who are interested in Smart wearable technology and are concerned about their health and fitness. Present day, because presently the most popular Smart wearable technologies on the market are used during a workout on the road: when cycling, jogging, and walking; swimming, in the gym/fitness centres and golf courses.

5.4.2 Sampling Procedure

A sampling frame is described as a representation of the elements of the target population, which consists of a list or set of directions for identifying

the target population (Malhotra, 2015). According to Berndt & Petzer (2011), sampling frame is closely related to the population. Ideally it is a complete and correct selection of a small number of elements from a larger defined target group of items and expecting that the information gathered from the small group will allow accurate conclusions to be made about the larger group. According to Bryman (2012), a sample is a segment of the population that is selected for the investigation.

5.4.2.1 Sampling type

5.4.2.2 Non-probability

Malhotra (2015) states that the most important decision about the choice of sampling technique is whether to use probability or non-probability sampling.

This study proposes to use non-probability sampling techniques. Berndt & Petzer (2011), noted that non-probability sampling is arbitrary and subjective. It is a sampling technique where the samples are gathered in a process that does not give all the individuals in the population equal chances of being selected. Non-probability sampling technique relies on the personal judgment of the research rather than chance to select sample elements (Malhotra, 2015).

In probability sampling designs, the elements in the population do not have probabilities attached to it and may yield good estimates of the population characteristics (Malhotra, 2015). Under non-probability sampling, there is convenience sampling whereby individuals are selected because of their convenience, accessibility and proximity to the researcher. Each respondent is chosen just because he or she is easiest to recruit for the study and the researcher does not consider selecting subjects that are representative of the entire population.

5.4.2.3 Convenience Sampling

Convenience sampling is described as the most common of all sampling techniques, which is preferred by many researchers because it is fast,

inexpensive, and relatively easy to interpret data collected and the subjects are readily available. Convenience sampling is the least expensive and least time-consuming of all the existing sampling techniques. The sampling units are accessible, easy to measure, and more cooperative, however convenience samples are not representative of any definable population (Malhotra, 2015).

The study employed the convenience sampling method. In all form of research, it would be ideal to test the entire population however, as in most cases, the population is just too large and, therefore, impossible to include every individual. This represents the main reason why most researchers tend to rely on the convenience sampling techniques. Participants were selected from among Witwatersrand University students who are familiar with Smart wearable technologies.

5.4.2.4 Sample size

The basic idea of sampling is that by choosing some of the elements in a population, conclusions can be drawn about the entire population (Berndt & Pezter, 2011). For the researcher to achieve more precision, the acceptable risk in predicting that level of accuracy and identifying variability in the population, a larger sample is required.

For the purpose of the proper survey, there is a need for perfect research instruments to find out sample size for more accurate results about factors influencing the purchase intention of Smart wearable technology. The majority of Smart wearable device owners are young, with nearly half between 18 and 54 years old, and both men and women are equally likely to buy Smart wearable technologies (Sichun & Boxall, 2015).

Previous survey conducted to determine the potential of Smart wearable technology in the market in Europe, already targeted individuals between the ages of 18 and 55, mentioning this demographic, in particular 18 - 24 year old individuals, have the strongest buying power and are most likely to purchase a Smartwatch or a fitness band over Smart clothing and

Google Smart Glasses (Baer, Czaj, Poljacik, Whyard, & Woodworth, 2015).

Missal (2015) cited that two-thirds of Millennials (18 - 35 years of age) are familiar with Smart wearable devices compared to Generation X (36 - 50 years old) and that both Millennials and Generation X are more likely to purchase wearable technology than any other generation. This study also targeted the students of the Witwatersrand University between the ages of 18 and 35 years.

In South Africa, one in five adults attend the gym/health club at least 10 times per months, and the total number of members in 442 gyms is reported to be 913 012, only 18,9% of the total South African adult population estimated for 2015, who care about their fitness and health issues. Scholars that have conducted studies on Smart wearable technology have used a sample size of 474 estimates (Baer et al., 2015). Therefore, this study also proposed a sample of 474 respondents as a representative sample size.

5.5 Data Collection Instrument

5.5.1 Questionnaire design

Survey is a kind of research instrument or data gathering technique which is more rigid than interviews. They are usually used to gather ideas from a large population as it is placed in quantitative research method (Malhotra, 2015). The researcher employed a self-administered questionnaire in English, containing closed-ended questions designed to achieve the objectives formulated for the study, to collect data from the respondents.

Closed-ended survey questions were utilised because they are mostly likely to lead to more reliable and valid data. Also closed-ended questions are better to use when projecting a survey to a broad audience. The investigation aimed to identify whether the variables are statistically significant factors that influence consumer purchase intention of Smart wearable technology.

The questionnaire was structured as follows:

- A preamble provided information explaining the purpose of the questionnaire as well as the rights of the respondents.
- **Section A** then included questions designed to develop a demographic profile of those surveyed: the respondentôs profile and general information: gender, age, level of education, occupation, and whether the respondent was aware of Smart wearable technology devicesô existence. Also, the respondents were requested to indicate the brand of Smart wearable technology they are familiar with.
- **Section B** contained questions addressed towards Smart wearable watches, fitness trackers, wrists bands and Smart Glasses. All the measurement items were measured on a five-point Likert-type scale that will be anchored by 1= strongly disagree to 5= strongly agree to express the degree of agreement. ópproduct qualityômeasure used four-item scales, ópproduct designômeasure used four-item scales, ópproduct priceôwas measured by four-item scales, ócustomer attitudeô used five-item scales, and finally óconsumer purchase intentionô used three-item scales, all taken from Kinuthia, Mburugu, Muthomi & Mwihaki (2012).

5.5.2 Research variables measurement instruments

Research Constructs	Research Measurement Item	Scale
Quality	• The quality of the product meets my expectation. • The brand has a good functional quality. • Styles of the product have distinctive features. • The quality of the product is suitable for me.	1 = strongly disagree and 5 = strongly agree
Design	• The brand provides wide variety of style. • The brand provides my choice of colour. • The design of the brand is reputable. • I am happy with the product size.	1= strongly disagree and 5 = strongly agree
Price	• The increase of price does hinder me from purchasing. • I select brand name regardless of price.	1=strongly disagree

	• The increase of price is an indication of great value. • I am ready to pay any price for this particular product.	and 5=strongly agree
Attitude toward Wearable technology	• The product display is attractive. • The product Ads attract me to purchase. • The product name and image are attractive to me. • The product design matches its price. • The product design does not match its price.	1=strongly disagree and 5=strongly agree
Consumers' purchase intention	• I intend to use this product. • I am more likely to repurchase this brand in future. • I will buy this product.	1=strongly disagree and 5=strongly agree

5.6 Data protection

To ensure data protection, the completed questionnaires were stored in a locked cupboard, and the collected data was retained on the researcherôs password-protected computer.

5.7 Editing and coding

After the information-gathering has been completed, the data must be converted into a format that will answer the marketing investigatorôs questions. The data processing began with editing and coding the data. Editing requires one to check the data collection structure for inaccuracy, legibility, and reliability in classification (Zikmund & DôAmico, 2011). The editing process corrects problems such as interviewer errors, where an answer was recorded on the wrong portion of a questionnaire, before the data is transferred to the computer

Coding is a method of assigning a code or symbol, preferably a number; to each possible answer to a particular question. The purpose of coding is to transform respondentsôanswers to survey questions into codes or symbols that can be easily entered into and read by a statistical analysis

software package. In this study, Section A of the questionnaire preceded, while questions in Section B were coded according to relevant categories.

5.8 Data analysis

The analysis is the application of logic to understand the data that has been collected. A simple form of analysis may involve observing consistent patterns and summarising important details that are shown in the study (Zikmund, 2011). The Statistical Package for Social Science (SPSS), version 24, and AMOS, version 22 will be used to analyse the data and test the research formulated hypotheses. Before data analysis commenced, the data was captured into an EXCEL spreadsheet and subsequently cleaned by rectifying all transcription errors by returning to the completed questionnaires to check the correct response. Then the edited and coded data were imported into SPSS version 24 then AMOS version 22.

5.8.1 Structural equation model

According to Vanderweele (2012) the structural equation model is described as several statistical models mostly utilised to evaluate the validity of substantive theories with empirical data. Hooper, Coughlan & Mullen (2008) pointed out that it has been a necessity to researchers. Presently, SEM is also perceived to be the most popular statistical tool of scholars in several disciplines such as psychology, education, and the social and behavioural sciences (Vanderweele, 2012). SEM is a procedure with the ability to handle a large number of endogenous and exogenous variables, also unobserved variables specified as linear combinations (weighted averages) of the observed variables (Golob, 2010). Basically, SEM encompasses the evaluation of two models, notably a measurement and a path model.

The goodness of fit of a statistical model describes how well a model adapts to a set of observations. Measures of goodness of fit typically

summarise the discrepancy between observed values and the values expected under the model.

According to Kline (2010), in the structural equation modelling, the fit indices indicate whether the model is acceptable or not. When a model is proved to be acceptable, researchers then proceed on establishing whether the specific paths are significant. Generally, acceptable fit indices do not always imply that the relationships between variables are strong. Actually, high fit indices are often easier to obtain when the relationships between variables are low rather than high, because the power to detect discrepancies from predictions are amplified.

Many of the fit indices are mostly derived from the Chi-Square value. The Chi-Square value represents the differences that exist between the observed and the predicted covariance matrix. In Amos the Chi-Square is named CMIN. According to Moss (2016), the criterion for acceptance varies depending on researchers, ranging from less than 2 to less than 5 as suggested by Schumcher & Lomax (2004).

The Root Mean square also knows as the RMR or RMSE represents the Square root of the average or mean of the covariance residuals. According to Bush, Lahti & Werner (2015), the RMS value should be less than 0.08 and ideally less than 0.05

The Comparative Fit Index (CFI) is an incremental fit index, which is perceived to be an improved version of the NFI (Moss, 2016). It is one of the most used indices, because it processes many desirable properties, notably its relative, yet not complete, insensitivity to the complexity of the model. As suggested by Moss (2016), the CFI is normed so that values may vary between from 0 to 1, with higher values indicating better fit, whereas CFI values above 0.90 are usually associated with a model that fits well.

The Tucker Lewis Index first introduced by Tucker & Lewis is abstractly comparable to the NFI. Moss (2016) suggests that NFI values

approaching one shows a better fit than a model with a lower value. In this study the model fit is tested based on the RMSEA (Root Mean Square Error of Approximation) value less than 0.008 which indicates a reasonable fit with the data, the NFI (Normed Fit Index) values above 0.9 indicate a good fit of the model, the RFI (Relative fit index), the IFI (Incremental fit index), TLI, and CFI (Comparative fit index) values close to 1 indicate an excellent fit.

5.8.2 Confirmatory factor analysis

The Confirmatory Factor analysis (CFA) is perceived as an analytical tool, which is employed by researchers as a means to examine hypotheses of the constructs that the research topic is intending to measure and finally provides an empirical basis for interpretation (Holdnack et al. 2011). According to Lei et al. (2007), hypotheses testing is the main reason to employ CFA.

5.8.3 Reliability

Reliability refers to the consistency of a measure of a construct that represents the extent to which the scale produces constant results if repeated measurements are made (Malhotra, 2015). It is a tool used to evaluate the degree of consistency that exists among multiple measurements of research variables. According to Malhotra (2015) reliability is assessed by determining the association between scores obtained from different administrations of the scale. If the association is high, the scale yields consistent results and is therefore reliable.

To measure reliability, many studies use Cronbachôs alpha calculation (construct reliability) and Composite Reliability. The scale measuring Product Quality, Design, Price, Consumer Attitude and Consumer Purchase Intention were adapted from previous work. Since the study was conducted within a South African context, it was deemed essential to assess the internal consistency reliability of these scales by calculating the Cronbachôs alpha coefficient for each. According to Pallant (2010), to

confirm construct reliability of the measurement instruments, the Cronbachôs alpha coefficient value for a particular scale varies between 0 and 1. The closer the value is to 1, the more reliable the scale is deemed to be, while a value closer to 0 is indicative of a less-reliable scale. A cut-off point of 0.7 is used to decide whether a scale can be considered reliable or not (Pallant, 2010).

Apart from construct reliability, this study also calculated the Composite reliability, which measures the overall reliability of a set of items loaded on a latent construct. Composite reliability values vary between 0 and 1. Composite reliability (CR) values above 0.7 reflect a good reliability, therefore indicating that the scales taken from previous research are truly reliable. The formula for calculating composite reliability is as follows:

$$CR=\sum \lambda_i^2 / [(\sum \lambda_i)^2 + (\sum \varepsilon_i)]$$

Where **λ** represents the standardized factor loadings and **ε** is simply the indicator measurement error. In a simple way this formula is explained as the square of the sum of standardized factor loadings, which is later divided by the square of the sum of loadings adding the sum of indicator measurement errors.

5.8.4 Construct Validity

According to Bryman (2012), validity represents the extent to which a set of indicators, which have been developed, to estimate whether a construct actually measures the construct. Malhotra (2015) noted that if a measure is valid, it is reasoned to be reliable. Nonetheless, reliability is essential but not a sufficient condition for validity.

According to Malhotra (2015), perfect validity requires that there be no measurement error, that is, no systematic error and no random error. It can be assessed by determining whether a scale performs as expected in relation to other selected variables.

A research tool must have the ability to measure what it aims to measure before claims of validity can be made (Blumberg, Cooper & Schindler, 2011). Three types of assessment techniques could be used to conclude the validity of a measure, namely: construct validity, pragmatic and discriminant validity. In this study only construct and discriminant validity were checked.

5.8.4.1 Convergent validity

Construct validity consists of convergent validity and discriminant validity. Convergent validity is the evidence of a relationship between independent measurements, and discriminant validity does not require a measure to correlate too highly with measures from which it is meant to differ (McCrae, Kurtz & Terracciano, 2011). Convergent validity is displayed when each measurement item has a strong correlation with its assumed theoretical construct. Meaning that all the items which are the indicators of research constructs, must converge or share a great proportion of variance in common.

To check the convergent validities of the measurement items, according to Fornell & Lacker cited in Byrne (2010) who suggested that all the estimates or factor loadings should be greater than 0.70 to calculate the Average Variance Extracted (AVE), and suggested the benchmark for AVE should be 0.5. The AVE value equal or above 0.5 indicate that all elements converged well on the construct they were supposed to measure. The Average Variance Extracted for the research variables are calculated using the following formula:

$$AVE = \sum \lambda_i^2 / (\sum \lambda_i^2 + \sum \lambda_i^2)$$

5.8.4.2 Discriminant Validity

Discriminant validity represents the extent to which a construct is strictly distinct from other constructs. Discriminant validity check can be achieved

through comparing the AVEs with the squared correlation for each of the constructs. Hair et al., (2014) suggest that a common criterion for assessing discriminant validity is that the AVE (Average Variance Extracted) of a latent variable has to be greater than the squared correlations between the latent variable and all other latent variables. The rule of thumb for assessing discriminant validity demands that the square root of AVE be higher than the squared correlations between constructs (Chin, 2010).

According to Chin (2010), to assess discriminant validity the average variance extracted of the construct should be greater than the shared variance between the construct and the other model constructs. The Correlations Matrix was employed in this research to measure the discriminant validity of the research constructs. The Average Variance Extracted values or the diagonal elements **(1)** for all the research constructs, should exceed the largest squared correlation between any pair of constructs.

5.8.5 Path modelling and hypotheses testing

For hypothesis testing, this study used the Amos structural equation modelling, and path coefficient analysis to test relationships between the variables. Path modelling was done to assess the relationships between variables, whereas the path coefficient measures were employed to test whether the hypotheses are significant or not and if the relationships between variables are positive or negative.

5.9 Ethical considerations

The study involved humans in that it focused on the collection of data about the opinions and perceptions of consumers towards any Smart wearable technologies. Smart wearable technologies are regularly used in both private and public space.

5.9.1 Potential benefits and hazards

Respondents were asked to complete a questionnaire and to return it to the researcher upon completion. The physical risk is minimal since all that is expected from respondents is to mark suitable responses with a pen or pencil on the questionnaire. Furthermore, the questionnaire took less than ten minutes to complete, limiting unnecessary time delays as well as physical and psychological strain on the respondents. The content of the survey did not include any questions that could be sensitive in any nature.

5.9.2 Recruitment procedures

Prospective respondents were approached by the researcher with a structured self-administered questionnaire by convenience. Participation was completely voluntary, and the respondents were free to withdraw at any stage. Respondents were furthermore not asked to provide any private credentials or identifiable data, ensuring that the data was completely anonymous and was not linked to any particular respondent.

5.9.3 Informed consent

The questionnaire commenced with a preamble explaining the purpose of the study as well as the rights and obligations of the respondents. Once the preamble was read, the respondent was presented with a consent letter to participate in the study; the respondent could either agree or refuse to take part in the study. Once the respondent agreed to participate, the questionnaire was handed to him/her for completion.

5.9.4 Conclusion

Chapter 5 provided the philosophy of the research, the research setting and unit of analysis, the population sample, data collection instrument, data analysis and lastly the ethical considerations.

Chapter Six (6) DATA ANALYSIS AND INTERPRETATION OF RESULTS

6.1 Introduction

Chapter 5 has fully explained the main methods and techniques that were used to attain the results which are presented in this chapter. This chapter provides the results from this observed analysis, which consists of the statistical analyses of the results found from the distributed research questionnaires. The chapter presents and fully explains the calculated frequencies for all demographics of the research participants; the calculated descriptive statistics, means and standard deviations for all the variables under study; and the reliability statistics for the variables were also calculated. Construct validity was also calculated and reported on. Subsequently, the fitness of the model was calculated and presented. Furthermore, this chapter presents the results on the hypotheses proposed for the study.

6.2 Sample size and response rate

Before the researcher commenced the analysis, the data was captured and cleaned in order to rectify all transcription errors. Approximately 431 questionnaires were prepared and circulated. A total of 431 students of the University of the Witwatersrand, selected randomly, filled in the research questionnaires. However not all received questionnaires were analysed. Some questionnaires were not fully completed. To get a suitable sample for the data analysis, 15 questionnaires were withdrawn due to invalid or incomplete data entries. Thus the sample comprising of a total of 416 respondents was then used for data analysis.

6.3 Descriptive Analysis

6.3.1 Demographic Characteristics

This section summarises the results on the demographic characteristics of the research sample, which includes age, gender, education level, occupation, and Smart wearable technology awareness, ownership, types and brand names.

Table 4: Demographics – Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	165	39.7	39.7	39.7
	Female	251	60.3	60.3	100.0
	Total	416	100.0	100.0	

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Table 4 provides the gender distribution of the research participants. In this table the first column contains the gender of the respondents. The fourth column displays the valid percentage of respondents for each gender type.

Figure. 11 is a pie chart of the gender distribution in Table 4. From the pie chart it can be seen that researched respondents indicates that 60.3% (251) of respondents were female and the remaining 39.7% (165) were male. This shows that both men and women are interested in Smart wearable technology, however more women showed more interest in the study.

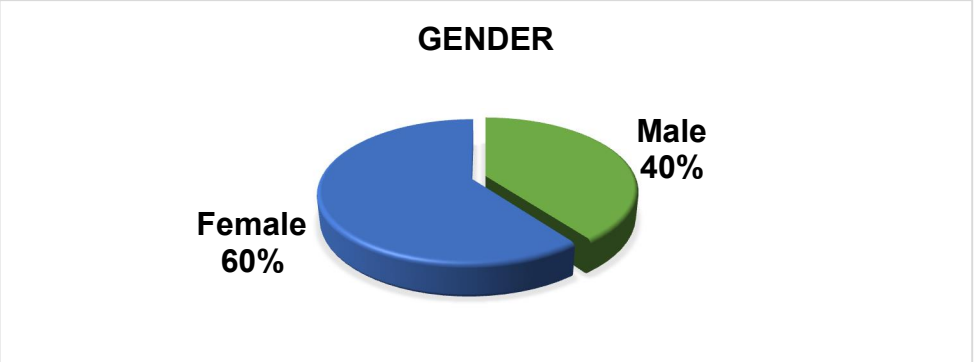

Fig. 11: Demographics ï Gender

Table 5: Demographics - Age in years

Age (in years)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	231	55.5	55.5	55.5
	26-30	126	30.3	30.3	85.8
	31-35	55	13.2	13.2	99.0
	36-older	4	1.0	1.0	100.0
	Total	416	100.0	100.0	

Table 5 presents the distribution by age, in years, of the respondents. In this table the first column contains the age in years of the respondents. The fourth column displays the valid percentage of respondents for each age category.

Figure 12 is a histogram of the research participantsôage categories in Table 5. According to Figure 12, the highest percentage (55.5%) of respondents were between 18 and 25 years old. This matches the population in the methodology. According to Baer et al. (2015), individuals between the ages of 18 and 24 have the strongest buying power of Smart wearable technology and are most willing to make purchases of Smart wearable devices. 30.3% of the participants in the sample were between the ages of 26 and 30, followed by 14.2% participants who were 31 to 35. The lowest percentage (1%) of the respondents were 36 years and older, represented by only 4 people.

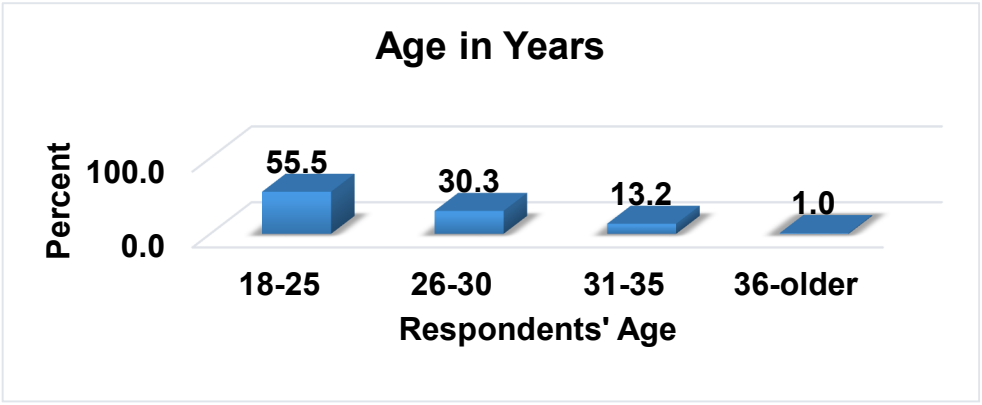

Fig.12: Demographics - Age in years

Table 6: Demographics – Education

Academic achievement					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**Matric**	**177**	**42.5**	**42.5**	**42.5**
	Diploma	**65**	**15.6**	**15.6**	**58.2**
	Degree	**101**	**24.3**	**24.3**	**82.5**
	Postgraduate	**72**	**17.3**	**17.3**	**99.8**
	Other	**1**	**0.2**	**0.2**	**100.0**
	Total	**416**	**100.0**	**100.0**	

Table 6 represents the respondentsô academic achievement. In this table the first column encompasses the different types of academic level. The fourth column displays the valid percentage of respondents for academic achievement category.

All of the research respondents were University of the Witwatersrand enrolled students. The level of study is presented in Table 6. The academic level most represented consisted of respondents with High-school matric certificates, probably in their first, second or third year of undergraduate program. Respondents with a degree were next and counted 24.3% of respondents, followed by 17.3% of respondents with a postgraduate degree; 15.6 % of respondents hold a diploma and lastly 0.2 % of respondents, represented by one respondent who noted to have acquired a designer certificate.

Table 7: Demographics – Smart wearable technology awareness

Smart wearable technology awareness					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**Yes**	**416**	**100.0**	**100.0**	**100.0**

Table 7 offers the frequency distribution of Smart wearable technology awareness. According to Table 7 results above, all the 416 suitable questionnaires received for the data analysis were fully aware of Smart wearable technology existence. This suits with the research

methodology, which noted that the research participants were South African individuals who were conscious of the existence of Smart wearable technology.

Table 8: Demographics – Smart wearable technology ownership

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**Yes**	**121**	**29.1**	**29.1**	**29.1**
	No	**295**	**70.9**	**70.9**	**100.0**
	Total	**416**	**100.0**	**100.0**	

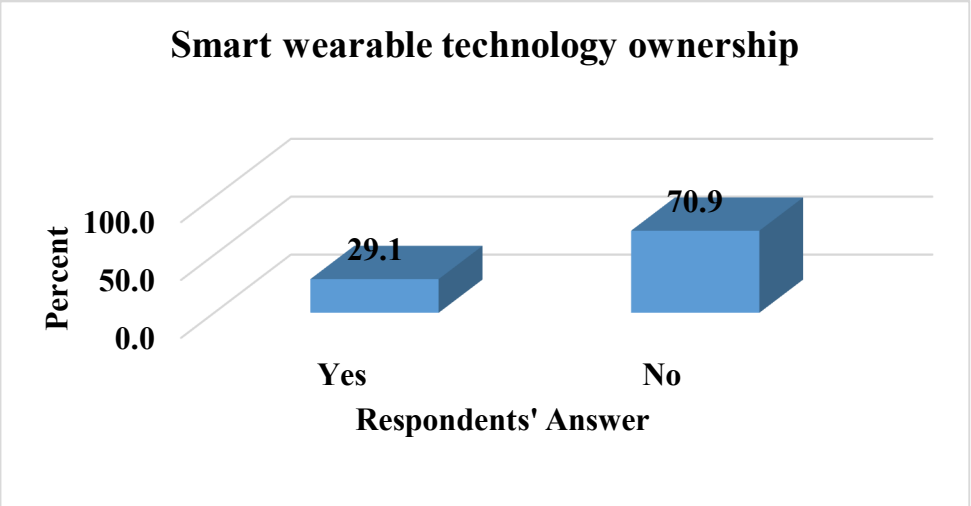

Fig. 13: Demographics ï Smart wearable technology ownership

Figure 13 is a histogram of the number of respondents who owned any form of Smart wearable technology data in Table 8. This Figure 13 above indicates that only 29.1 % of respondents did possess a Smart wearable device, while the highest percentage of respondents (70.9%) did not own any form of Smart wearable technology. This result matches previous research conducted on Smart wearable devices by Gownder (2014), who stated that 90 million Smart wearable devices are shipped, but 80 to 90% have failed, because several issues about cost, design, privacy and security risks and high power consumption are holding consumers back from purchasing.

Table 9: Demographics – Smart wearable technology brand names

Smart wearable technology brand names					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Apple	166	39.9	39.9	39.9
	Samsung	99	23.8	23.8	63.7
	Sony	78	18.8	18.8	82.5
	Fitbit	54	13.0	13.0	95.4
	Google	13	3.1	3.1	98.6
	Pebble	5	1.2	1.2	99.8
	Other	1	0.2	0.2	100.0
	Total	416	100.0	100.0	

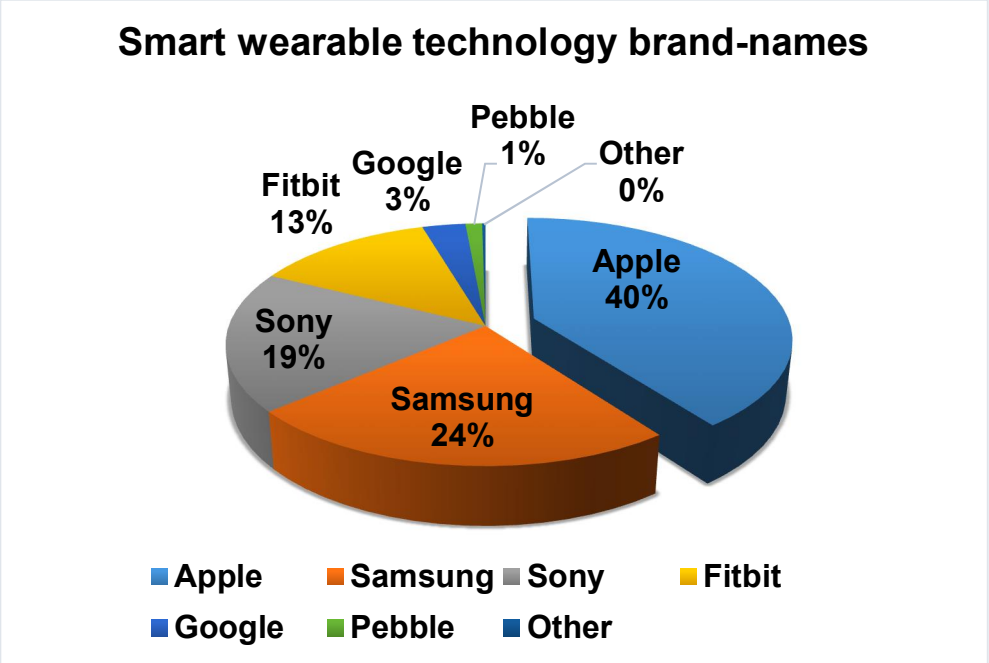

Fig.14: Demographics ï Smart wearable technology brand-names

Figure 14 is a pie chart of Smart wearable technology different brand names data in Table 9. According to Figure14, when asked about the brand name of Smart wearable technology they were most interested in, 39.6% of respondents reported to be more interested in the Apple brand; followed by Samsung, which scored 23.5%; Sony scored18.8%. Respondents interested in the Fitbit brand reported 13%, the Google brand scored 3.1% and lastly another brand noted

was Tom-Tom, which reported 0.2%. This research result suits Juniper Researchôs recent survey (2015), which noted that Smartphone users in South Africa regardless of their mobile brand preference, chose the Apple brand as the ñcoolestò brand for wearable technology, followed by Samsung.

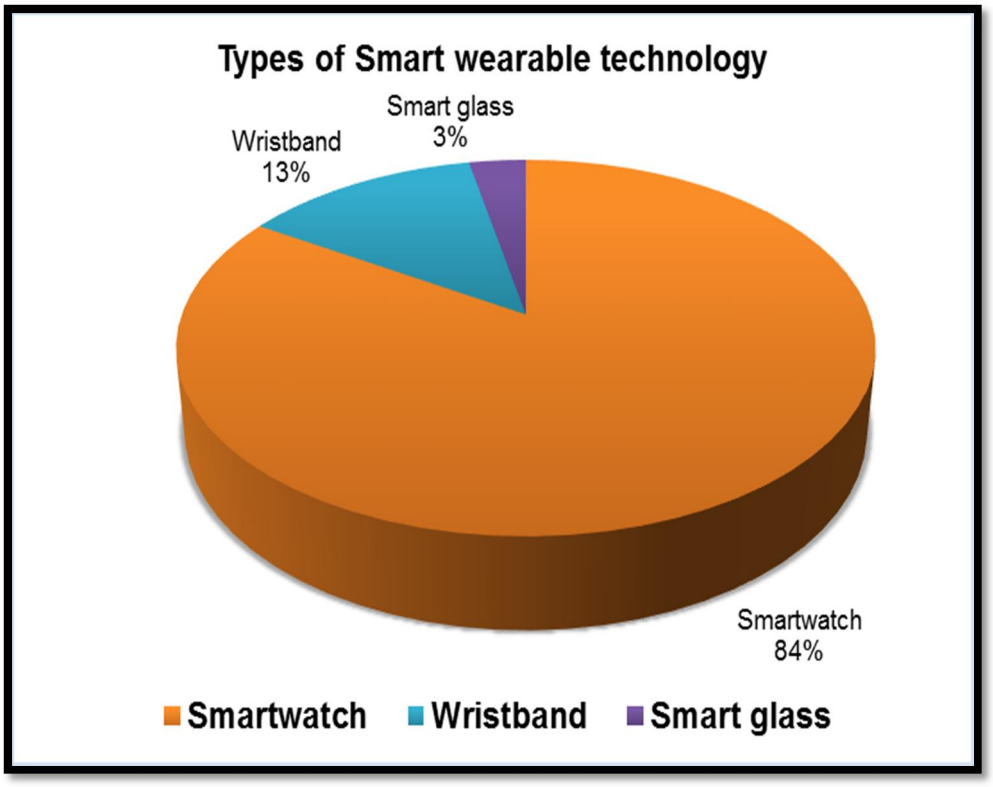

Fig.15: Demographics ï Types of Smart wearable technology

Based upon the Smart wearable technology brand names presented in Table 9, Figure 15 is a pie chart of different types of Smart wearable technology. The result shows that Smartwatches from top brands Apple, Samsung, Sony, Pebble and Tom-Tom respectively are the most popular types of Smart wearable devices among South African individuals, scoring 84%, followed by Fitbit wristbands 13% and Google glasses 3%. This result matches with the consumer wearable technology market survey in South Africa by Gartner (2015), which found that more Smartwatches and wristbands were sold in 2015 and will continue to top Smart wearable sales forecast until 2017.

6.3.2 Descriptive statistics – Variables

Table 10: Descriptive statistics – variables result

C Item Statistics							
Construct	Mean	Min.	Max.	Range	Maximum / Minimum	Std. Deviation	N of Items
Product Quality	**3.532**	**3.382**	**3.745**	**.363**	**1.107**	**4.196**	**4**
Product Design	**3.501**	**3.313**	**3.808**	**.495**	**1.149**	**4.083**	**4**
Product Price	**3.540**	**3.433**	**3.663**	**.231**	**1.067**	**3.714**	**4**
Consumer Attitude	**3.804**	**3.659**	**3.957**	**.298**	**1.081**	**4.089**	**5**
Purchase Intention	**3.708**	**3.560**	**3.877**	**.317**	**1.089**	**3.034**	**3**

Table 10 above provides an exposition of descriptive statistics results obtained for Product quality, Design, Price, Consumer Attitude and Consumer purchase intention. Based upon Table 10, the following findings can be observed.

All the research variables - product quality, design, price, consumer attitude and purchase intention for Smart wearable technology - show a maximum mean of four when rounding up the means value of each variable. Thus it can be concluded that the majority of respondents have agreed to the questions measuring each variable. A possible reason for respondentsôagreement could be that the majority of the research participants have already formed opinions about the type of Smart wearable technology they owned or were interested in, because they are aware of the Smart wearable technology brandsôexistence and performance.

Specifically, product quality measure included four items that scored a maximum mean of **3.745** with a Std. deviation of **4.196** as shown in Table 10, thereby indicating that the respondents demonstrated a high likelihood of Smart wearable technology to be of good quality.

The product design construct included four measuring items with a Std. deviation of **4.083** and a maximum mean value of **3.808**, thus showing that respondents perceived Smart wearable devices to be of good design.

As for the product price construct, the construct included four measurement items which scored a maximum mean and Std. deviation scores of **3.663** and **3.714** respectively, thus indicating that the research participants agreed with the manufacturerôs price of Smart wearable devices.

The construct consumerôs attitude measurement encompassed five items, which scored a maximum mean of **3.957** and a Std. deviation of **4.089**. The results indicated that participants hold a good attitude towards Smart wearable technology.

And lastly, purchase intention variable covered three measurement items that scored a maximum mean and Std. deviation values of **3.877** and **3.034** respectively, showing that respondents reported agree purchase intention.

6.3.3 Reliability

In this study the Cronbachôs alpha, Composite reliability (CR) and Average Variance Extracted (AVE) were calculated to assess the reliability of the measures. Table 11 and Table 14 below provide the results for the Cronbachôs alpha, composite reliability and average variance extracted, which are all explored in detail in the sections to follow.

6.3.3.1 Construct Reliability

The Cronbachôs alpha was introduced by Lee Cronbach in 1951 as a measure of the internal consistency of a scale. According to Raykov & Grayson (2003) the Cronbachôs alpha has been commonly used as a measurement of scale reliability. Tavakol & Dennick (2011) describe

the internal consistency as the extent to which all the items in a test measure the same construct. According to Bryman (2012) a calculated alpha coefficient commonly varies between 0 and 1.0 which is an indication of no internal reliability and a value of 1 indicates a perfect internal reliability. For researchers it is crucial to aim for a perfect internal reliability. Tavakol et al., (2011) state that a low Cronbachôs alpha value could occur due to a small number of questions, poor interrelatedness between items or heterogeneous constructs.

The scales measuring the research variables product quality, design, price, attitude and purchase intention, were all adopted from previous research. Since this study was conducted within the South African context, it is important to assess the internal-consistency reliability of these scales by calculating the Cronbachôs alpha coefficient for each. To test the reliability of the research instruments, or whether the questions used did measure the variables they were supposed to measure, Cronbachôs alpha calculations were employed to measure the reliability of all the 20 questions that form the constructs for each research variables respectively.

According to Pallant (2010), the Cronbachôs alpha coefficient value for a particular value varies between 0 and 1. The closer the value is to 1, the more reliable the scale is deemed to be, whilst a value close to 0 is indicative of a less-reliable scale. A cut-off point of 0.7 is used to decide whether a scale can be considered reliable or not.

Table 11: Reliability statistics - results

Reliability Statistics			
Construct	Cronbachôs alpha	Cronbachôs alpha based on standardized items	No of items
Product Quality	**.892**	**.895**	**4**
Product Design	**.886**	**.888**	**4**
Product Price	**.859**	**.859**	**4**
Consumer Attitude	**.891**	**.891**	**5**
Purchase Intention	**.907**	**.907**	**3**

Table 11 above contains the Reliability statistics of the study constructs. Based on Table 11, it can be perceived that all of the research constructs, notably Product quality, Design, Price, Consumer Attitude, and Consumer Purchase intention have a Cronbachôs alpha of **0.895, 0.888, 0.859, 0.891 and 0.907** respectively, which supports their internal consistency.

As a result, none of the constructsôquestions needed to be deleted, because the Cronbachôs alphas were already higher than the 0.7 benchmark value and closer to 1 as suggested by Pallant (2010). The different research questions used in making the questionnaire, together all contributed well to the stability and comprehensiveness of the constructs they measured. Nevertheless, the analyses for Cronbachôs alphas if items were deleted did not display significant improvements.

6.3.3.2 Composite Reliability

Composite reliability (CR) characterizes an index reflecting the impact of error upon the scale (Raykov et al., 2003). Nunkoo et al., (2012) noted that CR is comparable to Cronbachôs alpha as it also suggests that a value benchmark greater than 0.7 is acceptable for a composite reliability. CR is calculated by using the standardized factor loadings of the construct items.

Table 12: AMOS Output Extract: Standardized Factor Loadings of Construct Items

Reliability Statistics			
No	**Construct statements**		**Standardized factor loadings (λ)**
Product Quality			
PQ1	The quality of the product meets my expectation.	<--- PQ	**.694**
PQ2	The brand has a good functional quality.	<--- PQ	**.848**
PQ3	Styles of the product have distinctive features.	<--- PQ	**.943**
PQ4	Quality of the product is suitable for me.	<--- PQ	**.830**
Product Design			
PD1	I think the Brand provides wide variety of style.	<--- PD	**.701**
PD2	The Brand provides my choice of colour.	<--- PD	**.871**
PD3	The Design of the brand is reputable.	<--- PD	**.908**
PD4	I am happy with the product size and shape.	<--- PD	**.796**
Product Price			
PP1	The Increase of price does hinder me to purchase.	<--- PP	**.754**
PP2	I select brand name regardless of price.	<--- PP	**.816**
PP3	The Increase of price is an indication of great value.	<--- PP	**.823**
PP4	I am ready to pay any price for this particular product.	<--- PP	**.713**
Consumer Attitude			
CA1	The Product display is attractive.	<--- CA	**.778**
CA2	The Ads about the product attract me to purchase.	<--- CA	**.734**

CA3	The Product name and image are attractive to me.	<--- CA	**.834**
CA4	The Product design match its price.	<--- CA	**.859**
CA5	The Product design does not match its price.	<--- CA	**.736**
Consumer Purchase Intention			
PI1	I intend to use this product in future.	<--- PI	**.865**
PI2	I am more likely to repurchase this product in future.	<--- PI	**.917**
PI3	I will definitely buy this product.	<--- PI	**.859**

Table 12 provides the construct statement and the standardized factor loadings. The reliability of the research instruments was also assessed by testing the composite reliability. According to Fornell & Lacker cited in Byrne (2010) noted that, for Composite reliability to be considered adequate, the value should be greater than the 0.7 benchmark value. The internal reliability of the research instruments was verified using the Fornellôs composite reliability, using standardized factor loadings presented in Table 12. Composite reliability was calculated using the following formula:

$$CR = \sum \lambda_i^2 / [(\sum \lambda_i)^2 + (\sum \varepsilon_i)]$$

For instance, the composite reliability for the research variable ôProduct Qualityôwas calculated as follows:

$$CR = (.694+.848+.943+.830)^2 / [(1-.694^2) + (1-.848^2) + (1-.943^2) + (1-.830^2)$$

i.e.

$$CR = (10.98) / (10.98 + 1.22)$$

As a result, the composite reliability for the construct ôProduct Qualityô is found to be **0.9**. Likewise, the composite reliabilities for the

remaining research constructs were also calculated. Composite reliability values for the variables Product Design (PD), Product Price (PP), Consumer Attitude (CA) and lastly Consumer Purchase Intention (PI) were found to be **0.9, 0.86, 0.9, and 0.91** respectively, which clearly indicates that they were all above the 0.7 benchmark value for composite reliability, thus indicating that the scales taken from previous research were truly reliable and indicate adequate internal consistency.

The composite reliability of all the research constructs are presented in Table 14.

6.3.4 Validity

Malhotra (2015) described validity as the degree to which a measurement represents characteristics that exist in the construct being investigated. This study will explore two types of validity, particularly discriminant and construct validity.

6.3.4.1 Discriminant Validity

Discriminant validity shows whether a measure does not correlate with other constructs from which it is supposed to differ (Malhotra, 2015). Table 13 provides the factor matrix showing discriminant validity. In this study, to assess discriminant validity of the research constructs two methods were employed - assessment of the Average Variance Extracted (AVE) and the Inter-construct Correlation Matrix.

According to Chin (2010), the average variance extracted of the construct should be greater than the shared variance between the construct and the other model constructs. The highest shared variance of each construct is represented by the square of the correlation between two constructs. For example, the correlation between the variable product design and product quality was **0.619**, then the shared variance between product design and product quality is **0.383.**

The highest shared variance of each construct scored **0.404** for Product quality, **0.383** for Product design, **0.247** for Product price, **0.237** for Consumer attitude, and **0.404** for Purchase intention. As seen on Table 14, all of the highest shared variances of the variable were less than AVE of each variable therefore confirming constructs discriminant validity.

Table 13 lists the correlation matrix with correlation among constructs. As can be perceived from the factor correlation matrix in Table 13**,** The Average Variance Extracted values or the diagonal elements were **(1)** for all the research constructs, and exceeded the largest squared correlation between any pair of constructs (**0.636** which was between Product Quality and Purchase Intention).

This analysis showed that the off-diagonal elements or shared variance between factors (**0.619, 0.444, 0.497, 0.481, 0.456, 0.430, 0.636, 0.616, 0.432, 0.487**), scored lower than the Average Variance Extracted of the individual factors, therefore confirming discriminant validity.

Table 13: Factor Matrix Showing Discriminant Validity

Correlations						
		PQ	**PD**	**PP**	**CA**	**PI**
Product Quality	Pearson Correlation	**1**				
	Sig. (2-tailed)					
	N	416				
Product Design	Pearson Correlation	**.619****	**1**			
	Sig. (2-tailed)	.000				
	N	416	416			
Product Price	Pearson Correlation	**.444****	**.497****	**1**		
	Sig. (2-tailed)	.000	.000			
	N	416	416	416		
Consumer Attitude	Pearson Correlation	**.481****	**.456****	**.430****	**1**	
	Sig. (2-tailed)	.000	.000	.000		
	N	416	416	416	416	
Purchase Intention	Pearson Correlation	**.636****	**.616****	**.432****	**.487****	**1**
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	416	416	416	416	416
**. Correlation is significant at the 0.01 level (2-tailed).						

6.3.4.2 Convergent Validity

According to Bryman (2012), convergent validity allows the appraising of a scale consistency when they are used to measure the same concept under different circumstances. Convergent validity was assessed through the t-statistic for each factor loading values or Estimates. According to Fornell & Lacker cited in Byrne (2010), all the Estimates or factor loadings should be greater than 0.70 to calculate the Average Variance Extracted (AVE), and suggested the benchmark value for AVE should be greater than 0.5. It can be seen in Table 12 that all factor loadings exceeded the recommended benchmark value, therefore AVE can be calculated to show convergent validity. For instance the convergent validity for the research variable ôProduct Qualityôwas calculated as follows using this formula:

$$AVE = \sum \lambda_i^2 / (\sum \lambda_i^2 + \sum \lambda_i^2)$$

$$AVE = (0.694)^2 + (0.848)^2 + (0.943)^2 + (0.830)^2$$

$$= 2.78$$

i.e.

$$2.78 / (1.22 + 2.78)$$

As a result, the convergent validity for the construct ôProduct Qualityô is found to be **0.7**. Similarly the convergent validity for the remaining research constructs were also calculated. Convergent validity values for the variables Product Design (PD), Product Price (PP), Consumer Attitude (CA) and lastly Consumer Purchase Intention (PI) were found to be **0.7, 0.6, 0.6, and 0.72** respectively, which clearly indicates that they were all above the 0.5 benchmark value, thus indicating that all items converged well on the construct they were supposed to measure, therefore confirming the existence of convergent validity. The convergent validity of all the research constructs are presented in Table 14.

Table 14: Composite Reliability and AVE of Constructs

Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)	The highest shared variance
Product Quality	.9	.7	.404
Product Design	.9	.7	.383
Product Price	.86	.6	.247
Consumer Attitude	.9	.6	.237
Consumer Purchase Intention	.91	.72	.404

Table 14 above provides the summary of the constructsô composite reliability and average variance extracted.

6.3.5 Confirming the Measurement Model Using CFA

After validation of the measurement instrument was satisfied, the outcomes of the Confirmatory Factor Analysis (CFA) using AMOS version 22 was used to assess the model fit of the measurement model.

The measurement model shown in Figure 16 below encompasses five factors. Each factor is measured by five observed variables representing Consumer Attitude, four observed variables for Product Quality, Design and Price, and lastly a minimum of three observed variables for Consumer Purchase Intention. The CFA model also presents the associated error term, and the observed variables are regressed into their corresponding factor. Lastly all the five factors are presented to be inter-correlated and show the error terms that need to be deleted to fit the model. In order to make the model fit, the model was run twice and some items needed to be deleted as shown in Figure 16. After the items were deleted, the model was run again and achieved the following results.

6.3.5.1 Goodness of Fit Index (Chi Square)

Table 15: Goodness of Fit Index (Chi Square) /CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	57	446.876	153	.000	**2.921**
Saturated model	210	.000	0		
Independence model	20	6502.020	190	.000	34.221

According to Moss (2016), the criterion for acceptance varies depending on researchers, ranging from less than 2 to less than 5 as suggested by Schumcher & Lomax (2004). According to Nunkoo et al., (2012), the most popular way of evaluating model fit is the ^{chi}-square

goodness-of-fit statistic. The acceptable model fit is indicated by ^{chi}-square value between 1 and 3. The rule of thumb suggests that a ^{chi}-square value close to 0 or less than 3 is an indication of perfect model fit, however if ^{chi}-square value = 0, the model perfectly fits the data, concluding that the predicted correlations and covariances equal their observed counterparts.

In this study, the overall model fit presented in Table 15 below appears to be perfect. The ^{chi}-square test yields a value of **2.921** which is acceptable and less than 3, and evaluated with 153 degrees of freedom, has a corresponding p-value of 0.000.

6.3.5.2 **6.3.5.2 The Goodness-of-fit Index (RMSEA)**

Table 16: The Goodness-of-fit Index (RMSEA)

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.068	.061	.075	.000
Independence model	.283	.277	.289	.000

The Root Mean Square Error Approximation (RMSEA) was for the first time introduced by Steiger & Lind cited in Kim and Singleton (2011). It is one of the most widely used measures to reject models with either a large sample or a large number of observed variables. Kim & Singleton (2011), suggested that a lower RMSEA value in Table 16 shows a better fit. Previous research suggested that, An RMSEA (Root Mean Square Error of Approximation) value less than 0.008 indicates a good fit with the data (Diamantopoulos & Siguaw, 2000).

The rule of thumb suggests that a value of the RMSEA of about 0.08 or less indicates a close fit of the model in relation to the degree of freedom. However, RMSEA value less than 0.1 is acceptable and indicates a moderate fit. In our case this examination of the goodness-of-fit indices shows that the model has achieved reasonable model fit. The RMSEA value is **0.068**, which is well below the recommend benchmark value of 0.08 thus indicates a good fit of the model. Hence

we reject the null hypothesis and accept the alternative hypothesis, therefore concluding that the model fits.

6.3.5.3 The Goodness-of-fit Index (RMR & GFI)

Table 17: The Goodness-of-fit Index (RMR & GFI)

Model	RMR	GFI	AGFI	PGFI
Default model	.043	.910	.876	.663
Saturated model	.000	1.000		
Independence model	.524	.213	.130	.193

The Root Mean Square Residual is the average residual value derived from the filling of the variance-covariance matrix for the hypothesized model to the variance-–covariance matrix of the sample data. Hence, the RMR value presented in Table 17 represents the square root of the mean of the standardized residuals. A low RMR value is an indication of better fit, whereas a higher value shows a poorer fit.

The Rule of thumb suggests that the RMR (Root Mean Square Residual) should be < 0.10, 0.08, 0.06 and 0.05, and the closer RMR (Root Mean Square Residual) is to 0, the better the model fit. In our case, the RMR value in Table 17 is **0.043**, which is very close to zero, therefore we can conclude that the model fits perfectly.

According to Joreskog & Sorbom (1981), the goodness-of-fit index (GFI) was the very first standardized fit index. It is perceived to be equivalent to a squared multiple correlation (R^2) except that the GFI is a kind of matrix proportion of explained variance. Therefore, a GFI value equal to 1.0 indicates a perfect model fit, and a GFI value greater than 0.90 could indicate a good fit, while GFI value closer to 0 designates very poor fit. Nevertheless, GFI values can also fall outside the range (0ï 1.0.). GFI Value greater than 1.0 can occur with just identified models or with over identified models with almost perfect fit; however, negative GFI value is most expected when the sample size is small or model fit is remarkably poor.

In our case, the GFI value presented in Table 17 is **0.910**, which is greater than 0.90, therefore indicating a good fit of the model.

6.3.5.4 The Goodness-of-fit Index (NFI, RFI, IFI, TLI & CFI)

Table 18: Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	**.931**	**.915**	**.954**	**.942**	**.953**
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

- **The Normed Fit Index**

The Normed Fit Index (NFI) introduced by Bentler & Bonnet in 1980, is an incremental fit index that reflects the proportion and one of the unique incremental fit indices by which the researcherôs model improves fit compared to the null model (random variables). NFI indices often vary between 0 and 1. An NFI index of 1 is an indication of a perfect fit, whereas NFI values above 0.9 indicate a good fit of the model (Bentler, 1992).

Based on Table 18 above, the NFI value **0.931** is above the 0.9 benchmark value and closer to 1, therefore, indicating a good fit of the model.

- **The Relative Fit Index**

Previous research suggests that Relative fit index (RFI) represents a derivative of the NFI, just like the IFI (Incremental fit index), TLI, and CFI (Comparative fit index). The RFI values vary between 0 and 1, and the closer the value is to 1 this shows a very good fit (Diamantopoulos & Siguaw, 2000; Hair et al., 2010; Kelloway, 1998).

In our case, the results of the incremental fit measures in **the baseline comparisons** Table 18, show that the model achieved an NFI value of **0.915**, which is closer to 1 therefore indicates a good fit of the model.

- **The Incremental Fit Index**

  The incremental fit index (IFI) was first introduced by Bollen (1989) to address the issue of parsimony and sample sizes which are associated with the NFI. The author suggested that the IFI value should be equal to or greater than 0.90 to accept the model. In our case the NFI value **0.954** in Table 18 is greater than the suggested benchmark value of 0.90, thus concluding that the model fit perfectly and can be accepted.

- **Tucker-Lewis Index**

  The Tucker-Lewis Index (TLI) introduced by Tucker and Lewis as suggested by the name, uses simple models and considers the sample size associated with The Normed Fit Index (NFI). The TLI recommended benchmark value is 0.9 (Hooper, Coughlan and Mullen, 2008). The current study has an acceptable TLI value of **0.942** exceeding the 0.9 the benchmark value, which specifies a good fit.

- **Comparative Fit Index**

  Previous literature on the CFI benchmark value also notes that a CFI value should exceed 0.9 to indicate an acceptable fit of the model (Nunkoo et al., 2012). In this current study, in Table 18 the CFI value is **0.953**, which exceeds the benchmark value, thus portraying a positive picture of model fit.

The Measurement Model

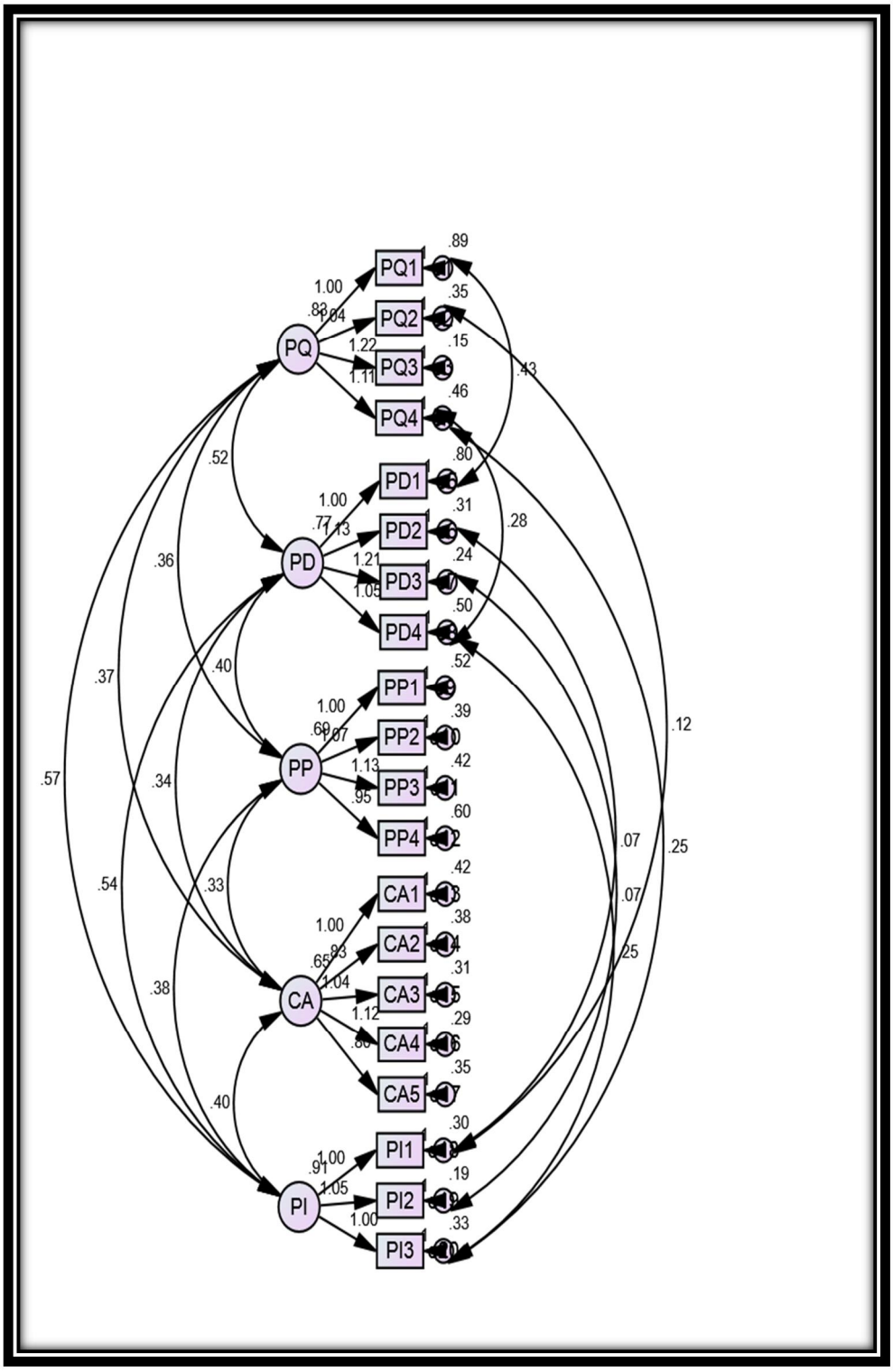

Fig.16: The Measurement Model

6.4 Structural Equation Model Analysis- Hypotheses testing

The structural equation modelling was performed to evaluate the relationships between five latent variables therefore testing the study hypotheses. Table 19 below provides a summary of the results, presenting the Amos output extract that contains the proposed hypothesis relationship, the Standardized regression estimates of the hypotheses tested or path coefficient and the p (values).

Figure 17 below illustrates the structural equation model (SEM). The measurement model provides the latent variables that are presented in circular shapes while the measurement items of each variable are presented in rectangular shapes. Together with measurement items in circular shapes are measurement errors and the unidirectional arrows between latent variables are used to convey the causal relations.

Table 19: AMOS Output Extract: Standardized Regression Estimates of the Hypotheses Tested

Proposed hypothesis relationship			Path Coefficients	P (values)	Supported/ Not supported
H1.Product Quality	---›	Product Price	.21	0.001	Supported / Significant
H2. Product Design	---›	Product Price	.41	0.001	Supported / Significant
H3. Product Design	---›	Consumer Attitude	.38	0.001	Supported / Significant
H4. Product Price	---›	Purchase Intention	.41	0.001	Supported / Significant
H5. Consumer Attitude	---›	Purchase Intention	.57	0.001	Supported / Significant

6.4.1 Discussion of Results

The Structural Equation Modelling was conducted on the structural research model using Amos version 22 to test the hypotheses formulated as shown in Figure 17. All the paths coefficients support

the findings in the literature and also the research model. From Table 19 above, it is evident that all path coefficients are positive, therefore indicating that product quality has a positive influence on Product Price, Also, that Product Design has a positive influence on both Product Price and Consumersô Attitude, and lastly that Price and Attitude also has a positive influence on Consumersô Purchase Intention.

The results in Table 19 and Figure 17 provide support for all five (5) predicted hypotheses (H1, H2, H3, H4 and H5).

- **H1: Product quality positively influences product price**

Hypothesis 1 posited a positive relationship between product quality and product price. Consistent with H1, the result in Table 19 indicates that there is a significant (**β= 0.21**) positive (p value=0.001) relationship between product quality and product price. Hence, concluding that there is sufficient evidence to support H1.

- **H2: Product Design positively influences product price**

Hypothesis 2 posited a positive association between the design of Smart wearable technologies and its price. H2 results indicated that there is a significant (**β= 0.41**) positive (p value=0.001) relationship between design and price. This is consistent with the prediction of H2 and is, therefore, supported.

- **H3: Product Design positively influences consumer attitude.**

Hypothesis 3 posited a positive association between the design of Smart wearable technologies and consumerôs attitude. H3 results indicated that product design (**β = 0.38**) has a positive effect on consumer attitude, and does have a significant effect on consumer attitude, because the p value 0.001 is less than .01, .1 and 0.5. This is consistent with the prediction of H3 and is, therefore, supported.

- **H4: Product price positively influences consumer purchase intention**

Hypothesis 4 posited a positive relationship between the price of Smart wearable technologies and consumersôintention to purchase. H4 results indicated that there is a significant (**β=0.41**) positive (p

value= 0.001) relationship between product price and consumersô purchase intention. This is consistent with the prediction of H4 and, therefore, it is supported.

- **H5: A positive attitude positively influences consumer purchase intention.**

Finally, results for H5 in Table 19, are in line with H1, H2, H3, H4 and support the reasoning that consumersô attitude has a positive relationship with consumersô purchase intention. The relationship (**β=0.57**) is significantly positive (P-value=0.001).Therefore, thereôs sufficient evidence to support H5. Consumer attitude toward Smart wearable technology has a positive significant effect on purchase intention.

The Structural Model

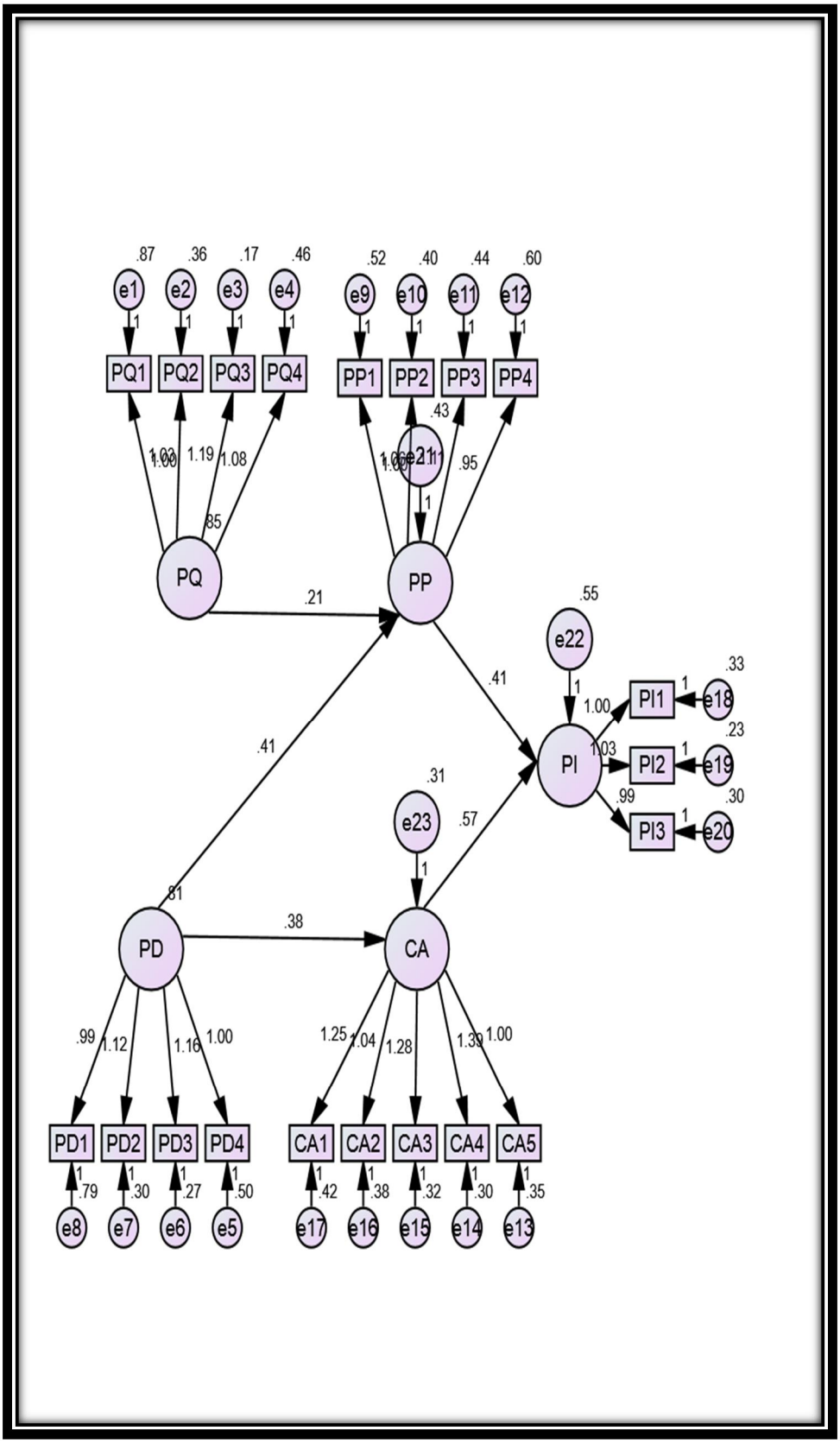

Fig. 17: The Structural Model

6.5 Conclusion

In conclusion of this research chapter, a theoretical model was proposed for establishing a research model that gives a good understanding of factors that influence consumer purchase intention of Smart wearable technology.

The scales measuring the research variables, product quality, design, price, attitude and purchase intention were found reliable. The research measurement model perfectly fit based upon the requirements of the goodness fit indices.

The research conceptual model incorporated consumersô attitude and product price to examine the influence they have on consumersô intention to purchase Smart wearable technologies. The relationship was found positive and significant, therefore supporting the proposed hypotheses of product price and consumersô attitude positively influencing consumersôpurchase intention.

In the process a clear set of antecedents for product price and consumersôattitude toward Smart wearable devices were brought out and the empirical validation of the model for Smart wearable technology purchase intention was successfully assessed. Product quality and design were incorporated in the model to investigate their influence on price and consumersôattitude of Smart wearable devices. Also the relationship was found positive and significant, therefore supporting that product quality has a positive and significant effect on product price and product design has a positive and significant effect on both product price and consumer attitude.

Chapter Seven (7) RESEARCH CONCLUSION AND LIMITATION

7.1 Introduction

Chapter 6 provided the research analysis and encompasses interpretation of the research findings. This chapter summarises the research findings and provides the research contributions, limitations and recommendation for future research.

7.2 Conclusion of research findinds

The aim of the study was to investigate the factors influencing the purchase of Smart wearable technologies (Smartwatches, Wristbands and Smart Glasses) within the South African market. The study enables gaining insight on how product quality, design, price, and consumersôattitude influence consumersôintention to purchase within the South African market for Smart wearable technology.

In particular, five hypotheses were postulated. To test the proposed hypotheses, data was collected from the Witwatersrand University in Johannesburg South Africa. The empirical results supported all five posited research hypotheses in a significant way.

Important to note about the study findings, is the fact that both consumersô attitude and product price have a positive influence on consumersôpurchase intention of Smart wearable technology devices. Both attitude and price have a significant positive effect on the intention to purchase Smart wearable devices. Nevertheless, to be more precise, the effect of consumersôattitude on purchase intention goes through the positive effect of a product design on consumersô attitude. Both scenarios were supported. So, if a product or brand design is attractive to a consumer, the consumerôs attitude toward the product or brand is likely to be more positive therefore, it will lead to a consumerôs attitude that is more positive and a greater willingness to accept and purchase the product or brand.

These findings indicate that the most important factor in determining consumersô purchase intention towards Smart wearable devices is their overall attitude towards the products design. The more positive attitude they have towards the products design, the more likely they will purchase them. In line, Chaniotakis et al (2010) proposed that consumersô purchase intention is influenced by consumersô attitude especially during economic crisis. People will try to save more money by purchasing private label product during economic downturn and purchase again familiarity product once economic turn improves (Conroy, 2010). Therefore, the most significant factor influencing purchase intention is due to consumersôattitude. The result is in line with the theory of purchase intention where purchase intention usually related with consumersô behaviour, perception and their attitude (Chaniotakis et al., 2010).

Consumers experiencing affordable and worthy price will have positive perception towards Smart wearable products. Not only is that, having the price within the expected range, customersôwillingness to pay is also important (Blackwell & Blackwell, 1997).

Product price is found to have a positive and significant effect on consumersô purchase intention. If the product is perceived to have good quality and unique attractive design, consumers will have a more positive attitude toward the product or brand than when perceived quality is low and product design is unattractive. Both quality and price are found to extend the effect of positivity of consumersô attitude toward the product or brand, and the price tag of the product. These scenarios are fully supported in hypotheses one, two, and three. Though both quality and design positively influence product price, product design is found to have an enlarging effect on product price. Generally, it can be stated that the design of a product successfully influences the price set for that product.

7.3 Academic contributions

Consumersôpurchase intentions towards Smart wearable technology depend on various factors that need to be studied in order to make wearable technology brands successful. Numerous academic studies have been conducted to examine the factors influencing consumersô purchase intention within diverse disciples; however, limited research has investigated on the effects of consumersô expectation and perception on purchasing intention for Smart wearable technology Therefore, this study is unique in terms of proposing and testing a conceptual model by integrating antecedent variables product quality, design, price, consumer attitude and purchase intention alongside the concepts of the theory of planned behaviour and consumer-price perception theory.

According to Boutsouki et al., (2008) most studies on factors influencing consumersôpurchase intention of Smart wearable devices cater for the United States or other Western countries, hence the outcomes of this study findings is purely South African, a country where Smart wearable technology, though they are at their primary stage, both manufacturers and retailers are trying their best to make them a success.

Therefore, this study makes a significant contribution to the academic body by exploring the factors that most influence the purchase intention of consumers which in turn contribute to the growth and success of Smart wearable technology market in South Africa.

On the academic side, this study makes a significant contribution to the consumersôpurchase intention literature by exploring the impact of product quality on price, product design on product price and consumersôattitude and, lastly, consumersôattitude and product effect on purchase intention. In particular, the current study findings provide

support to the proposition that consumersôattitude and product price are factors that influence consumersôpurchase intention.

The present study was grounded upon two theories, notably the theory of planned behaviour (TPB) and the consumer price perception theory. The analysis results of this study still showed that attitude is a determinant of intention. Compared to price of Smart wearable technology, consumersô attitude influence on consumersô purchase intention was found to have a stronger relationship.

As mentioned earlier, the model of study also illustrates that price affects a personôs intention to purchase. In support of the consumer price perception theory, the study results found that price is a significant determinant of consumersôpurchase decisions, therefore contributing to the idea that the price of a product leads to perceived value, which is a primary factor influencing purchase intention.

7.4 Managerial implications

This study can be used by new technology manufacturers to get a clearer understanding on the important factors that influence consumersôchoice and intention to make purchases. These research findings could be useful to current and future Smart wearable technology researchers and manufacturers. Moreover These findings may assist both manufacturers and retailers of Smart wearable devices to better understand the factors influencing consumersô purchase intention through improving the quality and design of the products, which in turn could indirectly grow the Smart wearable market.

The findings of this study suggest that a consumer positive attitude toward Smart wearable device mostly enables a significant consideration for apparel retailers who aim to increase consumersô purchase intention for Smart wearable technology. As a result, this study suggests for manufacturers to develop attractive, effective and

different designs for Smart wearable devices that meet consumersô satisfaction and expectation.

The study also adds new knowledge to the public on the meaning of Smart wearable technology. The study results show that products that are perceived to have great design and quality are more important to consumers, therefore influence their attitude toward the product.

It is evident that the increasing number of Smart wearable technology brands on the market influences consumersôintention to buy, therefore it is important that wearable technology producers attract prospective buyersô attention. Manufacturers need to come up with innovative design and quality features that can influence consumersôattitude and their intention to purchase.

The importance of design is crucial, because the design of the product determines how consumersô attitudes are formed. Positive attitudes quickly transfer good publicity –that can be easily detected on firmsô sales. Product design is not only found to influence attitudes but also, like quality, product design has a positive influence on the price set for the product, which can create a flourishing effect on the companyôs bottom line.

With the help of this research, it becomes clearer how to enhance and influence consumersôattention. New technology manufacturers should create products with great quality and design that communicates to consumers the value of the brand and its worth. Product design realised a strong relationship towards product price and consumersô attitude. It is therefore important for manufacturers to work on both exterior and interior look of the product to influence buyersôattitudes and minds. This will increase consumer confidence, trust, and intention to purchase the product.

This study discovered that demographic characteristics were important factors affecting consumer attitude, and purchasing

intentions of Smart wearable technology devices. In the case of demographic, individuals between the ages of 18 and 30 proved to have the strongest buying power of Smart wearable technology. However, it is perceived that when the age of consumers increases, consumersôwillingness to purchase tends to decrease. Therefore, this could be beneficial to both Smart wearable technology and marketing managers who need to concentrate more on individuals between the ages of 18 and 30, as they represent the best target markets, to influence their intention to purchase. By segmenting consumers according to the research results would potentially improve attitude and intention to purchase Smart wearable devices.

7.5 Limitation and Future Research

A number of limitations of this study are evident. As with most research, this research is also subject to limitations despite its contribution to some interesting results. Due to time constraints, the target population of the study was limited to students from the Witwatersrand University premises and non-probability convenience sampling was used, a sample size of 416 respondents; surely limiting the ability of the researcher to generalize findings since the findings may not be applicable to other people and, therefore, cannot fully represent the opinion of all people in the country since the brand choice decisions of Witwatersrand University students may differ from those of other people in the country. Future research could incorporate data from different places in South Africa to obtain better results and increase the validity of research.

This study focused on only four predictors of purchase intention, hence, future studies may also extend the current study by including new purchase intention predictors such as brand romance, brand trust and consumer satisfaction.

References

Abramovish, G., (2014). 15 mind-blowing Stats about wearable technology. *Adobe, the Digital Marketing conference.*

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Adapa, A., (2016).Factors influencing the adoption of smart wearable devices. Pp.35.

Ahmetoglu, G., Fried S, Dawes J, & Furnham, A., (2010). Pricing Practices: Their Effects on Consumer Behaviour and Welfare. Mountain views learning-teaching brain science to business.

Aghdaie, SFA.,& Honari, R., (2014). Investigating the role of brand in forming the consumer involvement. International review of management and business research, 3(1), pp.254-266.

Ajzen, I. (1991). The theory of planned behaviour. *Organisational Behaviour and Human Decision Process,* 50 (2), pp.179-211.

Al Sacco., (2014). Fitness Trackers Are Changing Online Privacy: And It is Time to Pay Attention, CIO. Available at http://www.cio.com/article/2465142/wearable-technology/fitness-trackers-are-changing online-privacy-and-its-time-to-pay-attention.html.

Ambrose, S., (2012). Smartphones Drive SA Social Network Adoption. *Strategy Worx Market analysis.*

Ampuero, O., & Vila, N. (2009). Consumer perceptions of product packaging. *Journal of Consumer Marketing*, 23(2). pp. 100-112.

Amy, C.; Adam, J.; Fleisher, D.; Reed, F.; Jr.; & Alistair, M., (2014). *The Internet of Things Part 1: Brave New World*, CLIENT ALERT (Morrison Foerster), at 1, *available at* http://www.jdsupra.com/legal news/the-internet-of-things-part-1-brave-new-23154.

Anic, I.D., (2010). Attitudes and purchasing behaviour of consumers in domestic and foreign food retailers in Croatia. PhD Theses from the Institute of Economics, Zagreb, Department of microeconomic analysis, organisation and management, Trg J. F. Kennedy 7, 10000 Zagreb. Croatia.

Armstrong, J. S., V. G. Morwitz, & V. Kumar (2010). Sales forecasts for existing consumer products and services: Do purchase intentions contribute to accuracy? *International Journal of Forecasting*, 16(3), pp.383-397.

Arthur, R., (2015). Robots, Holograms and Wearables: a tech history of fashion week. http://fashionista.com/2015/09/fashion-week-technology.

Baer, GT., Czajkowski, S., Poljacik, C., Whyard, H., & Woodworth, K., (2014). Wearable technology: case study survey research report. http://en.calameo.com/read/003352118e10d5997433c.

Baker, M. J., (2000). Marketing strategy and management. London: MacMillan Business Press Ltd. 9th edition.

Balasubramanyam, M., (2015). The benefits of wearable technology. Available at http://www.softwarespecialists.com/benefits-technology/.

Batra, R. & Sinha, I. (2010). Consumer-level factors moderating the success of private label brands. *Journal of Retailing*, 76(2), pp.175-191.

Batty, R., (2008). Maximize Quality Profits, *Quality,* 46 (13), pp. 44-47.

Bennett, J. A; Thiele, G, A & Jooste, C. J, (2003). Introduction to marketing management. RAU. 5th edition.

Bennett, B., (2014). *Wearable*-those-pouring-money-health-related-mobile-gadgets-and-apps-believe-they-can-work; *Tech Multiplies and Goes Mainstream at MWC 2014*. http://reviews.cnet.com/8301-13970_7-57619658-78/wearable-tech-multiplies-and-goes-mainstream-at-mwc-2014.

Bentler, P. M., & Bonnet, D, G. (1980). Significant tests and goodness of fit in the analysis of covariance structures. Psychological Bulletin, 88, pp.588-606.

Bentler, P.M., (1992). On the fit of models to covariances and methodology to the Bulletin. Psychological bulletin, 112(3), p.400.

Benton, A., (2014). *The Future of Entrepreneurship*, WALL ST. J., July 7, 2014, *available at* http://online.wsj.com/articles/angela-benton-on-the-future-of-entrepreneurship-1404762819.

Berger, R., Akselrod, S., Gordon, D., Cohen, R. (2007). An efficient algorithm for spectral analysis of heart rates variability. Bio. Eng. IEEE Trans. 33, pp.900-904.

Bergmann J, & McGregor, A., (2011). Body-Worn Sensor Design: What Do Patients And Clinicians Want? , Annals of Biomed. Eng., vol. 39, pp. 2299-2312.

Berlyne, D. E. (2014). Studies in the new experimental aesthetics, New York: John Wiley and Sons.

Berndt, A. & Petzer, D., (2011). Marketing Research. Pearson Education South Africa.

Besio, C., & Pronzini, A., (2010). Inside organisations and out. Methodological Tenets for Empirical Research Inspired by Systems Theory, 11(3).
BI Intelligence Estimate (2015). Global-wearable-device-unit-shipments-forecast. ICEF Monitor-market intelligence for international research.
Blackwell, R. and Blackwell, K. (1997). Changing Consumption Trends, *International Mass Retail Association.*
Bloch, P. H. (2011). Product Design and Marketing: Reflections after Fifteen Years. *Journal of product innovation management,* 28, pp. 378ï 380.
Blumberg, B. Cooper, D, R & Schindler, P, S. (2011). Business research methods. McGraw-Hill Higher Education, pp. 656.
Bodine K., & Gemperle, F., (2003). Effects of Functionality on Perceived Comfort of Wearables. Proceedings of the 7th IEEE International Symposium on Wearable Computers, Washington, DC, USA, pp. 57-61.
Bollen, K.A., (1989). A new incremental fit index for general structural equation models. *Sociological Methods & Research,* 17(3), pp.303-316.
Boutsouki, C., Zotos, Y. & Masouti, Z. (2008). Consumer behaviour towards own label: monitoring the Greek experience. *Agricultural Economics Review*, 9, (1).
Boztepe, S., (2007). User value: Competing theories and models. *International Journal of Design* 1 (2), pp. 55ï 63.
Brijball, S. (2009). Consumer behavior. Juta & Co. ltd. 7th edition.
Bryman, A., (2012). Social research methods. Oxford University Press. 4th ed.
Buenaflor, C., & Kim, H., (2013). Six human factors to the acceptability of wearable computers. *International Journal of multimedia and ubiquitous engineering,* 8(3).
Burtton, S., Lichtenstein, D R., Netemeyer, R. G., & Folse, J. (1998). A scale for measuring attitude toward private label products and an examination of its psychological and behavioural correlates. Journal of the Academy of Marketing Science 26(4), pp293-306.
Bush. P., Lahti, P., & Werner, RF., (2014). Colloquium: Quantum root-mean-square error and measurement uncertainty relations. *Reviews of Modern Physics,* 86.
Byoungho, J., & Yong, G.S. (2009). How do consumers define retail centre convenience? *International Journal of Global Business.*
Byrne, B. M., (2010). Structural Equation Modeling with Amos. 2nd ed. Taylor & Francis Group.

Cameran, P., Moizer,A., & Pettiniccbio, A., (2010). Customer satisfaction, corporate image, and service quality in professional services. *Service Industries Journal,* 30(3), pp.421-435.

Canalys Research. (2014). Connected Health & Wellness Technology.

Candi, M., (2010). Design as an element of innovation: evaluating design emphasis and focus in new technology-based firms.

Cant, M. C; Brink, A. & Brijball, (2009). Consumer behavior. Juta & Co. ltd. 7th edition.

Carr,A.s, Muthusamy, S., & Lee, D. (2008). The relationship between Intra-organisational and Inter- organisational Coordination and its influence on product Quality Improvement, *Journal of Applied Business Research*, 24(1), pp.85-102.

Carvalho, CA. (2011). Impact of Consumer Attitude in Predicting Purchasing Behaviour. Marketing Academic Research.

Casey, M., (2013). Game of Phones- Africa Mobil Consumer Survey. Deloitte South Africa.

Chandholk, R., (2014). Silicon Valley never talks about the real reason you do not own a Smartwatch or wearable tech.

Chandon Jean-Louis. (2011). Consumer choice of Private Label Brands in the French market: Proposition and test of a partial mediation model. University Paul Cezanne.

Chang, T., Albert, W., (2010). Price, product information, and purchase intention: An empirical Study, Journal of the academy of Marketing Science, 22, pp.16-27.

Chaniotakis, I.E., Lymperopoulos, C., & Soureli, M., (2010). Consumersôintentions of buying own-label premium food products. *Journal of product and Brand Management,* 19(5), pp.327-334.

Chen, M.F. (2007) ñConsumer attitudes and purchase intentions about organic foods in Taiwan: Moderating effects of food-related personality traitsò, *Food Quality and Preference*, 18, (7), pp. 1008-1021.

Cheug, G.W. & Rensvold, R.B., (2002). Evaluating goodness of fit indexes for testing measurement invariance. Structural equation modelling, 9, pp.9.

Chi, H.K, Yeh, H.R, Yang, T.Y., &Yang, T.Y. (2009). The impact of brand awareness on consumer purchase intention: the mediating effect of perceived quality and brand loyalty. The Journal of International Management Studies, 4(1), pp.135-144.

Chin, W. W. (2010). The partial least squares approach to structural equation modelling. Modern Methods for Business Research, pp. 295-336. Mahwah, NJ: Lawrence Erlbaum Associates, Publisher.
Chinomona, R., Okoumba, L., & Pooe, D. (2013). The Impact of Product Quality on Perceived Value, Trust and StudentsôIntention to Purchase Electronic Gadgets. *Mediterranean Journal of Social Sciences*. MCSER Publising, Rome-Italy.
Chitturi, R., (2009). Emotions by design: A consumer perspective. *International Journal of Design,* 3 (2), pp. 7ï 17.
Chun, H., (2009), Improving Product Quality by Multiple Inspections: Prior and Posterior Planning of Serial Inspection Procedures, *IIE Transactions,* 41, (9), pp. 831-842.
Clinch,M., (2014). *Wearable Smart Bands set for 350% Growth in 2014*, http://www.cnbc.com/id/101410507.
Conner, M., & Norman, P. (2005). Predicting health behaviour: research and practice with social cognition models. Maidenhead: Open University Press.
Conroy. P. (2010). Brand loyalty and the impact of private label products. Deloitte Debates, Available from: http://www.deloitte.com/us/brandloyalty. [Accessed 30th may 2017].
Cooper, R.B, & Zmud, R.W. (1990). Information technology implementation research: a technological diffusion approach. Management Science, pp.123-139.
Cosmos, A. B., (2013). What are the Important Attributes in the Purchase of Mobile Phones? The case of marketing students in Sunyani Polytechnic, Ghana, West Africa. *International Journal of Research in Finance & Marketing,* pp. 16-30.
Creusen. H., & Schoormans, L., (2011). The Different Roles of Product Appearance in Consumer Choice, pp.2-4.
CSS Insight., (2015). The rise of wearable technology. https://www.buy.garmin.com/en-us/us/into-sports/health-fitness/vivofit-/prod143405.html.
Cushing, T., (2014). After Two Officers Are Indicted for Shooting Citizens, Dallas Police Dept. Decides Body Cameras Might Be a Good Idea, TECHDIRT. http://www.techdirt.com/articles/20140507/10325727152/after -two-officers-are-indicted-shooting-citizens-Dallas-police-dept-decides-body-cameras-might-be-good-idea.shtml.

Danova (2014).The Wearables Report: Growth trends, consumer attitudes, and Why Smartwatches will dominate. *BI intelligence Insider newsletters.*
DeMeo, G., (2013). Wearable Tech: If It Benefits you, It Benefits Retailers, VENTUREBEAT.
http://venturebeat.com/2013/12/24/wearable-tech-if-it-benefits-you-it-benefits-retailers.
Dervojeda, K., Nagtegall, F., & Verzijl, D. (2015). Internet of things wearable technology. 1st ed. European Union: European Commission.
Available at: http://ec.europa.eu/growth/industry/innovation/business-innovationobservatory/files/case-studies/44-iot-wearable-technology_en.pdf.
Diamantopoulos, A., & Siguaw, J, A. (2000). A Guide for Uninitiated. London: Sage publication.
Dicey, L., (2015). Shopping online retains cultural influence.
http://www.financialmail.co.za/redzone/2015/12/10/shopping-online-retains-cultural-influence.
Dick, A.; Jain, A. & Richardson, P. (2012) Correlates of Store Brand Proneness: Some Empirical Observations. Journal of Product and Brand Management, 4(4), pp. 8-15.
Dunk, A.S. (2002). Product quality environmental accounting and quality performance. Accounting Auditing and Accountability Journal, 15(5), pp.719-732.
Dunne,A. & Raby. F., (2014). *Speculative Everything.* Wearable Technology ï Market Assessment, an IHS Whitepaper http://www.ihs.com/pdfs/Wearable-Technology-sep-2014.pdf.
Du Plessis, P.J.; Jooste, C.J.; & Strydom, J.W., (2009). Applied Strategy Marketing. Sandown: Heinemann Publishers (Pty) Ltd.
Duval, S., Hoareau, C., & Hashizume, H., (2010). Smart clothing technology and applications. Chapter 7, pp.153-187.
ECONOMIST., (2014). Health and Happiness. Available at http://www.economist.com/news/business/21595461.
Elliot, R.., (2009). Product design. Thompson Gale. University of Glasgow.
Ezeh, M. & Al-Azzawi, M. (2012). Students Brand Preferences between Apple and Samsung Smartphone.

Fan, X., Thompson, B. & Wang, L., (1999). Effects of sample size, estimation methods, and model specification on structural equation modelling fit indexes. *Structural Equation Modelling: A Multidisciplinary Journal*, *6*(1), pp.56-83.

Fetscherin, M., & Toncar, M., (2009). Country of origin effect on U.S. consumersô brand personality perception of automobiles from China and India. *Multinational Business Review*, 17(2), pp.111-128.

Fisher-Vanden, Karen, & Terry, R., (2009). Is Technology Acquisition Enough to Improve Chinaôs Product Quality? Evidence from Firm-Level Panel Data. *Economics of Innovation & New Technology,* 18, (1), pp. 21-38.

Flextronics, X., (2014). Wearable Technology, Fashioning the Future, Available at www.flextronics.com.

Fornell & Lacker (1981). Evaluating Structural Equation models with Unobserved Variable Sand Measurement Error. Journal of Marketing Research, 18 (1), pp39-50.

Gale (2009). Product design. *Encyclopaedia of management.*

Garter, (2016). Wearable technology sales forecast. New York.

Garvin, A., (2012). What does product quality means? Sloan management review.

Gerwin, D., & Barrowman, N., (2010). An evaluation of research on integrated product development. *Management Science* 48 (8), pp.930-953.

Ghosh, b. (2010), Study of Antecedents of purchase intention and its effect on brand loyalty of private label brand of apparel, *International Journal of Sales & Marketing*, 3 (3), pp. 73-86.

Giovanis, A., Tomaras, P., & Zondiros, D. (2013), Suppliers Logistics Service Quality Performance and its Effect on RetailersôBehavioral Intentions, *The 2nd International Conference on Integrated Information, Social and Behavioral Sciences,* 73, pp.302 ï 309.

Golob, T.F., (2010). Structural equation modelling for travel behaviour research. *Transportation Research Part B: Methodological*, *37*(1), pp.1-25.

Gonyea, D., (2014). Google Glass: Coming Soon to a Campaign Trail Near You, NPR ITS ALL POLITICS.
http://www.npr.org/blogs/itsallpolitics/2014/03/17/290714189/google-glass-coming-soon-to-a-campaign-trail-near-you.

Gownder. H. (2014). Smartphones are fading. Wearables are Next. CNNMoney (New York).

Grant, D. S., (2015). Markets and Markets.SE 27/63. *Australian Journal of marketing and sales*.

Grewal, D., Ram. J, Kalyanam. K & Tolerica. S. (2010). Strategic management of online and offline retail pricing: A Research Agenda. Journal of interactive Marketing, 24(5), pp. 138-154.

Grunert, K.G., Bredahl, L. & Brunso, K. (2014). Consumer perception of meat quality and implications for product development in the meat sector- a review. *Meat Science,* 66, pp. 259-272.

Hair, J. F., Hult, W. C., Babin, B. J. & Anderson, R. E. (2010). Multivariate Data Analysis: A global perspective, 7th ed: New Jersey Pearson Prentice Hall.

Hashim & Muhammed 2013. Consumer purchase intention at traditional restaurant and fast food restaurant, Consumer Behaviour.

Hawkins, Del I., Best, R. J., Coney, K. A., (2004). Consumer Behaviour: Building Market Strategy. 9th ed, McGraw-Hill/Irwin.

Herrington, C. & Weaven, S. (2009). E-retailing by Banks: E-service Quality and its Importance to Customer Satisfaction. European Journal of Marketing, 43(9/10), pp.1220-1231.

Herrmann, A., Xia, L., Monroe, K. B. & Huber, F. (2007). The influence of price fairness on customer satisfaction: an empirical test in the context of automobile purchases. *Journal of Product & Brand Management,* 16, pp. 49-58.

Higginbotham, S. & Ishmael. (2014). *Samsung Launches a Wearable Wristband and Cloud Platform for Tracking Your Health*, GIGAOM.

https://gigaom.com/2014/05/28/samsung-launches-a-wearable-and-cloud-platform-for-tracking-your-health; *Samsung Unwraps Tizen for "Internet of Things*," TAIPEI TIMES, June 5, 2014, *available at* http://www.taipeitimes.com/News/biz/archives/2014/06/05/2003592005.

Holnack, J.A., Zhou, X., Larrabee, G.J., Millis, S.R., & Salthouse, T.A., (2011). Confirmatory Factor Analysis of the WAIS-IV/WMS-IV. *Assessment*, 18 (2), pp. 178-191.

Hong. K & Schniderjans. M., (2011). Balancing concurrent engineering environment factors for improved product development performance. *International Journal of Production Research*, 38 (8), pp.1777-1801.

Hooper, D., Coughlan, J. & Mullen, M., (2008). Structural equation modelling: Guidelines for determining model fit. *Articles*, p.2.

Hu, L. T., & Bentler, P.M. (1999). Evaluating model fit. In R.: Concepts, issues, and applications. pp. 76-99. Thousand Oaks, CA: Sage.

Hunn, N., (2015). The market for Smart wearable technology: *A consumer-centric approach,* pp3.

Ibrahim, I., Kasim, K., & Mohamood, S K. (2013). Antecedents stirring purchase intention of Smartphone among adolescents in Perlis. International Jornal of Academic Research in Business and Social Science, 3 (13), pp 84-97.

Icek Ajzen. 2005. Attitudes, personality and behaviour. 2nd ed: Maidenhead. Open University Press.

IDC. (2014). Worldwide Wearable Computing Market Gains Momentum with Shipments Reaching 19.2 Million in 2014 and Climbing to Nearly 112 Million in 2018. Press Release. *Available at* http://www.idc.com/getdoc.jsp?containerId=prUS24794914.

Isabella, G., pozzani, L., Chen, V., & Gomes, M. (2012). Influence of discount price announcements on consumer behaviour. *Sao Paulo journal of business administration.* 52(6), pp.657-671.

Iyer & Kuksov, D., (2010). Consumer feelings and equilibrium product quality. *Journal of Economics & Management Strategy* 19 (1), pp.137-168.

Jaafar, S. N., Lalp, P. E., & Mohamed, M., (2012). ConsumersôPerceptions, Attitudes and Purchase Intention towards Private Label Food Products in Malaysia. *Asian Journal of Business and Management Sciences,* 2(8), pp. 73-90.

Jalilvand, M, R., Samiei, N., Mahdavinia, S, H., (2011). The effect of brand equity components on purchase intention, *International business and management*, 2(2), 149-158.

Jin, C.J., & Yong, N.C., (2011). ConsumersôPerceived Quality, Perceived Value and Perceived Risk towards Purchase Decision on Automobile. *American Journal of Economics and Business Administration* 3 (1). Pp. 47-57.

Joanna,h., Lockee, C., & Bass, K.,(2008). Board engagement in quality: findings of a survey of hospital and system leaders. *Journal of Healthcare Management* 53 (2), pp.121-135.

Joreskog & Sorbom (1981). The use of LISREL in Sociological Model Building: a multidimensional Perspective. Beverly Hills: Sage.
Juniper research, (2015). Apple voted coolest wearable technology even by Android users. Consumer wearables market survey.
Karjaluoto, H., & Leppaniemi, M. (2005). Factors influencing consumersôwillingness to accept mobile advertising: A conceptual model. International Journal of Mobile Communications, 3(3), pp.197-213.
Kasim, K., & Mohamood, S K, & Ibrahim, I. (2013). Antecedents stirring purchase intention of Smartphone among adolescents in Perlis. *International Journal of Academic Research in Business and Social Science,* 3 (13), pp. 84-97.
Katz, D., (1937). Attitude measurement as a method in social psychology social force, 15 (4), pp.479-482.
Kerr, D., (2014). Fitbit Rules 50 Percent of the Worldôs Wearable Market, CNET, http://www.cnet.com/news/fitbit-rules-50-percent-of-the-worlds-wearable-market.
Khan, I., Ghauri, T., & Majeed, S. (2012). The impact of brand related attributes on purchase intention of customers. A study about the customers of Punjab, Pakistan. *Interdisciplinary journal of contemporary research in business*, 4 (3).
Khraim, H.S. (2011). The Influence of Brand Loyalty on Cosmetics Buying Behaviour of UAE Female Consumers. *International Journal of Marketing Studies*, 3(2), pp. 123-133.
Keller, K. L. (2008), Strategic Brand Management. The Building, Measuring, and Managing Brand Equity. 3rd edition. New Jersey. Pearson Education International.
Kelloway, E.K., (1998). Using LISREL for structural equation modelling: A researcherôs guide. Sage Publications.
Kim,H., & Singleton, K.J., (2011), Term Structure Models and the Zero Bound: An Empirical Investigation of Japanese Yields. *Journal of Financial and Quantitative research.*
Kinuthia, N. G.; Mburugu; Muthomi, N.; & Mwihaki, M., (2012). Factors influencing brand loyalty in Sportswear among Kenyan university students: the case of swimmers. *Asian journal Social Sciences & Humanities*, pp.213.
Kline, R.B., (2010). Principles and Practice of Structural Equation Modelling. 3rd ed. New York: Guilford Publications.

Kortuem, M., Bauer, Z., & Segall. (1999). NETMAN: The design of a collaborative wearable computer system, Mobile Networks and Applications, vol. 4, pp.49-58.

Kotler, P., & Keller, K.L., (2009). Marketing management 13th ed. Pearson Education Inc.

Kotler, P., & Armstrong, G., (2010). Principles of marketing. 14th ed. Pearson publisher.

Koufteros, X., Vondermbse, M. & Jayaram, J., 2010). Internal and external integration for product development: the contingency effects of uncertainty, equivocality, and platform strategy. *Decisions Sciences,* 36 (1), pp. 962-135.

Kumar, A. (2009). Consumer Attitude Formation and Chang. *Journal of Management and Marketing Research*.

Kumar, A., & Zhang. (2009). Indian consumersôpurchase intention towards a United States versus local brand. Journal of Business Research, 62(5), pp. 521-527.

Kurdsholi, H. R, & Bozjani, A.Y. (2012). Studying the effects of the green marketing mix on the green purchase decision of consumers (A case study of Peghah Dairy products in Shiraz). A*cademic-research quarterly of new marketing research,* 2(1).

Kurkkovsky, O., & Bhalodi, J., (2008). Classification of privacy management techniques in pervasive computing. *International Journal of U and E-service, sci. tech.;* 1, pp. 55-71.

Latif, S. & Abidee., (2011). Effective advertising and its influence on consumer buying decision. *International journal of management*.

Lautt, A., (2012).Sunlight is Still the Best Disinfectant: The Case for a First Amendment Right to Record the Police, 51 WASHBURN L.J. 349 (2011/12).

Lay-yee, K.L., Kok-Siew, H., & Yin-Fah, B.J. (2013). Factors affecting smartphone purchase decision among Malaysian Genaration Y. International Journal of Asian Social Science, 3(12), pp. 2426-2440.

Ledgard, J., (2015). This is the future: 10 new technologies Africa can use to leapfrog. Biznews.com.

Ledger, D. (2014). Inside Wearables. Endeavour Partners published research. http://www.endeavourpaterners.net.

Lee, Abdoullia, & Assion Lawson- Body. (2010). Perceived price fairness of dynamic pricing. *Journal of Industrial Management & Data Systems*. 111, pp.531- 550.

Lee, H. M., Lee, C. C., & Wu, C. C. (2011). Brand image strategy affects brand equity after M&A. *European Journal of Marketing*, 45(7/8), pp.1091-1111.
Lei, P.W. & Wu, Q., (2007). Introduction to structural equation modelling: Issues and practical considerations. *Educational Measurement: Issues and Practice*, *26*(3), pp.33-43.
Levy, M. & Weitz, B. (2012), Retailing Management, New York: McGraw-Hill.
Lewren, M., (2015). How wearable technology will change fashion in 2016? Strategy and Research.
Lichtenstein, R., Bloch, H., & Black, C. (2008). Correlates of price acceptability. *Journal of Consumer Research*, 15(9), pp.243-252.
Liljander, V., Polsa, P. & Riel, A llard. (2009). Modelling consumer responses to an apparel store brand: store image as a risk reducer. *Journal of retailing and consumer service,* 16(4). pp. 281-290.
Lin & Lin (2007). Luxury fashion brand consumers in China: perceived value, fashion lifestyle, and willingness to pay. Journal of Business Research, 65 (10), pp.01516-1522.
Llusar, JCB., Zornoza, CC., Tena, ABE. (2010). Measuring the relationship between firm perceived quality and customer satisfaction and its influence on purchase intentions. *Total Quality Management*, 12(6), pp. 719- 734.
Makarechi, K., (2014). *Move Over, Google Glass; Here Come Google Contact Lenses*, VANITY FAIR. http://www.vanityfair.com/online/daily/2014/04/google-contact-lenses; Lance Ulanoff, *Google Smart ContactLenses Move Closer to Reality*, MASHABLE, http://mashable.com/2014/04/21/google-smart-contact-lensespatents/#:eyJzIjoidCIsImkiOiJfbXBtazRkemRvdWttcXQ4byJ9.
Malhotra, N.K., (2015). Essentials of Marketing Research. A Hands-On Orientation. Pearson Education Limited.
Mallory, T. H. (2011). Wearable Technology in Healthcare: The key to wellness at Work.
Mallory, R., & Katalin, M. (2011). The importance of Peer approval in the sartorial purchasing patterns of the University of Georgia Students. *College Student Journal*, 45(1).

Mann, S., (2012). Eye Am a Camera: Surveillance and Sousveillance in the Glassage. Available at http://techland.time.com/2012/11/02/eye-am-a-camera-surveillance-and-sousveillance-in-the-glassage.

Martin, S., & Kuehnl, C., 2015. New product design: concept, measurement, and consequences. *Journal of Marketing,* 79 (3).

McCrae, R., Kurtz, J., & Terracciano, A., (2011). Internal Consistency, Retest Reliability, and their Implications for Personality Scale Validity: *Journal of the Society for Personality and Social Psychology, Inc.*

McDaniel, C., Lamb, WC. Hair, J., (2011). Introduction to Marketing. South-Western, Cengage Learning, 11th ed.

McKinsey Global Institute. (2013). Disruptive Technologies: Advances that will transform life, business, and the global economy, Available at www.mckinsey.com.

Mead, D., (2013). Google Glass Is Already Being Used in the Operating Room. MOTHERBOARD. Available at http://motherboard.vice.com/blog/google-glass-is-already-being-used-in-the-operating-room.

Metz, R., (2014). *The Internet of You*, MIT TECH. REV. http://www.technologyreview.com/news/527386/the-internet-of-you.

Michaels, P., (2010). Apple: What recession? *Macworld,* 27 (1), pp. 16.

Mielach, D., (2013). Wearable tech Adoption Slow- But not for long. BusinessNewsDailly.

Mihail, C., Roco & Sims, W., (2002). Converging Technologies for Improving Human Performance.Bainbridgeends.http://www.wtec.org/ConvergingTechnologies/Report/NBIC_report.pdf.

Miller, C., (2014). *At Google, Bid to Put Its Glasses to Work*, N.Y. TIMES. *Available at* http://www.nytimes.com/2014/04/08/technology/google-begins-a-push-to-take-glass-to-work.html.

Mirabi, Akbariyeh, & Tahmasebifard. (2015). A Study of Factors Affecting on Customers Purchase Intention Case Study: the Agencies of Bono Brand Tile in Tehran. *Journal of Multidisciplinary Engineering Science and Technology*, 2 (1).

Missal. L. (2015).Wearable Technology familiarity and consideration on the rise: increased recognition of potential benefits-but several concerns have also grown. The Harris poll. http://www.theharrispoll.com/business/wearable-Tech.html.

Mital, A., (2008). Development: a structured approach to design and manufacture. Burlington, MA: Butterworth-Heinemann.
Mohaini, M. (2011). ConsumersôPerceptions, Attitudes and Purchase Intention towards Private Label Food Products in Malaysia. *Asian Journal of Business and Management Sciences,* 2(8), pp.73-90.
Moore, J., (2014). How does product affect the marketing plan for the product? Sand blog. Remarkable ideas to grow your business. http://www.idea-sandbox.com/blog/groe/price/product-affect-marketing-plan-product/.
Moore, M. (2010). Product attributes and retail format choice among US Apparel purchasers. *Journal of Textile and Apparel Technology and Management*, 6 (4), pp1-11.
Morrison, F., (2014). Available at http://www.jdsupra.com/legal news/the-internet-of-things-part-1-brave-new-23154.
Moss. S., (2016). Fit indices for Structural Equation Modeling. PSY article. Available at http://www.Sicotests.com/PSYarticle.asp?id=277.
Moye, L.N., & Kincade, D.H. (2003). Shopping orientation segments: exploring differences in store patronage and attitudes toward retail store environments among female apparel consumers. *International Journal of Consumer Studies*, 27(1), pp. 58-72.
Munnukka, J., (2008). Customersôpurchase intentions as a reflection of price perception. *Journal of product and brand management.* 17(3), pp. 188-196.
Munusamy, J. & Wong, C.H. (2008). The relationship between marketing mix strategy and consumer motive: an empirical study in major Tesco stores. *UNITAR E-Journal*, 4(2).
Myer, B., Kwan, W., & Forsythe, S. (2013). Creating successful cause-brand alliances: the role of cause involvement, perceived brand motivations and cause brand alliance attitude. *Brand Management*, 20 (3), pp.205-217.
Nader, D., (2014). The Quantified Self Movement Reaches Personal Finance. INSTITUTIONAL INVESTOR. Available at http://www.institutionalinvestor.com/Article/3315313/Banking-and-Capital-Markets-Trading-and-Technology/The-Quantified-Self-Movement-Reaches-Personal-Finance.html.

Nagtegaal, F., Verzijl, D., & Dervojeda, K.; Netherlands, P. & Probst, L., Frideres, L. & Pedersen, B., Luxembourg, P., (2015). Internet of things: wearable technologies. *Business innovation observatory.*

Narayan, S., (2010). The perils of faking it. Retrieved October 3/2010, http:64.74.118.102/2010/02/04214927/ the perils-of-faking it.html.

Nielsen (2014). Tech- Styles: Are Consumers really interested in Wearable tech on Their Sleeves? *The Neilsen Comparable metrics Report.*

New York Times. (2015). Jewellers enter the wearable technology market. Available at: http://www.nytimes.com/2014/12/05/style/international/jewelers-enter-the-wearable-technology-market.html?_r=0.

Noone, B. M., Kimes, S.E., & Mattila, A.S. (2007). The effect of meal pace on customer satisfaction. Cornel Quarterly, 48(3), pp.231-244.

Nunkoo, R., Ramkissoon, H. & Gursoy, D., (2012). Public trust in tourism institutions. *Annals of Tourism Research*, 39(3), pp.1538-1564.

O'Cass, A., & Frost, H., (2002). Status Brand: Examining the Effects of Non-Product-Related Brand Associations on Status and Conspicuous Consumption. *The journal of Product and Brand Management*, 11(2/3), pp.452-475.

Orth, R., Campana, D., & Malkewitz, K., (2010). Formation of Consumer Price Expectation based on Package Design: Attractive and Quality Routes. *Journal of Marketing Theory and Practice*, 18, (1), pp. 23-40.

Owusu, A., (2013). Influences of price and quality on consumer purchase of mobile phone in the Kamasi Metropolis in Ghana: a comparative study. *European Journal of Business and Management,* 5(1).

Oxford University Press. Oxford Dictionaries. 2013. Definition of attitude in English. The United Kingdom. Accessed 1.3.2013. http://oxforddictionaries.com/definition/english/attitude?q=attitude.

Palani & Sohrabi (2013). Consumer attitudes and behaviour when selecting a holiday destination. Business Economics and Tourism Research.

Pallant, 2010). SPSS Survival manual: a step by step guide to data analysis using SPSS for windows. 4th edition. Open University Press.

Panzarino, M., (2013). Disney Gets into Wearable Tech with the MagicBand. Available at http://www.thenextweb.com/insider/2013/05/29/disney-goes-into-wearable-tech-with-the-magic-band.

Pedersen (2015). Cybersecurity Skills Training: An Attecker- centric Gamified Approach. Technology Innovation Management Review.

Penner, L., (2010). Consumer behaviour: the psychology of marketing. Retrieved from http://www.consumerpsychology.com.

Perrau, F., (2011). The forces that drive consumer behaviour and how to learn from it to increase your sales. http: // www.theConsumerFactor.com.

Perreau. (2013).The forces that drive consumer behaviour: and how to learn from it to increase your sales.

Pesin, M., (2011). Fashion marketing and price. Madison publisher. http://www.vibeconsulting.co/fashion-marketing-and-price.

Phau, I., & Teah, H., (2009). Devil wears (counterfeit) Prada: A study of antecedents and outcomes of attitude towards counterfeit of luxury brands. *Journal of consumer marketing,* 26 (1), pp. 15-27.

Poole, M. (2010). Consumer Perception of potato Health Benefits. *Electronic Theses and Dissertations.*

Probst, L. (2015). Internet of Things: Wearable technology. *European Union Business Innovation Observatory.*

PwC. (2014). The Wearable Future, Consumer Intelligence Series, Available at: http://www.pwc.com/es_MX/mx/industrias/archivo/2014-11-pwc-the-wearable-future.pdf.

Rahimniya, F., Alavi, S.M., & Siyahrudi, M.N., (2012). Studying the effects of visual and functional aspects of packaging on the purchase of foods with customersô ecology variable as moderator, *Journal of business management*, 4(3), pp.65-82.

Rainbowlink. (2011). Retrieve from: *http://www.slideshare.net/rainbowlink/attitude-9722476.*

Raykov, T., & Grayson, D., (2003). A test for change of composite reliability in scale development. *Multivariate behavioural research*, *38*(2), pp.143-159.

Regan, K., (2014) ñSaving Lives: Ambulances Get Connected to the IoT,òPTC PRODUCT LIFECYCLE STORIES. Available at http://blogs.ptc.com/2014/07/25/saving-lives-ambulances-get-connected-to-the-iot.

Reichheld, FF. & Sasser, Jr., (2007) zero defections. Quality comes to services. *Harvard Business Review,* 68(5), 105-111.

Rizwan, M., Jamal, M. N., Abidin, Z., Zareen, K. G., Khan, A., Farhat, B. & Khan, R. (2013) The determinants of Purchase Intentions towards Counterfeit Mobile Phones in Pakistan, *Asian Journal of Empirical Research*, 3(2), pp.220-236.

Rizwan, M., Qayyum, M., Qadeer, W., & Javed, M. (2014).The impact on branded product on consumer purchase intentions. *Journal of public administration and governance*, 4(3).

Robert, W.; & Veryzer, Jr., (2009). The place of product design and Aesthetics in consumer research. *Advances in consumer research*. Rensselaer Polytechnic Institute.

Rosenfeld, Y., (2009), Cost of Quality Versus Cost of Non-Quality in Construction: The Crucial Balance. *Construction Management & Economics*, 27(2), pp. 107-117.

Rudell, F., (1991). Boys' Toys and Girls' Tools?: An Exploration of Gender Differences in Consumer Decision-making for High-tech Products, Proceedings of Gender and Consumer Behaviour, Salt Lake City, Utah, pp. 187-198.

Sandu, M.C., (2014). Important elements in consumerôs decision-making process. 25(4), pp.365-373.

Satit, RP. , Tat, HH. , Rasli, A., Chin, T.A., & Sukati, I., (2012). The Relationship between Marketing Mix and Customer Decision-Making over Travel Agents: An Empirical Study. *International Journal of Academic Research in Business and Social Sciences*.

Schaaf, M., & Ziefle. (2011). Smart Clothing: Perceived Benefits vs. Perceived Fears, The5thInternational Conference on Pervasive Computing Technologies for Healthcare (Pervasive Health) and Workshops, pp.601-608.

Scheeres, D. (2010). Keeping Quality While Cutting Costs, *IE*, 42(3), pp.24.

Schifferstein, H., & Zwartkruis-Pelgrim. E., (2008). Consumer-product attachment: Measurement and design implications. *International Journal of Design*, 2 (3), pp. 1ï 13.

Schiffman, L. & Kanuk, L. (2010). Consumer behaviour, Global 10th ed. United States of America: Pearson Prentice Hall.

Schumcher, R.E & Lomax, R.G. (2004). A biginnerôs guide to structural equation modeling, 2nd ed. Mahwash, NJ: Lawrence Erlpaum associates.

Segev, L., (2015). For South African, wearable tech is more than just fitness.

Sengupta, J., (2014). Package size and perceived quality: the intervening role of unit price perceptions. Journal of consumer psychology, 24, (1), pp.4-17.
Shah, H., aziz, J., Jaffari, R., Waris, S., Ejaz, w., Fatima, M., & Sherazi, K. (2012). The Impact of Brands on Consumer Purchase Intentions. *Asian Journal of Business Management,* 4 (2), pp.105-110.
Shaharudin, M., Mansor, S., & Elias, S. (2011). Food quality attributes among Malaysiaôs fast food customer. *Journal of International Business and Management*, 2(1), 198-208.
Shaharudin, R.; Mansor, S.; Hassan, A.; Omar, M.; & Harun, E., (2011). The relationship between product quality and purchase intention: The case of Malaysiaôs national motorcycle/scooter manufacturer. *African Journal of Business Management,* 5(20), pp. 8163-8176.
Shugan, M., (2009). Price-quality relationships. Advance in consumer research. 11, pp. 627-632.
Sichun & Boxall. (2015). How consumers use Smartphones and wearable technology to track their health. Connected life report.
Singh, R., & Khan, I., (2012). An approach to increase customer retention and loyalty in B2C world. International journal of scientific and research publications, 2 (6).
Singh, J., & Powles, J., (2014). *The Internet of Things: The Next Big Challenge to Our Privacy*, GUARDIAN, *available at* http://www.theguardian.com/technology/2014/jul/28/internet-of-things-privacy.
Solomon, M.R.; & Rabolt, N.J., (2008). Consumer behaviour in fashion. PhD Thesis. The University of Hewartt.
Solomon, M., (2010). Consumer behaviour: buying, having, and being 8th ed. Upper saddle River, NY: Pearson Prentice Hall.
Song, S., (2014). Why consumers do not buy wearable devices: *a critical research on factors that influence consumer's decision,* pp2.
Soriano. D.R. (2012). Customersôexpectations factors in restaurants: the situation in Spain. International Journal of Quality Reliability Management, 19(8), pp.1055-1067.
Steele, S., Loa, C., Secombe, Y., & Wong. (2009). Elderly PersonsôPerception and Acceptance of Using Wireless Sensor Networks to Assist Healthcare. *International Journal of Medical Information,* 78, pp. 788-801.

Steiger, J. H.(1990). Structural model evaluation and modification: An internal estimation approach. *Multivariate Behavioural Research.* 25, pp173-180.
Steiger, J. H, & Lind, J. (1980). Statistically-based tests for the number of common factors. Paper presented at the Annual Spring Meeting of the Psychometric Society, Iowa City.
Steinberg & Jules. (2009). Good detail promotions do not cost much, but they pay. *This week in consumer electronics,* 16 (3). pp. 30.
Stivings, M. A., (2010). Price-Endings: When prices signal quality. *Research in Management Science*, 46(12).
Suarez, A., (2014). *Wearable Fitness Device Privacy Concerns Abound*, JDSUPRA, http://www.jdsupra.com/legalnews/wearable-fitness-device-privacy-concerns-17278.
Sudhir, K & Talukdar, D. (2014). Does store brand patronage improve store patronage? *Review of Industry Organisation*, 24(2). pp. 143-160.
Sutterfield, J. & Lydia. A. (2012). Using Taguchi Methods in a marketing study to determine features for a Smartphone. *Journal of Marketing Studies*. Allied Academies.
Tariq. M., Nawaz, R., Muhammad, M, & Butt. A. (2013). Customer perceptions about branding and purchase intention: A study of FMCG in an emerging market. *Journal of Basic and Applied Scientific Research*, 3(2), pp.340-347.
Tavakol, M. and Dennick, R., (2011). Making sense of Cronbach's alpha. *International journal of medical education*, *2*, p.53.
Technavio (2014). Exploring five challenges in the wearable technology market. Discover market opportunities. http://www.technavio.com./blog/exploring-five-challenges-in-the-wearable-technology-market.
Tellis, G.J. Gaeth, Yin, E., & Niraj. R., (2009). Does Quality Win? Network effects versus quality in high-tech markets. *Journal of Marketing Research,* 46(2), pp.135-149.
Tellis, G.J. & Gaeth, G.J. (2009). Best value, price seeking, and price aversion: the impact of information and learning on consumer choices, *Journal of Marketing*, 54(4), pp. 34-45.
Texeira, Q., (2010). How quality affects the bottom line? New York: McGraw-Hill.
Thakor. V, & Katsanis, P., (2007). A model of brand and country effects on quality dimensions. *Journal of International Consumer Marketing,* 9 (3), pp. 79-100.

Thapa, A. (2011). Consumer switching behaviour: A study of shampoo brands. *National monthly refereed journal of research in commerce & management*, 1(9).
Thibodeau, P., (2014). The Internet of Things Could Encroach on Personal Privacy, computerworld.http://www.computerworld.com/s/article/9248086/The_Internet_of_Things_could_encroach_on_personal_privacy.
Thierer, A., (2014). The internet of things and wearable technology: Addressing privacy and security concerns without derailing innovation, pp4. Virginia 22201.
Tolentino, M., (2014). Smart Building Projects to Boom in 2018, Silicon Angle.
International Journal of product development, pp.64-71.
Tood, S., & Kenesei, Z., (2011). The use of price in the purchase decision. *Journal of empirical generalisation in marketing science*, pp.1-22.
Tsiotsou, R., (2005). Perceived Quality Levels and their Relation to Involvement, Satisfaction, and Purchase Intentions. Marketing Bulletin, 16. Research Note 4.
Tsiotsou, R., (2006). The role of perceived product quality and overall satisfaction on purchase intentions. *International Journal of Consumer Studies,* 30(2), pp.197-217.
Tsukayama, H., (2014). *Wearable Tech Grows Enough to Get Its Section on Amazon*, WASH. POST, *available at* http://www.washingtonpost.com/blogs/the-switch/wp/2014/04/29/wearable-tech-grows-enough-to-get-its-own-section-on-amazon.
Tucker, L. R., & Lewis, C. (1973), the reliability coefficient for maximum likelihood factors analysis. *Psychometrika*, 38, pp.1-10.
Ullman, J.B., (2001). Structural equation modelling. Using multivariate statistics. 4th ed, pp.653-771.
Ulrich, KT., & Pearson, S., (2008). Assessing the importance of design through product archaeology. *Management Science*, 44(3), pp.352-369.
Um, S., Chon, K., & Ro, Y. (2009). Antecedents of revisit intention. Annals of Tourism Research, 33(4), pp.1141-1158.
Uusitalo, O. (2011). Consumer perceptions of grocery retail formats and brands. *International Journal of Retail Distribution Management,* 29 (5). pp. 214-225.
Valler, R. j., Cuerrier, J., Pelletier, l., & Mongeau, C., (1992). Attitudes, behaviour, and social context: the role of norms. Journal of personality and social psychology, 62, pp. 98-109.

Vanderweele, T.J., (2012). Structural Equation Models and Epidemiologic Analysis. *American Journal of Epidemiology,* 176 (7), pp. 608-612.
Van Rompay, L.., Pruyn, H. & Tieke. P., (2009). Symbolic meaning integration in design and its influence on product and brand evaluation. *International Journal of Design,* 3 (2), pp. 19ï 26.
Venkatesh, V., & Davis, D., (2000). A Theoretical Extension of the Technology Acceptance Mode, Four Longitudinal Field Studies. Management Science, vol. 46, pp. 186-204.
Verhoef, P., & Lemon, P., (2013). Customer engagement: a new frontier in customer value management. *Handbook of Service Marketing Research. Cheltenham*: Edward Elgar Publishing.
Vijayan, J., (2014). The Internet of Things Likely to Drive an Upheaval for Security, computerworld.http://www.computerworld.com/s/article/9248069/The_Internet_of_Things_likely_to_drive_an_upheaval_for_security.
Voon, Ngui & Agrawal., (2011). Determinants of willingness to purchase food. *International food and agricultural management review,* 14(2).
Walsh, V., Roy, R., Bruce, M., & Potter, S. (2008). Winning by design. Technology, product design and international competitiveness, Oxford: Blackwell Publishers.
Wang, Y.-S., Yeh, C.-H. & Liao, Y.-W. (2013). What drives purchase intention in the context of online content services? The moderating role of ethical self-efficacy for online piracy. *International Journal of Information Management*, 33(1), pp.199-208.
Wankhade, L., & Dabade, BM., (2006). TQM with quality perception: a system dynamic approach. TQM Mag 18(4), pp.341 - 357.
Wanted Analytics (2014). Technology enabled Learning Excellence. New York Publisher.
Wearable World News, (2014). Four significant barriers mass adoption wearables, http://wearableworldnews.com/2014/03/25/four-big-barriers-mass-adoption-wearables/.
Wee, C.H., Ta, S.j. & Cheok, K.H. (1995). Non- price determinants of intention to purchase counterfeit goods: An exploratory study. *International Marketing Review*, 12(6), pp.19-46.

Wickliffe, V, P., & Pysarchik, D, T., (2011). A look at product attributes as enhancers of group integration among the US and Korean consumers. *International Journal of Retail & Distribution Management,* 29(2), pp.99-109.
Wilson, F. (2013). Wearables in workplace. *Wearable technology survey*. Price waterhouseCoopers.
Yang, T.Y. (2009). The impact of brand awareness on consumer purchase intention: the mediating effect of perceived quality and brand loyalty. The Journal of International Management Studies, 4(1), pp.135-144.
Yang, S., (2014). Can bottles speak volumes? The effect of package shape on how much to buy, Priya Raghubir.
Yanmei, Z.; You, J.; Robert, A.; & Schonsleben, P., (2009). Design Quality: A Key to Improve Product Quality in International Production Network. *Production Planning & Control,* 20 (2), pp. 168-177.
Yen- Ku & Kung-Don, (2009). The causal relationship between service quality, corporate image and adultsôlearning satisfaction and loyalty: a study of professional training programmes in Taiwanese vocational institute. *Total quality Management & Business Excellence*, 20 (7), pp.749-762.
Yoder, W. (2014). Creative functionality: product design and packaging in Branding. *Article on branding, Design and Marketing.*
Zeithamel, V. A.; & Bitner, M. J., (2008). Services marketing. New York: Mcgraw-hill Company.
Zhang, P, (2009). Roles of attitudes in initial and continued. Ict use longitudinal study.
Zikmund, W., (2011). A multivariate analysis of perceived risk, self-confidence and information sources. *Advance in consumer research*, pp.406-416.
Zikmund, W. G.; & DôAmico, M., (2011). Marketing: creating and keeping customers in the e-commerce world. Cincinnati: South-Western College Publishing. 7th edition.

Appendix 1: Descriptive Statistics of the Measurement Instruments

Product Quality

Item Statistics			
	Mean	Std. Deviation	N
PQ1	3.86	1.079	416
PQ2	3.61	1.107	416
PQ3	3.68	1.092	416
PQ4	3.74	1.066	416

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PQ1	11.04	7.466	.674	.463	.786
PQ2	11.28	7.691	.601	.388	.819
PQ3	11.21	7.174	.725	.563	.763
PQ4	11.15	7.602	.658	.503	.793

Product Design

Item Statistics			
	Mean	Std. Deviation	N
PD1	3.31	1.260	416
PD2	3.42	1.147	416
PD3	3.46	1.173	416
PD4	3.81	1.146	416

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PD1	10.69	9.843	.663	.462	.890
PD2	10.58	9.565	.817	.681	.829
PD3	10.54	9.376	.824	.699	.826
PD4	10.19	10.152	.713	.552	.868

Consumer Attitude

Item Statistics

	Mean	Std. Deviation	N
CA1	3.82	1.037	416
CA2	3.85	.914	416
CA3	3.66	1.005	416
CA4	3.73	1.053	416
CA5	3.96	.880	416

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CA1	15.19	10.697	.730	.533	.868
CA2	15.17	11.576	.693	.487	.876
CA3	15.36	10.674	.767	.608	.859
CA4	15.29	10.226	.800	.656	.851
CA5	15.06	11.798	.687	.490	.878

Product Price

Item Statistics

	Mean	Std. Deviation	N
PP1	3.54	1.103	416
PP2	3.52	1.089	416
PP3	3.43	1.137	416
PP4	3.66	1.103	416

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PP1	10.62	8.226	.687	.478	.827
PP2	10.64	8.106	.726	.544	.811
PP3	10.73	7.789	.743	.561	.803
PP4	10.50	8.376	.658	.441	.838

Purchase Intention

Item Statistics

	Mean	Std. Deviation	N
PI1	3.69	1.117	416
PI2	3.56	1.094	416
PI3	3.88	1.094	416

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PI1	7.44	4.252	.805	.649	.874
PI2	7.56	4.266	.828	.686	.854
PI3	7.25	4.327	.809	.656	.871

Appendix 2: Model-Fit: pre-test of the measurement model

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	50	999.681	160	.000	6.248
Saturated model	210	.000	0		
Independence model	20	6502.020	190	.000	34.221

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.056	.806	.745	.614
Saturated model	.000	1.000		
Independence model	.524	.213	.130	.193

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.846	.817	.868	.842	.867
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.842	.713	.730
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	839.681	743.621	943.224
Saturated model	.000	.000	.000
Independence model	6312.020	6051.880	6578.501

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	2.409	2.023	1.792	2.273
Saturated model	.000	.000	.000	.000
Independence model	15.668	15.210	14.583	15.852

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.112	.106	.119	.000
Independence model	.283	.277	.289	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	1099.681	1105.011	1301.216	1351.216
Saturated model	420.000	442.386	1266.444	1476.444
Independence model	6542.020	6544.152	6622.634	6642.634

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2.650	2.418	2.899	2.663
Saturated model	1.012	1.012	1.012	1.066
Independence model	15.764	15.137	16.406	15.769

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	80	85
Independence model	15	16

Scalar Estimates (Group number 1 - Default model)

Maximum Likelihood Estimates

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
PQ1	<---	PQ	1.000				
PQ2	<---	PQ	1.036	.062	16.686	***	par_1
PQ3	<---	PQ	1.169	.066	17.756	***	par_2
PQ4	<---	PQ	1.070	.066	16.120	***	par_3
PD1	<---	PD	1.000				
PD2	<---	PD	1.125	.067	16.773	***	par_4
PD3	<---	PD	1.186	.069	17.191	***	par_5
PD4	<---	PD	1.017	.067	15.268	***	par_6
PP1	<---	PP	1.000				
PP2	<---	PP	1.067	.066	16.117	***	par_7
PP3	<---	PP	1.124	.069	16.242	***	par_8
PP4	<---	PP	.947	.067	14.098	***	par_9
CA1	<---	CA	1.000				
CA2	<---	CA	.831	.054	15.516	***	par_10
CA3	<---	CA	1.039	.058	18.047	***	par_11
CA4	<---	CA	1.119	.060	18.637	***	par_12
CA5	<---	CA	.802	.052	15.570	***	par_13
PI1	<---	PI	1.000				
PI2	<---	PI	1.018	.042	23.960	***	par_14
PI3	<---	PI	.980	.043	22.627	***	par_15

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

			Estimate
PQ1	<---	PQ	.708
PQ2	<---	PQ	.859
PQ3	<---	PQ	.924
PQ4	<---	PQ	.828
PD1	<---	PD	.707
PD2	<---	PD	.874
PD3	<---	PD	.901
PD4	<---	PD	.791
PP1	<---	PP	.754
PP2	<---	PP	.816

			Estimate
PP3	<---	PP	.823
PP4	<---	PP	.714
CA1	<---	CA	.779
CA2	<---	CA	.734
CA3	<---	CA	.834
CA4	<---	CA	.858
CA5	<---	CA	.736
PI1	<---	PI	.863
PI2	<---	PI	.897
PI3	<---	PI	.863

Covariances: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
PQ	<-->	PD	.551	.065	8.536	***	par_16
PQ	<-->	PP	.376	.052	7.182	***	par_17
PQ	<-->	CA	.389	.051	7.634	***	par_18
PQ	<-->	PI	.624	.067	9.347	***	par_19
PD	<-->	PP	.410	.053	7.762	***	par_20
PD	<-->	CA	.356	.048	7.395	***	par_21
PD	<-->	PI	.585	.063	9.213	***	par_22
PP	<-->	CA	.333	.045	7.408	***	par_23
PP	<-->	PI	.395	.052	7.566	***	par_24
CA	<-->	PI	.414	.051	8.174	***	par_25

Correlations: (Group number 1 - Default model)

			Estimate
PQ	<-->	PD	.666
PQ	<-->	PP	.487
PQ	<-->	CA	.518
PQ	<-->	PI	.697
PD	<-->	PP	.554
PD	<-->	CA	.496
PD	<-->	PI	.683
PP	<-->	CA	.498
PP	<-->	PI	.494
CA	<-->	PI	.534

Variances: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
PQ	.865	.107	8.090	***	par_26
PD	.792	.098	8.042	***	par_27
PP	.690	.081	8.561	***	par_28
CA	.650	.071	9.142	***	par_29
PI	.927	.086	10.763	***	par_30
e1	.862	.065	13.264	***	par_31
e2	.331	.030	11.013	***	par_32
e3	.203	.027	7.627	***	par_33
e4	.454	.038	11.825	***	par_34
e5	.793	.060	13.121	***	par_35
e6	.309	.031	10.010	***	par_36
e7	.259	.030	8.658	***	par_37
e8	.491	.040	12.226	***	par_38
e9	.524	.045	11.608	***	par_39
e10	.396	.039	10.131	***	par_40
e11	.416	.042	9.900	***	par_41
e12	.595	.049	12.210	***	par_42
e13	.422	.035	12.022	***	par_43
e14	.384	.030	12.607	***	par_44
e15	.307	.028	10.831	***	par_45
e16	.292	.029	10.048	***	par_46
e17	.354	.028	12.583	***	par_47
e18	.317	.030	10.406	***	par_48
e19	.234	.027	8.807	***	par_49
e20	.305	.029	10.409	***	par_50

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

			M.I.	Par Change
e16	<-->	e18	5.860	-.048
e16	<-->	e17	5.887	.046
e15	<-->	PP	4.158	.046
e15	<-->	e17	7.497	-.052
e13	<-->	e20	4.758	.048
e13	<-->	e19	7.109	-.055

			M.I.	Par Change
e12	<-->	e17	12.149	.089
e12	<-->	e16	4.472	-.054
e10	<-->	e17	4.434	-.047
e10	<-->	e15	4.067	.045
e10	<-->	e13	4.473	-.053
e10	<-->	e12	4.234	-.059
e8	<-->	e20	124.483	.261
e8	<-->	e19	31.740	-.123
e8	<-->	e18	12.552	-.084
e8	<-->	e17	8.585	.068
e8	<-->	e12	7.847	.086
e7	<-->	e20	10.349	-.063
e7	<-->	e19	57.821	.139
e7	<-->	e18	22.898	-.095
e6	<-->	e20	8.908	-.060
e6	<-->	e19	20.591	-.085
e6	<-->	e18	51.845	.147
e5	<-->	e20	18.388	-.124
e5	<-->	e18	7.212	.079
e5	<-->	e17	5.210	-.066
e5	<-->	e14	8.993	.090
e5	<-->	e8	5.149	-.077
e5	<-->	e6	6.364	.073
e4	<-->	e20	124.261	.254
e4	<-->	e19	31.829	-.120
e4	<-->	e18	31.164	-.130
e4	<-->	e12	15.885	.119
e4	<-->	e8	107.538	.281
e4	<-->	e7	13.133	-.082
e4	<-->	e6	4.317	-.048
e4	<-->	e5	8.746	-.099
e3	<-->	e20	17.872	-.077
e3	<-->	e19	57.742	.130
e3	<-->	e18	19.033	-.081
e3	<-->	e12	4.028	-.048

			M.I.	Par Change
e3	<-->	e8	8.696	-.064
e3	<-->	e7	52.848	.132
e3	<-->	e6	27.270	-.098
e3	<-->	e4	8.286	.057
e2	<-->	e20	13.219	-.073
e2	<-->	e19	10.275	-.060
e2	<-->	e18	66.013	.165
e2	<-->	e16	4.297	-.041
e2	<-->	e8	11.743	-.081
e2	<-->	e7	24.826	-.099
e2	<-->	e6	84.806	.188
e1	<-->	e20	5.282	-.069
e1	<-->	e18	16.310	.123
e1	<-->	e9	5.621	.089
e1	<-->	e8	16.390	-.144
e1	<-->	e6	4.275	-.063
e1	<-->	e5	105.456	.451
e1	<-->	e4	15.373	-.135
e1	<-->	e2	7.256	.081

Variances: (Group number 1 - Default model)

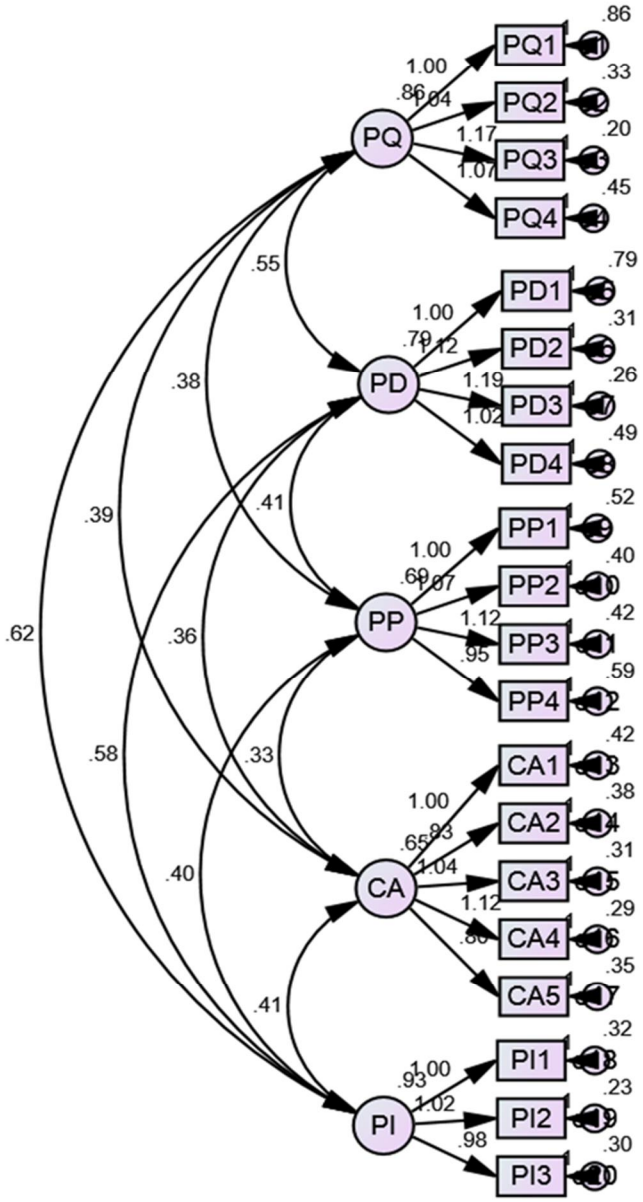
	M.I.	Par Change

Regression Weights: (Group number 1 - Default model)

			M.I.	Par Change
PI3	<---	PD4	34.455	.159
PI3	<---	PD1	11.183	-.082
PI3	<---	PQ4	30.212	.142
PI2	<---	PD4	10.854	-.084
PI2	<---	PD3	6.618	.064
PI2	<---	PQ4	8.432	-.070
PI2	<---	PQ3	4.958	.055
PI1	<---	CA4	4.121	-.061
PI1	<---	PD2	13.312	.101
PI1	<---	PD1	5.478	.059
PI1	<---	PQ4	6.932	-.069
PI1	<---	PQ2	15.801	.112

			M.I.	Par Change
PI1	<---	PQ1	8.737	.071
CA5	<---	PP4	5.024	.063
CA5	<---	PD4	4.807	.059
CA4	<---	PI	4.644	-.072
CA4	<---	PI3	5.200	-.065
CA4	<---	PI1	8.120	-.079
CA4	<---	PP4	4.033	-.056
CA4	<---	PQ2	5.659	-.066
CA3	<---	PP2	5.191	.064
CA2	<---	PD1	5.732	.061
PD4	<---	PI3	37.674	.208
PD4	<---	CA5	9.397	.129
PD4	<---	PP4	8.200	.096
PD4	<---	PQ4	34.871	.182
PD4	<---	PQ1	5.164	-.064
PD3	<---	PI2	7.517	.077
PD3	<---	PI1	4.473	-.059
PD3	<---	PQ3	4.179	.054
PD3	<---	PQ2	5.576	-.065
PD2	<---	PI2	5.181	-.066
PD2	<---	PI1	6.554	.073
PD2	<---	PQ3	4.245	-.056
PD2	<---	PQ2	13.886	.105
PD1	<---	PI3	5.853	-.101
PD1	<---	PQ1	51.184	.248
PQ4	<---	PI3	23.181	.159
PQ4	<---	PI2	4.585	-.071
PQ4	<---	PI1	6.549	-.083
PQ4	<---	CA1	4.099	.070
PQ4	<---	PP4	7.660	.090
PQ4	<---	PD4	37.053	.191
PQ4	<---	PQ1	7.224	-.074
PQ3	<---	PP	4.638	-.080
PQ3	<---	PI3	6.779	-.069
PQ3	<---	PI1	7.089	-.069

			M.I.	Par Change
PQ3	<---	CA2	4.862	-.070
PQ3	<---	PP4	7.560	-.072
PQ3	<---	PP1	4.929	-.058
PQ3	<---	PD4	6.997	-.067
PQ3	<---	PD2	10.551	-.082
PQ2	<---	PI1	20.125	.127
PQ2	<---	PP1	4.153	.058
PQ2	<---	PD2	22.094	.130
PQ1	<---	PP1	4.947	.095
PQ1	<---	PD1	53.536	.275
PQ1	<---	PQ4	4.133	-.080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Appendix3: Research Questionnaire H16/07/27

PARTICIPANT INFORMATION SHEET

Good Day

My name is Evelyne Kasongo Nkonko and I am currently studying towards my Master degree in Marketing at the University of the Witwatersrand, Johannesburg. I am conducting a research on factors influencing the purchase intention of smart wearable technology in South Africa.

The purpose of the survey is to find out if product quality, design, price and consumer attitude are factors influencing the purchase intention of smart wearable technology in South Africa. As a user of smart wearable technology you are invited to take part in this survey. You are kindly requested to contribute by filling in the attached questionnaire. The questionnaire is divided into 2 sections, Section A for demographic info and Section B for factors influencing consumer purchase intention. The questionnaire should not take more than 10 minutes of your time.

You are kindly invited to complete the survey in order to assist in completion of this project. There are no risks, inconveniences which maybe experienced since the research is done for academic purposes. There is a guarantee of anonymity and confidentiality of the information you are going to provide. However you are free to withdraw at any given stage without any risk, penalty or loss of benefits.

If participation in this research causes you any distress, myself and Mr. Norman Chiliya will be available for consultation.

Should you have any questions or if you would like a copy of a summary of the final research report, please feel free to contact me on:

807878@students.wits.ac.za or Cell: 0630268084

In case you have any questions or queries my supervisorsôdetails are

Mr. Norman Chiliya

Email: **norman.chiliya@wits.ac.za**

Thanking you in advance for your cooperation

_____ _____

Evelyne Kasongo Supervisor: Mr. Norman Chiliya

Date:

Master student: Division of Marketing

School of Economics and Business Sciences

CONSENT TO PARTICIPATE IN MASTERS RESEARCH

Factors influencing the purchase intention of Smart wearable technology

Please read the following, and sign in the space below should you agree to complete the questionnaire. If you have any questions relating to the consent form, please contact the principal researcher, Norman Chiliya, on 011 717 8063.

I have read and understand the contents of the participant information sheet attached to the questionnaire, a copy of which I have received for my own records. I have been encouraged to ask questions and all of my questions have been answered to my satisfaction. By signing this form:

- I agree voluntarily to participate in this study.
- I understand that my responses will be treated as anonymous and confidential at all times.
- I know that I can withdraw from the study at any time without any penalty, risk or loss.

Name and Signature Date

_____ _____

SECTION A: GENERAL INFORMATION

The section is asking your background information. Please indicate your answer by ticking (X) on the appropriate box.

Please answer the following questions by marking the appropriate answer(s) with an X. This questionnaire is strictly for research purpose only.

SECTION A: GENERAL INFORMATION

The section is asking your background information. Please indicate your answer by ticking (X) on the appropriate box.

A1 Please indicate your gender

Male		Female	

A2 Please indicate your age category

18-25		26-30		31-35		36-older	

A3 Please indicate your highest academic level

High School	
Diploma	
Degree	
Post graduate degree	
Other (specify)	

A4 Please indicate your occupation

Student	
Employed	
Self-employed	
Unemployed	
Other (specify)	

A5 Are you aware of Smart wearable technology existence?

Yes	
No	

A6 Do you currently own a Smart wearable device?

Yes	
No	

A7 What is the brand name of Smart wearable technology you are interested in or familiar with?

Apple	
Samsung	
Sony	
Fitbit	
Google	
Pebble	
Other (Specify)	

The questions below are all based on the brand you have indicated above.

Below are statements about **product quality, product design, product price, attitude and purchase intention**. You can indicate the extent to which you agree or disagree with the statement by ticking the corresponding number in the five point scale below:

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

SECTION B

B1 PRODUCT QUALITY

Please indicate to what extent you agree or disagree with the following statements regarding the Quality of your favorite Smart wearable device						
		Strongly disagree	**disagree**	**Neutral**	**Agree**	**Strongly agree**
1	The quality of the product meets my expectation.					
2	The brand has a good functional quality.					
3	Styles of the product have distinctive features.					
4	Quality of the product is suitable for me.					

B2 PRODUCT DESIGN

Please indicate to what extent you agree or disagree with the following statements regarding Product design of your favorite Smart wearable device.						
		Strongly disagree	**disagree**	**neutral**	**Agree**	**Strongly agree**
1	I think the Brand provides wide variety of style					
2	The Brand provides my choice of colour.					
3	The Design of the brand is reputable					
4	I am happy with the product size and shape					

B3 PRICE

Please indicate to what extent you agree or disagree with the following statements regarding Price of your favorite Smart wearable device.						
		Strongly disagree	**disagree**	**neutral**	**Agree**	**Strongly agree**
1	The Increase of price does hinder me to purchase.					
2	I select brand name regardless of price					
3	The increase of price is an indication of great value.					
4	I am ready to pay any price for this particular product					

B4 ATTITUDE

Please indicate to what extent you agree or disagree with the following statements regarding Attitude of your favorite Smart wearable device						
		Strongly disagree	**disagree**	**neutral**	**Agree**	**Strongly agree**
1	The Product display is attractive					
2	The Ads about the product attract me to purchase.					
3	The Product name and image are attractive to me.					
4	The Product design match its price.					
5	The Product design does not match its price.					

B5 PURCHASE INTENTION

Please indicate to what extent you agree or disagree with the following statements regarding Purchase Intention of your favorite Smart wearable device						
		Strongly disagree	**disagree**	**neutral**	**Agree**	**Strongly agree**
1	I intend to use this product in future.					
2	I am more likely to repurchase this product in future.					
3	I will definitely buy this product					

Thank you for taking the time to complete this survey. All information will be treated as confidential and not disclosed without discretion.

Appendix4: Ethics clearance certificate

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Nkonko

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H16/07/27**
PROJECT TITLE	Factors influencing the purchase intention of Smart wearable technology
INVESTIGATOR(S)	Miss E Nkonko
SCHOOL/DEPARTMENT	Economics and Business Science/
DATE CONSIDERED	22 July 2016
DECISION OF THE COMMITTEE	Approved unconditionally
EXPIRY DATE	04 August 2019
DATE 05 August 2016	**CHAIRPERSON** (Professor J Knight)

cc: Supervisor : Mr N Chiliya

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ Signature

_____/_____/_____ Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES