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# Brand loyalty and its influence on prescription behaviour by medical officers and clinical officers in Kiambu level 5 and Ruiru Sub-county hospitals

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**BRAND LOYALTY AND ITS INFLUENCE ON PRESCRIPTION BEHAVIOUR BY  
MEDICAL OFFICERS AND CLINICAL OFFICERS IN KIAMBU LEVEL 5 AND  
RUIRU SUB-COUNTY HOSPITALS.**



**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT FOR THE  
REQUIREMENT OF DEGREE OF MASTER OF BUSINESS ADMINISTRATION IN  
HEALTHCARE MANAGEMENT AT  
STRATHMORE BUSINESS SCHOOL**

**MAY 2019**

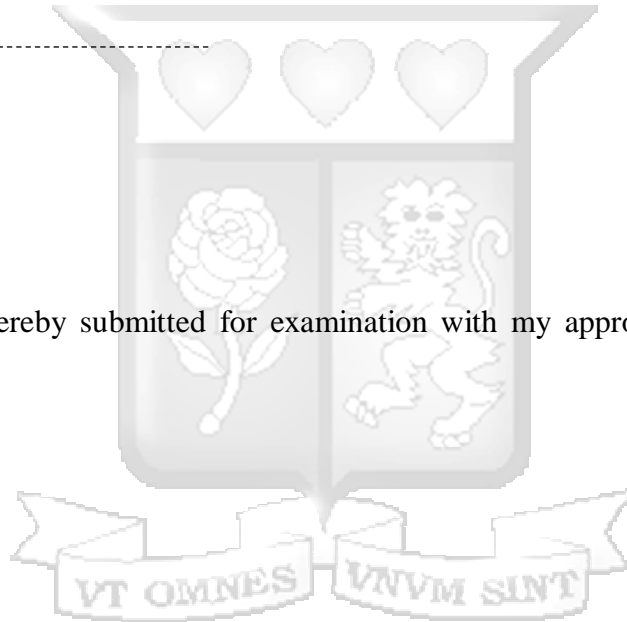
**DECLARATION**

I declare that this is my original work and has not been either previously assessed or approved for an award of degree in other institutions of higher learning. To the best of my knowledge and belief, the project does not include any material previously published by any scholar except where due acknowledgement is made.

James Muhuni

Sign: .....

Date: .....



This dissertation is hereby submitted for examination with my approval as the University Supervisor.

**Dr. Nancy Njiraini.**

Senior Lecturer

Institute of Healthcare Management

Strathmore Business School

Sign: .....

Date: .....

## ABSTRACT

In accommodating the healthcare need of patients, medical and clinical officers in any health centre must provide prescriptions that meet their demands. There has been an increasing debate on the motivational factors which describes how physicians prescribe drugs for their patients, more so with the increased anti-hypertensive rate in Kenya with specific focus in Kiambu County. While this could be as a result of brand loyalty developed by either the patients or physicians, little literature is available in the field of healthcare management to back-up the belief, more so in Kenya. To try and answer this phenomenon, the study aimed to investigate brand loyalty and its influence on the prescription behaviour of anti-hypertensive drugs by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub County Hospitals. The specific objective were to determine the influence of brand image, brand commitment and brand experience on prescription behaviour of anti-hypertensive drugs. Theory of brand equity and theory of planned behaviour contributed to the study. The study adopted a descriptive research design with a target population of 21 medical officers and 34 clinical officers in the two hospitals combined, totalling to 55 respondents. Census survey was carried out on the 55 respondents to make the sample size of the study. As such, the sample size of the study was 55 respondents. The study relied on primary data which were gathered using questionnaire as the primary data collection instrument. Pilot testing was done using three respondents from Kiambu level 5 hospital which is not part of the target population. Data was analysed using quantitative methods, descriptive statistics, inferential statistics as well as use of SPSS. To ensure that analysis was appropriate, diagnostic tests was performed such as linearity test and normality test. The study findings established that of the three variables, only brand experience and brand image had a positive relationship with prescription behaviour of anti-hypertensive drugs by medical and clinical officers whereas, brand commitment had a negative relationship. The study recommended that hospitals need to take into consideration the influence that brand loyalty could be having on the prescription behaviour of their behaviours especially due to rising uptake of anti-hypertensive drugs in the country, especially in Kiambu.



## LIST OF ABBREVIATIONS

AD: Antidepressant

DBP: Diastolic Blood Pressure

HR: Human Resource

NCD: Non-Communicable Disease

R&D: Research and Development

SBP: Systolic Blood Pressure

SSA: Sub-Saharan Africa

U.S: United States

WHO: World Health Organization



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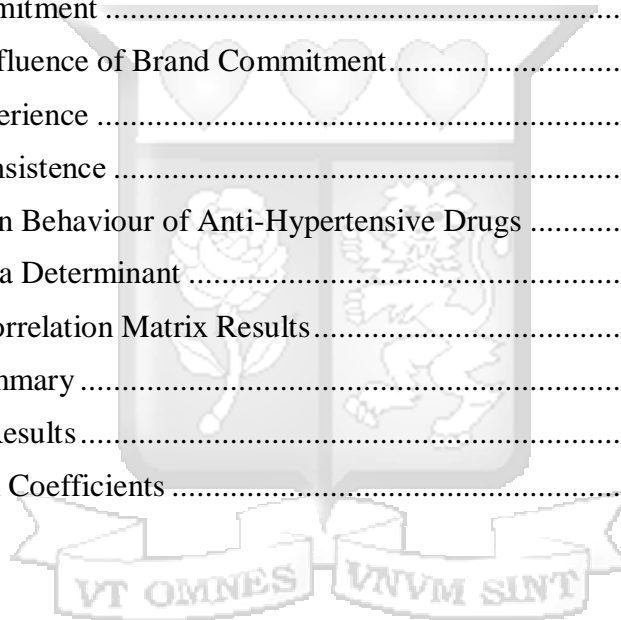
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Lastly, I want to thank my revision group and my syndicate group, special thanks go to Maggie, Sylvia and Naomi.



## DEDICATION

I dedicate this work to my family who continue to give me encouragement, strength and spiritual support as I undertake the study.



## OPERATIONAL DEFINITION OF TERMS

- Anti-hypertensive: Refers to a drug used to reduce the level of high blood pressure (Benjamin *et al.*, 2017).
- Brand commitment: Refers to the ability of the firm to create long term relationship with its clients so as to have a strong perception towards its brand (Eisingerich & Rubera, 2010).
- Brand experience: This is a type of experimental selling or marketing technique that includes a holistic set of terms or conditions created by the management to influence consumer's feelings towards their brand or brand image (Biedenbach & Marell, 2010).
- Brand image: Refers to how consumers think of a brand. It is the perception of the brand in the minds of the consumers and it develops over time, after interaction (Moerman, 2006).
- Brand loyalty: It is the perceived degree of faithfulness that consumers have towards a particular brand of a product in the market (Macit, Taner, Mercanoglu & Mercanoglu, 2016).
- Clinical Officers: Refers to clinicians with diploma in medicine and are not specialized in handling complicated medical issues such as surgery. They do primary care (Mutua *et al.*, 2014).
- High blood pressure Refers to systolic blood pressure (SBP) greater than or equals to 140 mmHg or diastolic blood pressure (DBP) greater than or equals to 90 mmHg (Benjamin *et al.*, 2017)
- Medical Officers: Refers to physicians with degree in medicine and are highly trained to handle high medical complications in the hospital such as surgery (Mutua *et al.*, 2014).

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

In accommodating the healthcare need of the patients, medical officers and clinical officers in any health centre must provide prescriptions that meet their demands. Even though technology and globalization has made it easier for consumers, mostly patients to have more knowledge on the available features of the medicine drugs in the market, few have managed to capitalize on it. And as a result, patients are mostly following and trusting the medicines prescribed to them by medical officers in the hospital (Hajjar, Frost, Lacy & Kotchen, 2006).

In a competitive industry where firms' main goal is to make profit, starting from pharmaceutical firms to healthcare organizations, brand is considered as the most effective and available strategy at hand (Vigolo & Cassia, 2015). Research and development (R&D) is becoming expensive for many healthcare organizations in the country. While many international health centres are engaging in R&D to introduce new medicines in partnership with pharmaceutical firms (Chen, Newell, Kou, Zhang, & Li, 2017), developing nations still lag behind. And as such, rely on brand to enhance their sales.

Hypertension is a critical disease that is currently facing both developed and developing nations. A study by Joshi, Alim, Kengne, Jan, Maulik, Peiris and Patel (2014) in establishing prevalence of hypertension and associated cardiovascular risk factors in Nairobi's urban slums indicated that in Africa, hypertension ranges from 25 – 35 per cent in people aged 25 years to 64 years. Further, Meme (2017) indicated that Kiambu had 33 per cent of the total hypertensive cases reported in the country based on the 2012 survey. While the cases may have risen over the years, this figure has brought into attention the need to bridge the gap by establishing brand loyalty and its influence on prescription behaviour of anti-hypertensives drugs in Kiambu Level 4 and Ruiru Sub-County Hospitals.

##### 1.1.1 Brand Loyalty

According to Macit, Taner, Mercanoglu and Mercanoglu (2016), brand loyalty is perceived as the degree of faithfulness that consumers (physicians) have towards a particular brand of a product in the market and is a major indicator of long-term rate of consumption (prescription) level by consumers (physicians) towards that brand. As such, Vigolo and Cassia (2015) outlined that consumers judge brand on the basis of informational cues that they associate with the product; and can either be intrinsic (flavour, colour and texture) or extrinsic cues.

Brand loyalty is not only important in determining consumption rate, but also on the prescription of drugs by the clinicians (Berndt & Aitken, 2011). Brand gives consumers strong perception of a product after consuming it for the first time, depending on the benefits and values they derive from it. Like in health organizations, medical officers and clinical officers provide consultancy which aim at informing patients the available drugs, their side effects, benefits and the kinds of diseases they treat in the market (Joyce, Carrera, Goldman & Sood, 2011).

Magno (2013) in his study indicated that creating brand loyalty in the health sector is a process. First, physicians must be influenced by the previous image which may make them to ignore new medicine arrivals in the market. Second, physicians or organizations consider quality in areas that resonate well with the patients. Also, patients do not have all information pertaining to certain brands in the market. And as a result, rely on their medical officers and clinical officers to have the final say (Magno, 2013).

Kabiraj and Shanmugan (2011) argued that attitude aspect was important as behavioural aspect in establishing brand loyalty. People develop rational and emotional behaviour which assist them to acquire perceived quality and value creation from a brand. A study by Fullerton (2003) cited in the work of Maheshwari, Lodorfos and Jacobsen (2014) revealed that commitment is essential in brand loyalty as it emphasizes on values, trust and perceived quality. Brakus *et al.*, (2009) also identified brand experience as another important driver of brand loyalty which increases brand personality.

In an attempt to determine the influence of brand loyalty on the prescription behaviour among medical officers and clinical officers on anti-hypertensive, the study adopted brand image (Mehralian *et al.*, 2017), brand experience and brand commitment (Brakus *et al.*, 2009) as predictor variables of the study. Several measures were developed such as I prescribe drugs based on the personality behind it (brand image), my attitudes and loyalty determines how I prescribe medicines over time (brand commitment), I prescribe drugs based on the drug awareness in the market (brand experience) among others as will be operationalized by the study.

### **1.1.2 Prescription Behaviour of Physicians**

Prescription decision is a complicated phenomenon in the health sector (Sharifnia, Mohammadzadeh, Arzani, Salamzadeh, Abolfazli, Zali, & Khoshdel, 2018)). With growing number in population of patients seeking for medicine prescription from their physicians,

understanding the underlying behaviours of how physicians prescribe drugs is very important (Nair, Manchanda & Bhatia, 2010; Kenneth, Lakhawat & Chandra, 2016). Several researchers such as Sharifinia *et al.*, (2018) in an survey study to understand factors affecting prescription behaviour of physician behaviour proposed several aspects such as physician's experience and traits, health facilities, patients' needs or expectations, drug strength and the type of diseases.

Previous studies have indicated that individuals are rational in decision-making. The prescribing decision is a complex process that involve a number of factors (Godin *et al.*, 2008). As a result, physicians adopt a number of strategies when making prescribing decisions. While behaviour of physicians may vary in many aspects, this study seeks to understand prescription behaviour of physicians. The study developed measures such as I consider cost of these drugs at the time of prescribing behaviour, I take into account drug issues such as side effects during prescribing behaviour, I also identify individual issues such as patient's drug persistence during prescribing decision, and various forms of pharmaceutical promotions may persuade how I prescribe drugs to the patients.

### **1.1.3 Anti-Hypertensives**

Globally, hypertension is the leading cause of deaths among young and adult population (WHO, 2009). Benjamin *et al.*, (2017) in their study defined hypertension as the systolic blood pressure (SBP) greater than or equals to 140 mmHg or diastolic blood pressure (DBP) greater than or equals to 90 mmHg, or simply, taking anti-hypertensive medications. It was estimated to have caused 9.4 million deaths which was about 17 per cent of total deaths in 2012. In addition, the overall prevalence of hypertension as of 2015 was 24 per cent for men and 20 per cent for women aged 18 years and above, with an increase in hypertension cases of 1.13 billion in 2015 up from 594 million in 1975 (Benjamin *et al.*, 2017).

Over the years, African continent had not paid much attention to anti-hypertensive as have been witnessed today. According to Ataklte *et al.*, (2014) Sub-Saharan Africa (SSA) currently has the highest prevalence of hypertension cases in the world at approximation of 30 per cent with about 54 percent reported in Soweto, South Africa. Whereas developed nations has seen decrease in hypertension cases, it is estimated that by the year 2025, the number of people taking anti-hypertensive may increase to approximately 68 per cent if the problem is not carefully addressed (Twagirumukiza *et al.*, 2011).

Being the most dominant non-communicable diseases (NCD), surveillance data shows that it has risen to 45 per cent in 2010 up from 35 per cent down in 2003 in Kenya. In the country,

the problem is mostly reported from cases of heart failure or cardiovascular complications and early deaths. A study by Joshi *et al.*, (2014) on awareness and treatment indicated that awareness range between 6 – 47 per cent while treatment range between 9 – 31 per cent. The existing studies have not assessed critically the brand loyalty and its influence on prescription behaviour of anti-hypertensive drugs by medical officers and clinical officers. Most studies such as Meme (2017) and Gatwiri (2017) only addressed the prevalence and factors leading to increase of hypertension cases. The paper therefore aimed to fill the gap.

Further, Mutua *et al.*, (2014) indicated that many hypertensive patients most often visit health centres due to health complications caused by the disease. The Ministry of Health in its survey 2012 as cited in (Gatwiri, 2017) recorded that Kiambu County was the leading County with hypertension problems estimated at 126,754. From the records in the hospitals in the County, hypertension disease is ranked seventh and fifth in causing fatality and admission. The records further suggested that there were 193 admission cases of uncontrolled hypertension which caused 27 deaths in 2011, and 328 cases of hospital admission which caused 40 deaths in 2012 (Gatwiri, 2017).

#### **1.1.4 Kiambu Level 5 and Ruiru Sub-County Hospitals**

Kiambu Level 5 and Ruiru Sub-County hospitals are government hospitals located in Kiambu County with the sole purpose of serving the people of Kenya of all origin. As the previous studies have indicated, the county have seen increase of hypertension cases in the last decades. Therefore there was need for more studies to understand the behaviours of the physicians in these two hospitals and how they prescribe anti-hypertensive drugs.

#### **1.2 Research Problem**

With increased generic medicine substitution in the market, Sharad and Hassali (2011) argue that it reduces consumers' expenditure on medicine. As the world changes and the level of integration increases at a faster rate, health organizations together with pharmaceutical firms are torn between how to enhance their market share and increase the perception of their brand and quality among their consumers.

An area that remains largely unaddressed by the existing studies is the prescription behaviours among medical officers and clinical officers in the country and whether brand loyalty of physicians towards pharmaceutical firms play a key role in it. With the rate of anti-hypertensive intake increases on annual basis (Mutua *et al.*, 2014) in the country, there is a need to

understand how medical officers and clinical officers prescribe these medicines to the patients; with special reference to generic and original drugs in the market.

Previous studies such as Macit *et al.*, (2016) on brand loyalty as a strategy for the competition with generic drugs by physicians noted that 92% of their respondents concurred that in most cases, doctors prescribe drugs based on their originality to patients with chronic diseases while Mwangagi (2010) on the effectiveness of brand perceived quality on the choice of prescriptions of drugs by doctors established that price is essential when it comes to prescription of medicine. Although there are many studies in line with brand loyalty, few studies have managed to address the brand loyalty and its impact on prescription of anti-hypertensive, more so in Kiambu, Kenya where the rate of hypertension is increasing by the day (Gatwiri, 2017).

Therefore to bridge this gap and to understand how medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County prescribe medicines to their patients, the study aimed to **determine** the brand loyalty and its influence on prescription behaviour of anti-hypertensive drugs by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospitals.

### **1.3 Research Objectives**

#### **1.3.1 General Objective**

To **determine** the brand loyalty and its influence on anti-hypertensive drugs prescription behaviour by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospital.

#### **1.3.2 Specific Objectives**

- i. To **find out** brand image and its influence on anti-hypertensive drugs prescription behaviour by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospitals.
- ii. To establish brand commitment and its influence on antihypertensive drugs prescription behaviour by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospitals.
- iii. To determine brand experience and its influence on anti-hypertensive drugs prescription behaviour by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospital.

#### **1.4 Research Questions**

- i. Does brand image influence on antihypertensive drugs prescription behaviour by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospital?
- ii. To what extent does brand commitment have influence on antihypertensive drugs prescription behaviour by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospital?
- iii. Does brand experience have influence on antihypertensive drugs prescription behaviour by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospital?

#### **1.5 Scope of the Study**

The scope of the study was in Kiambu Level 4 and Ruiru Sub-County Hospital. Based on their hospital records, there were 34 clinical officers and 21 medical officers in the hospitals combined. The research design was descriptive in nature since it sought to establish brand loyalty and its influence on prescription behaviour of anti-hypertensive drugs by medical and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospital. The target population of the study therefore was 55 respondents. As such, the sample size of the study was 55 respondents and were established using a census survey. Further, the study was justifiable in this site since Kiambu County had been recorded as the county with higher cases of hypertensions (Mutua et al., 2014). The study took eleven (11) months (June 2018 – April 2019).

#### **1.6 Significance of the Study**

The findings of the study may be useful in providing a clear picture of how medical officers and clinical officers prescribe anti-hypertensive drugs in the hospitals and whether brand loyalty play a critical role in their behaviour.

The pharmaceutical firms and other medicine suppliers may find the findings of the study useful. Also, findings of this study may address the issues relating to increased hypertension cases in the county which may be beneficial to the ministry of health.

To the researchers and students, the study may be useful in bringing forth the debate on the influence of brand loyalty on prescription behaviour of medical and clinical officers and also providing additional literature on the topic so as to broaden the area of the study and in the health management field.

The study was also significant in contributing to the development of brand loyalty theory and empirical review through establishing various aspects of brand loyalty such as image, commitment and experience in describing how they influence prescription behaviour of doctors and clinicians.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

This area covered theories that will contribute to the study, empirical review where knowledge gaps were identified, conceptual framework explaining the relationship between brand loyalty and prescription of anti-hypertensive by medical officers and clinical officers as well as operationalization of variables.

#### 2.2 Theoretical Review

##### 2.2.1 Brand Equity Model

Keller (1993) developed brand equity model to explain the concept of consumer (physician) behaviour and how they perceive brands in the market. The model established that for organizations (pharmaceutical) that want to stand out in this competitive market environment, they must first shape-up how their consumers (physicians) think and feel about their brands, and this must be created in their minds (Keller, 2001). Depending on how pharmacists do it, ensuring that your physicians' mind is occupied by your brand is one step that could give the firm a competitive edge in the market.

While organizations aim to create sustainable brand in the market, having the right type of experience around brand is very vital (Aaker, 2009), since it ensures that pharmacist's physicians have specific and positive feelings about the brand, their belief towards the product and perceptions must also be positive (Keller, 2003). A study by Yoo, Donthu and Lee (2000) on examinations of selected marketing mix elements and brand equity established that perceived quality of brand by consumers (physicians) is essential in creating brand loyalty.

According to Keller, Parameswaran and Jacob (2011), strong brands attract physicians to increase their prescription rate in the market. Based on the model developed by Keller (1993), there are four major steps in creating sustainable brand in the organization. First is the brand salience which aims at creating brand awareness so as physicians can recognize it with positive perceptions. Second in the model is the meaning of the brand or its image which is aimed at performance through meeting physicians' needs; by ensuring reliability, durability and efficiency.

Third is the brand response which aims to develop the extent of perception and feelings that individuals have towards the brand. Physicians' perception of a brand is based on quality,

credibility and superiority (Pappu, Quester & Cooksey, 2005). Lastly, there is resonance on top of the model which aim to provide the level of connection that physicians have with the brand. Thus, this is the major breaking point that organizations must achieve so as to achieve their brand loyalty in the market (Kapferer, 2008).

NathSanyal and Datta (2011) in their study showed that perceived quality of branded generics significantly, but indirectly, affects brand equity through the mediating variables of intrinsic cues and extrinsic cues. Connecting this theory to the study, it attempts to demonstrate how companies create strong brand which results to brand loyalty in the organization. Be it generic or original medicine, physicians' level of understanding, experience and awareness with these medicines play key role in how they prescribe anti-hypertensive drugs in the hospital, thus the study seeks to identify its influence.

### **2.2.2 Theory of Planned Behaviour**

The theory of planned behaviour (TPB) was developed by Icek Ajzen in 1985 to expand on the work of Theory of Planned Action (TPA) which emphasizes on individual's intention to engage in a certain behaviour at a given time and space. The theory emphasizes on the behavioural intent of a person. Godin *et al.*, (2008) in their meta-analysis study demonstrated high ability to predict physicians' behaviour within the context of health care. The theory test the ability of attitude, personal norm and perceived behavioural control (PBC) to predict behavioural intentions and prescribing behaviour of physicians.

Attitudes describes the degree of like or dislike for something which in some instances, may affect tendency or behaviour of a physician to act in certain ways (George, 2004). This could explain the extent to which a physician has a favourable or unfavourable attitude towards marketing drug promotions done by pharmaceutical companies which in some cases may influence their prescribing decisions (Ajzen, 1991). Another important aspect of TPB is the influence of subjective norm associated with expectation (pressure) to perform according to a given group of individuals or others (Conner, Norman & Bell, 2002).

To the physicians, this can be done by social pressure resulting from patient or pharmaceutical firms such as patient's demands for drugs, their expectations, pharmacist expert power as well as pharmacist-physician collaboration (Montano & Kazprzyk, 2015). Perceived behavioural control (PBC) is a function of conduct and it reflects knowledge (drug/product knowledge). Most factors associated with PBC are drug characteristics or issues, costs or habit persistence

of physicians and their responsiveness to the marketing efforts by the pharmaceutical firms (Oreg & Katz-Gerro, 2006).

This theory therefore is very important to the study as it highlights various factors that influence prescribing behaviour of physicians and their perceptions towards marketing promotions done by pharmaceutical firms (Albarracin, Johnson, Fishbein & Muellerleile, 2001). The theory therefore relates to the study as it emphasizes on other aspects such as attitudes and expectation of physicians towards prescribing decision making (Norman, Conner & Bell, 1999). The theory therefore hypothesises the influence of brand image, brand commitment and brand experience on prescribing decision of behaviour of physicians in the hospital.

## **2.3 Empirical Review**

The section discusses the existing studies on brand image, brand experience, brand commitment and how they relate to prescription behaviour of physicians.

### **2.3.1 Brand Image and Prescription Behaviour**

According to Moerman (2006), the response of patients to treatment is a comprehensive psychological and physiological effect. This is due to the fact that treatment covers a broad spectrum from drug brand image, dosage forms, colour, injection volume as well as the behaviour of the patients. Brand image is the perception of the brand in the minds of the consumers and it develops over time. It normally happens after consumers' interactions with brand. The success of healthcare organizations depends on how effective their medical officers prescribe medicines for their patients so as to meet their needs (Moerman, 2006). **However, this study did not demonstrate how brand image can significantly influence the prescription behaviour among medical doctors and physicians towards anti-hypertensive drugs.**

Li *et al.*, (2017) did a study on drug brand response and its impact on compliance and efficacy in depression patients. The drug image was based on the domestic brand and the imported brand. A survey of 459 outpatients with mild-to-moderate depression was taken and the safety and efficacy were evaluated both before and after the drug switch. The findings of the study revealed that the medication compliance of the imported brand closely correlated with consumption level. Patients relied more on the imported drugs for their medications than on the domestic brands. **This study therefore did not consider physicians as the respondents rather it utilizes patients, leaving a gap on how brand image can influence prescription behaviour among physicians in the hospitals.**

Moreover, Corrao *et al.*, (2014) researched on the similarity between generic and brand name anti-hypertensive drugs for primary prevention of cardiovascular disease. The study was a population based and had a sample size of 2206 anti-hypertensive patients. After analysis using logistic regression to model CV risk associated with either generic or brand name, it was established that there was a weak support on the notion that brand name anti-hypertensive medicines are superior to generics for preventing CV outcomes in the real world clinical practice. This study employed a methodology that is not familiar by many researchers. In addition, the study did not consider influence of brand image among physicians, rather it involve brand image among patients. This study sought to bridge this gap.

There has been a growing trend in prescription of medicines over the years depending on the drug classes (McCarthy, 2013). A study by Barbu and Conti (2014) on the adherence to generic or the brand antidepressant (AD) treatment and the key role of health system factors established that the use of generic brand image was associated with improved adherence and also the lower cost associated with it. The study involved 16,778 Medicare fee-for-service beneficiaries who received a new depression diagnosis and initiated generic versus brand name AD therapy. This study further focused on patients and not the physicians who prescribe drugs. As such, there was need to fill the gap.

### **2.3.2 Brand Commitment and Prescription Behaviour**

Long term success of any organization depends on its ability to create long term relationship with its clients. Commitment is very effective in the organization (Eisingerich & Rubera, 2010). Building strong perception require physicians to have brand commitment towards the brand and the pharmaceutical. There is increased competition in the market where firms are offering similar products and services. With this in mind, management must design their brand in a way that align with their physicians' preferences so as to increase their level of brand commitment (Kimpakorn & Tocquer, 2010). Since that most studies have not brought out relationship between brand commitment and prescription behaviour, especially in areas where rate of anti-hypertensive is high, this study bridged the gap through determining how brand commitment may influence prescription behaviour of the physicians in this environment.

Therefore, brand commitment can be explained as an enduring desire to keep a valued relationship (Choi & Ahluwalia, 2013).It can be affective or continuance. Affective commitment is the extent to which consumers want to keep the relationship based on their emotional attachment to the brand while continuance commitment results when the benefits of

the relationship is much more than the cost associated with the brand. The findings of Ramirez, Vloutsou and Morgan-Thomas (2017) indicated that the presence of brand commitment is necessary for a successful process of building loyalty which detect spurious behaviours and habits seen in some medical organizations. However, there was limited evidence of these study findings in the developing nations where anti-hypertensive challenges are high. This therefore provided a gap that needed to be filled especially in understanding how brand commitment influence prescription behaviour.

In assessing the relationship between brand commitments, brand credibility, perceived quality, customer satisfaction and brand loyalty, Javed, Aslam, Khan and Bibi (2014) established that group advertisement can help build brands, but dependability is what makes them preceding. This is because if consumers believe they share values with an organization, they will remain loyal to a particular brand. As such, the study sampled 200 female consumers with self-administered questionnaire. The findings of the study demonstrated that brand commitment is effective in enhancing brand loyalty, so do other variables of the study. This study was undertaken on consumers especially women, and therefore did not established the prescription behaviour of physicians; medical doctors and clinicians. The study therefore aimed to bridge the gap.

According to a research by Turi, Smith and Kemp (2013) brand relationships can provide consumers with resources in making decisions, meeting their needs, and motivating them. Their study explored developing affective brand commitment through social media in the context of personal branding. The study findings illustrated that emotional relationships are cultivated by the intimacy and self-connection the consumer has towards the brand. Therefore, the intimacy or connection can result to emotional attachment or bond of consumer behaviours towards their actions. However, there are limited evidence to support their findings in relation to prescription behaviour among doctors and clinicians, especially in areas perceived to have increased anti-hypertensive intake.

### **2.3.3 Brand Experience and Prescription Behaviour**

Brand experience is a type of experimental selling or marketing technique that includes a holistic set of terms or conditions created by the management to influence consumer's (physician's) feelings towards their brand or brand image. A study by Biedenbach and Marell (2010) on the impact of customer experience and brand equity in business to business services setting established that there is need for creating a positive customer experience through a

direct interaction of customers (physicians) with the company and its brand. This study was not undertaken in the field of healthcare management. As a result, there exist a gap that the study sought to bridge and demonstrate influence of brand experience on prescription behaviour of doctors and clinicians.

Healthcare organizations use brand experience as a strategy aimed at helping them convert brand awareness to brand loyalty (Verhoef, Lemon, Parasuraman, Roggeveen, Tsiros & Schlesinger, 2009). After exploring the effects of brand awareness on consumer purchase intentions with perceived quality and brand loyalty as mediating variables, Chi, Yeh, & Yang (2009) found out that there is a significant positive correlation between brand awareness, perceived quality and brand loyalty and consumer purchase intention and this could extend to the prescription behaviour of physicians in the health organizations. This study involved consumers as the main respondents and did not sought to include the opinion of doctors and clinicians as the prescribers of medicines in the hospitals. As such, this study sought to bridge the gap and provide empirical evidence on how brand experience influence prescription behaviour among physicians in perceived anti-hypertensive areas.

Francisco-Maffezzoli *et al.*, (2014) analysed creating loyalty through brand experience with mediating role of brand relationship quality. A survey based quantitative approach of 306 respondents at consumers of perfume and bath soaps was used to test the hypothesis. The study found out that there was no direct impact between brand experience and brand loyalty for either category of the products while there exists a positive relationship between brand experience and brand relationship quality. This study was not carried out on physicians as it only focused on consumers of perfume and bathing soaps. Leaving a gap that need to be filled in relation to how brand experience may influence prescription behaviour among physicians in the hospitals.

## **2.4 Research Gap**

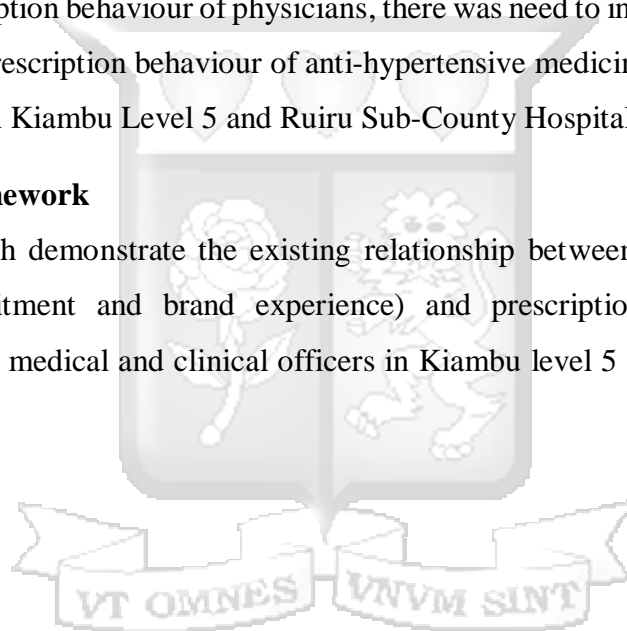
Given the development in healthcare management on how medical officers prescribe drugs to their patients, and also the increased anti-hypertensive medicine intakes in the country more so in Kiambu (Mutual *et al.*, 2014), there is need to understand how brand loyalty influence the prescription behaviour of anti-hypertensive medicine by doctors and clinicians in Kiambu Level 4 and Ruiru Sub-County Hospitals. The recent publications on anti-hypertensive medicines and treatment only address it from the prevalence point of view with less focus on the influence of brand loyalty by medical officers on its prescription (Gatwiri, 2017; Meme, 2017; Benjamin *et al.*, 2017; Ataklte *et al.*, 2014).

Moreover, a review on the concept of brand loyalty with its predictors (brand image, brand commitment and brand experience) have focused more on satisfaction in other sectors and not health organizations (Turi, Smith & Kemp, 2013; Verhoef, Lemon, Parasuraman, Roggeveen, Tsiros & Schlesinger, 2009; Eisingerich & Rubera, 2010), with few studies such as (Moerman, 2006; Li, Cai, Zhang, Fei & Xu, 2017; Corrao *et al.*, 2014) attempting to address the influence of brand image in the pharmaceutical industry but from the patient perspectives.

The prescription behaviour of medical and clinical officers more so in prescription of anti-hypertensive medicines is becoming very important for the health care management strategists. Many studies as aforementioned therefore do not explain the influence that brand loyalty has on prescription behaviour of physicians, more so in the Kenyan context. To bridge this gap and understand the prescription behaviour of physicians, there was need to investigate brand loyalty and its influence on prescription behaviour of anti-hypertensive medicines by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospitals.

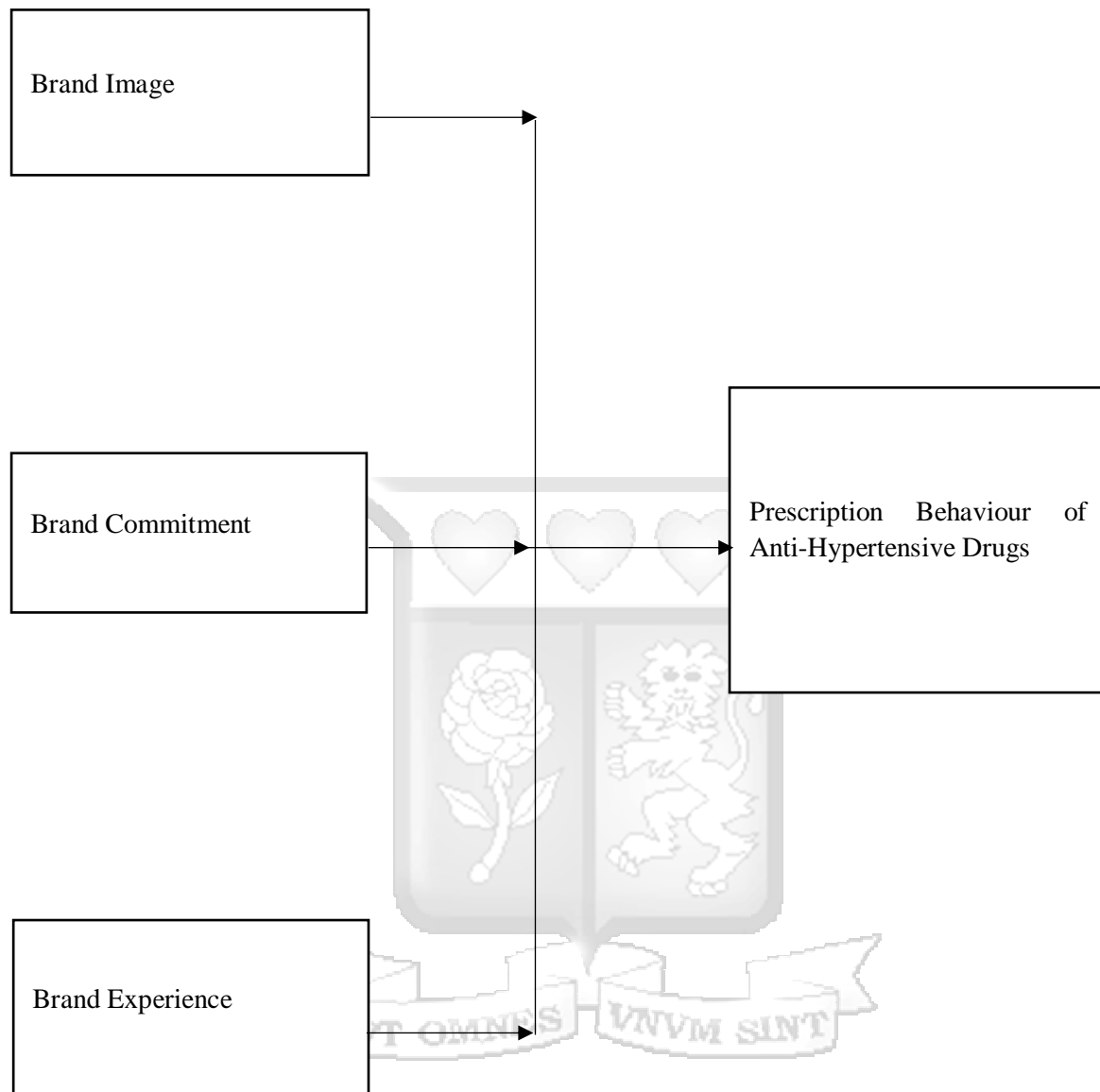
## **2.5 Conceptual Framework**

This is a model which demonstrate the existing relationship between brand loyalty (brand image, brand commitment and brand experience) and prescription behaviour of anti-hypertensive drugs by medical and clinical officers in Kiambu level 5 and Ruiru Sub-County Hospitals.



**Independent Variables**

**Dependent variable**



**Source: Author (2019)**

**Figure 2.1 Conceptual Framework**

## 2.6 Operationalization of Variables

Operationalization is the concept of simplifying variables into a simple terms that can be easily understood by different individuals interested in the study. It enhances the measurability of research variables so as to answer research questions. Likert scale of 1 – 5 was used to measure the research variables since the study seeks to obtain primary data.

**Table 2.1 Operationalization of Variables**

Variables	Indicators	Rating scale measure	Empirical review
<b>Brand image</b>	✓ Brand name and origin	Scaling point 1-strongly disagree	Merman, 2006 Cai et al., 2017
	✓ Brand memorability	2-disagree	Corrao <i>et al.</i> , 2014
	✓ Brand differentiation	3-not sure	McCarthy, 2013
	✓ Brand user experience	4-agree 5-strongly agree	Barbui & Conti, 2014
	<b>Brand commitment</b>	✓ Brand preference	Scaling point
✓ Personal attitudinal loyalty		1-strongly disagree 2-disagree	Kimpakorn & Tocquer, 2010
✓ Behavioural disposition		3-not sure 4-agree	Choi & Ahluwahi, 2013
✓ Brand acceptability		5-strongly agree	Ramirez, Vloutsou & Morgan-Thomas, 2017
✓ Emotional connection			Javed, Aslam, Khan & Bibi, 2014 Turi, Smith & Kemp, 2013
<b>Brand experience</b>	✓ Awareness	Scaling point	Biedenbach & Marell, 2010
	✓ Association	1-strongly disagree	
	✓ Expectations	2-disagree	Verhoef <i>et al.</i> , 2009
	✓ Reputation	3-not sure	Chi, Yeh & Yang, 2009
	✓ Authenticity	4-agree 5-strongly agree	Francisco-Maffezzolli <i>et al.</i> , 2014
<b>Prescription behaviour of anti-hypertensive</b>	✓ Cost of drugs	Scaling point	Sharifinia <i>et al.</i> , 2018
	✓ Individual issues	1-strongly disagree	Nair, Manchanda & Bhatia, 2010
	✓ Drug issues	2-disagree	
	✓ Promotions of drugs	3-not sure 4-agree 5-strongly agree	Kenneth, Lukhawata & Chandra, 2016

Source: Author (2019)

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.1 Introduction

Methodology provides a plan and procedure of getting information to achieve research objectives. It outlines research design, target population, data collection technique, research quality, diagnostic tests, data analysis and presentations and ethical considerations.

#### 3.2 Research Design

Research design refers to the techniques and methods that the researcher followed in obtaining data (Mackey & Gass, 2015; Brown, 2006). This study was a descriptive research study. According to Hakim (2012), descriptive studies involves observing and describing the behaviour or characteristics of a subject, population or events of the study without influencing them in any way. Also, Saunders, Lewis and Thornhill (2012) explained that this type of research is usually conducted to gather the general view of the subject under the study.

#### 3.3 Target Population

Population refers to the total number of elements, objects or persons under consideration for the study and have similar traits (Wahyuni, 2012). The target population for the study were both medical officers and clinical officers in the hospitals. The reason for this population for the study was because they are the people who interact with patients on a daily basis and understand the rate of intake of anti-hypertensive drugs in the hospital.

Inclusion exclusion criteria for the study was 3 months. Only those who have been in the hospital more than 3 months were included in the study since they may have knowledge of anti-hypertensive intake and their level of prescriptions. Based on the human resource (HR) data in the hospitals, there were 21 medical officers and 34 clinical officers in the health facilities combined. For this reason, the target population of the study was 55 respondents. A census survey therefore was taken on the study respondents.

**Table 3.1 Target Population**

Category	Number	Percentage (%)
Medical Officers	21	38
Clinical Officers	34	62
<b>Total</b>	<b>55</b>	<b>100</b>

**Source: Human Resource Data (2019)**

### **3.4 Data Collection Method**

Data collection methods refers to the ways the study used to obtain data needed for the analysis (Bellamy, 2011). Since that the study was primary type, structured questionnaires were used. According to Bellamy (2011), questionnaires are considered good data collection methods since they are useful in gaining first-hand information and storing information till further notice for use in making study inferences. Questionnaire was also useful in collecting quantitative information as it also emphasized on the anonymity of the respondents.

### **3.5 Data Collection Procedure**

The researcher visited the research site and sought permission from the relevant body within the institutions to obtain data from the target respondents, with explanation of the purpose and the significance of the study to them (Creswell & Poth, 2017). Once given the authority to proceed with reaching out to the target respondents, the researcher personally administered the questionnaires since the population was manageable without involving so much cost in getting help from the research assistant. The questionnaire was used for obtaining quantitative data for the analysis. The questionnaires were self-administered to the respondents through a drop and picked method. This entailed that the researcher dropped the questionnaires for the respondents to fill and later picked them for data analysis.

### **3.6 Research Quality**

Research quality refers to the level of accuracy and consistency of the research instruments in measuring the research objectives.

#### **3.6.1 Reliability of the Study**

Refers to the extent to which the research instrument may produce consistent results over time. The reliability of the study was determined by Cronbach's alpha test where values of 0.7 and above implied that the instrument was reliable enough for giving consistent results while values below 0.7 meant that the research instrument was not reliable enough to give consistent results (Hyett, Kenny & Dickson-Swift, 2014). The study established that all the variables had alpha value of above 0.7 which indicates that the instrument can provide a reliable study findings over time as shown in table 3.2.

**Table 3.2 Reliability Results**

Cronbach's alpha Reliability Test Results		
Variables	Alpha	Items
Brand image	.7139	6
Brand commitment	.7044	6
Brand experience	.7309	5
Prescription behaviour	.7001	4

**Sources: Research Data (2019)**

### 3.6.2 Validity of the Study

Validity refers to the extent to which the data collection instrument truly measures what it ought to measure by providing accurate results. This was done by assessment of the specific questions in the questionnaire so as to determine whether they were effective and accurate enough to give appropriate information aimed at answering the research questions by the supervisor (Taylor, Bogdan, & DeVault, 2015). The information given was used to improve the questionnaire questions so as to make them easy and simple for respondents to understand.

### 3.7 Data Analysis and Presentation

Data analysis refers to techniques used to simplify the research findings through coding, editing and encoding them for easy understanding in making study conclusion. Quantitative techniques, descriptive and inferential statistics were applied. Descriptive statistics involved use of mean and standard deviation to present the findings. Inferential statistics involved use of regression analysis and correlation analysis to determine the association between study variables. Also, statistical package of social sciences (SPSS) was used to develop the multiple regression model as follows;

$$\gamma = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$$

Where;

$$\gamma = \text{Prescription of Anti – Hypertensive Drugs}$$

$$\beta_0 - \beta_3 = \text{Regression coefficients}$$

$$X_1 = \text{Brand image}$$

$$X_2 = \text{Brand commitment}$$

$$X_3 = \text{Brand experience}$$

$$\varepsilon = \text{error term}$$

### **3.7.1 Diagnostic Tests**

This section assumes that data was gathered from the normally distributed population. It therefore suggest that before choosing the appropriate model of the study or conducting the regression analysis. Tests such as normality and linearity were performed (Bellamy, 2011).

#### **a) Normality test**

Was determined to assess if the data for the study was normally distributed or not, where a p-value more than 0.05 showed that data was normally distributed (*Null hypothesis, H<sub>0</sub>*) and a p-value of less than 0.05 showed that data was not significantly distributed (*Alternative hypothesis, H<sub>1</sub>*). (Creswell & Poth, 2017).

#### **b) Linearity test**

This test was performed using Pearson's correlation coefficient to show the relationship between the study variables. It established the strength of the relationship whether it was negative or positive. A positive relationship implied direct impact while a negative meant weak or no impact (Hakim, 2012).

### **3.8 Ethical Considerations**

Ethics refers to doing things in accordance with the stipulated rules and guidelines set. For this study to uphold the ethical standards of both the institutions of higher learning body and the organization chosen for the study, it first obtained a stamped introductory letter from the university and then National Commission for Science, Technology and Innovation (NACOSTI) research permit from the Ministry of Education. Thereafter, the researcher proceeded to the field of the study and seek for permission from the management of the organization before meeting the target respondents for the study. Lastly, the researcher stated categorically that the purpose of the study is for education and all information gathered were treated with confidentiality in the consent form.

## CHAPTER FOUR

### DATA ANALYSIS AND PRESENTATION OF THE FINDINGS

#### 4.1 Introduction

This section of the study provides findings of the study based on analysis of the information gathered. Quantitative analysis, descriptive statistics and inferential statistics are used to provide information for making study conclusions. The section therefore has demographic factors, descriptive and inferential statistics.

55 questionnaires as a data collection tool were sent to the respondents by the researcher. Only 33 were duly filled and returned for analysis. This represented a 60% response rate.

**Table 4.1 Response Rate**

Category	Frequency	Percentage
Filled	33	60
Did not fill	22	40
<b>Total</b>	<b>55</b>	<b>100</b>

**Source: Research Data (2019)**

#### 4.2 Demographic Information

This section describes the general information of the respondents in relation to their age, education and years of service.

##### 4.2.1 Age

This section sought to establish the age of the respondents and the findings were presented in table 4.2

**Table 4.2 Age**

Age	Frequency	Percentage
20 – 25 years	13	40
26 – 30 years	10	30
31 – 35 years	4	12
Above 35 years	6	18
<b>Total</b>	<b>33</b>	<b>100</b>

**Source: Research Data (2019)**

The study established that 40% of the respondents were in the age bracket of 20 – 25 years, 30% were in 26 – 30 years, 12% in 31 – 35 years while 18% were above 35 years. **This implied**

that majority of the respondents were in the prime age believed to be easily influenced by external factors hence the need to undertake the study as presented in table 4.2

#### 4.2.2 Education

Results of the study revealed that 48% of the respondents had diploma, 22% undergraduate, 30% graduate while no respondent had postgraduate studies. The findings therefore meant that there was an even distribution of education in the hospitals.

**Table 4.3 Education**

Education	Frequency	Percentage
Diploma	16	48
Undergraduate	7	22
Graduate	10	30
Postgraduate		
<b>Total</b>	<b>33</b>	<b>100</b>

Source: Research Data (2019)

#### 4.2.3 Years of Service

In estimating the years of service of the respondents, the study found out that 48% of the respondents had less than 1 year, 22% had 1 – 3 years, 12% had 4 – 6 years and 18% had above 6 years. The implication of this finding is that it enables the study to understand the level of experience that the respondents has towards understanding their prescription behaviour and how brand loyalty may play a role in it.

**Table 4.4 Years of Service**

Years of Service	Frequency	Percentage
Less than 1 year	16	48
1 – 3 years	7	22
4 – 6 years	4	12
Above 6 years	6	18
<b>Total</b>	<b>33</b>	<b>100</b>

Source: Research Data (2019)

#### 4.3 Diagnostic Test

This test was determined to estimate the fitness of the model for the study. Only if the model meets the test recommendations than multiple regression model can be used to estimate relationship of the study variables.

### 4.3.1 Normality Test

Was performed to establish whether the residual data was normally distributed or not, for it to be used in the study. Based on the residual of the variables, the study established that the study had a skewness of .0581 and kurtosis of .2413 with a p-value of .0862 which is higher than a p – value .05. An indication that the data was normally distributed and significant for the study.

This therefore implied that data for the study was sufficient for running descriptive and inferential analysis.

**Table 4.5 Skewness/Kurtosis Test for Normality**

Normality Test Results				
Obs	Pr (skewness)	Pr (kurtosis)	Adj chi2 (2)	Pro>chi
33	.0581	.2413	4.16	.0862

Source: Research Data (2019)

### 4.4 Descriptive Statistics

This section provides the results on the influence of brand image, brand commitment and brand experience on prescription of anti-hypertensive behaviour among medical and clinical officers at Kiambu level 5 and Ruiru sub-county hospitals. The study used mean and standard deviations.

#### 4.4.1 Brand Image

The first objective of the study was to determine influence of brand image on prescription of anti-hypertensive behaviour of medical officers and the findings were as follows.

The study findings in table 4.6 indicated that patient's ability to remember/recall (memory) these medicines in the hospital affects my prescribing decision with a mean of 3.6061. This therefore translates that the ability of patients in remembering the previous ant-hypertensive drugs they have used before sticks in their mind and as a result, creates an image that they would want to consume over time. Such behaviours forces physicians in most cases to prescribe drugs based on patient's demand and ability to recall. Therefore, the study findings found that a high mean of 3.0 suggest that respondents agreed that brand image is important in explaining the prescription behaviour of anti-hypotensive drugs by medical officers.

**Table 4.6 Brand Image**

Statement	Mean	Std. Dev
I prescribe these drugs based on the personality behind it	2.4545	1.5019
I provide patients with information regarding brand name and origin when seeking for treatments	3.3636	1.2703
Patient's ability to remember/recall (memory) theses medicines in the hospital affects my prescribing decision	3.6061	1.4777
I prescribe these medicines based on the positive experience you had with it and not the patient	3.6667	1.3844
Brand differences is very essential during my prescribing decision	2.8485	1.5025
Patients order me to prescribe these drugs for them based on the colour and texture	1.4242	.8671
<b>Overall mean</b>	<b>3.8939</b>	

**Source: Research Data (2019)**

#### 4.4.2 Extent of Brand Image

The study sought to assess whether brand image have influence on prescribing behaviour of anti-hypertensive drugs among medical officers in the hospitals. The findings indicated that 64% of the respondents said yes while 36% said no. **The findings therefore may imply that majority of the respondents understand that in some instances, they prescribe drugs based on their image in the hospital.**

**Table 4.7 Extent of Brand Image**

Have impact?	Frequency	Percentage
Yes	21	64
No	12	36
<b>33</b>	<b>33</b>	<b>100</b>

**Source: Research Data (2019)**

#### 4.4.3 Brand Commitment

The second objective of the study was to analyse the influence of brand commitment on prescription behaviour by medical officers on anti-hypertensive drugs in the hospital.

**Table 4.8 Brand Commitment**

Statement	Mean	Std. Dev.
My attitudes and loyalty determines how I prescribe these medicines over time	2.4545	1.4597
At times I prescribe these medicine based on my preferential motive	2.4848	1.3194
My character as a clinician makes me prescribe these medicines the way I want	1.8485	1.3020
I prescribe these medicines based on their brand acceptability in the market	3.2121	1.3401
Emotional connection of patients towards these medicines determines my prescribing behaviour	2.5151	1.3258
My relationship with drug suppliers determines my prescribing behaviour in the hospital	1.7879	1.1926
<b>Overall mean</b>	<b>2.3838</b>	

**Source: Research Data (2019)**

The study findings showed that I prescribe these medicines based on their acceptability in the market had a mean of 3.2121. The level of acceptability of anti-hypertensive drugs among patients may be a sign that patients themselves have high level of commitment on consuming the drugs. And as a result, making physicians to have a predetermined behaviour in prescribing these drugs. In addition, the emotional relationship that patients and physicians at times have may also enhance physicians' level of commitment hence prescribing anti-hypertensive drugs based on the commitment towards the drugs.

#### 4.4.4 Extent of Brand Commitment

The study also determined the extent of brand commitment on prescribing behaviour of medical officers.

**Table 4.9 Extent of Influence of Brand Commitment**

Extent of Influence	Frequency	Percentage
Great extent	4	12
Moderate extent	12	36
Little extent	10	30
No extent	7	22
<b>Total</b>	<b>33</b>	<b>100</b>

**Source: Research Data (2019)**

Results showed that 12% said great extent, 36% moderate extent, 30% little extent while 22% no extent. The findings demonstrated that there was an even distribution on the extent of influence of brand commitment on prescription as established by the study.

#### 4.4.5 Brand Experience

The study also established how brand experience may influence prescription behaviour among clinicians on anti-hypertensive drugs.

**Table 4.10 Brand Experience**

Statement	Mean	Std. Dev
I prescribe anti-hypertensive drug based on the drug awareness in the market	3.4242	1.2755
My level of association with the pharmaceutical firms determines my prescribing behaviour	1.8182	1.1580
Patients insist on getting anti-hypertensive drugs with good reputation irrespective of the available alternative medicines serving the same purpose	2.8485	1.4603
The feedback I get from your patients in some cases determines how my next prescription decision will be.	3.9697	1.0454
Also, consumer attitudes is a major factor since some of them insist only on the specific drugs that they want	3.3333	1.2412
<b>Overall mean</b>	<b>3.0788</b>	

**Source: Research Data (2019)**

From the study findings in table 4.10, the feedback I get from your patients in some cases determines how my next prescription decision will be with a mean of 3.9697 while I prescribe anti-hypertensive drug based on the drug awareness in the market had a mean of 3.4242. These findings therefore illustrates that the experience physicians have with anti-hypertensive drugs determines how they prescribe drugs to the patients in the hospital.

#### 4.4.6 Patient's Insistence

The study also investigated whether the patient's insistence on a particular anti-hypertensive drug affect medical officer's prescribing behaviour. 64% said yes while 36% said no. The implication of this finding therefore is that doctors and clinicians in some cases may give in to the demands of the patients (consumers) of anti-hypertensive drugs in the hospital.

**Table 4.11 Patient's Insistence**

Patient's Insistence	Frequency	Percentage
Yes	21	64
No	12	36
<b>Total</b>	<b>33</b>	<b>100</b>

**Source: Research Data (2019)**

#### 4.4.7 Prescription Behaviour of Anti-Hypertensive Drugs

Prescription behaviour of anti-hypertensive drugs in the two hospitals were performed.

**Table 4.12 Prescription Behaviour of Anti-Hypertensive Drugs**

Statement	Mean	Std. Dev
I consider cost of these drugs at the time of prescribing decision	4.0606	.9334
I take into account drug issues such as side effects and their characteristics during prescribing decision.	4.4545	.7538
I also identify individual issues such as patient's drug preference during prescribing decision making	3.1818	.1357
Various forms of marketing promotion by pharmaceutical firms may persuade how I prescribe drugs for patients	2.8489	1.3019
<b>Overall mean</b>	<b>3.6365</b>	

**Source: Research Data**

The findings in table 4.12 revealed that I take into account drug issues such as side effects and their characteristics during prescribing decision with a mean of 4.4545. In addition, I consider cost of these drugs at the time of prescribing decision had a mean of 4.0606. Many patients do not have the ability to purchase high cost medicines and as a result, rely of cost effective medicines. Physicians therefore consider cost of these drugs and their side effects when performing their prescriptions.

#### 4.4.8 Facility as a Determinant

The study further sought the opinion of the respondents to indicate whether facility (public/private) determines how they prescribe drugs for their patients. 78% said yes while 22% said no. This implied that good hospitals and structures may determine how physicians prescribe these medicines as compared to other hospitals with poor structures and lack of enough skilled doctors.

**Table 4.13 Facility as a Determinant**

Facility as a determinant	Frequency	Percentage
Yes	26	78
No	7	22
<b>Total</b>	<b>33</b>	<b>100</b>

Source: Research Data (2019)

#### 4.5 Inferential Statistics

The section presents findings on correlation and regression analysis of the study.

##### 4.5.1 Correlation Analysis

Correlation analysis was performed to determine the correlation between study variables.

**Table 4.14 Pearson Correlation Matrix Results**

		Brand Image	Brand Commitment	Brand Experience	Prescription Behaviour
<b>Brand Image</b>	Correlation	1.0000			
	Sig. (2-tailed)				
	N	33			
<b>Brand Commitment</b>	Correlation	.3282	1.0000		
	Sig. (2-tailed)	.0622			
	N	33	33		
<b>Brand Experience</b>	Correlation	.3458	.5099	1.0000	
	Sig. (2-tailed)	.0427	.0024		
	N	33	33	33	
<b>Prescription Behaviour</b>	Correlation	.3070	.2108	.3950	1.0000
	Sig. (2-tailed)	.0823	.2390	.0229	
	N	33	33	33	33

\*Correlation is significant at the .01 level (2-tailed)

\*Correlation is significant at the .05 level (2-tailed)

Source: Research Data (2019)

There was a weak positive correlation between brand experience and prescription of anti-hypertensive behaviour among medical officers ( $r = .3950$ ,  $p < .05$ ). Further, brand image and brand commitment had a weak positive correlation with prescription behaviour with a correlation coefficients of .3070 and .2108 respectively. However, their significance level was above .05 level of significance. The positive correlation coefficient results therefore implied

that both brand image, brand commitment and brand experience correlates positively with prescription behaviour among doctors and clinicians in the hospitals.

#### 4.5.2 Regression Analysis

This analysis was used to fit the data into the fitted model where  $R^2$  was used as a measure of explaining the variations in prescription behaviour of medical officers as a result of changes in brand image, brand commitment and brand experience.

The F statistics in analysis of variance (ANOVA) was used to measure goodness of fit of the model.

Further, regression coefficient summary was determined to explain the established relationship between independent variables (brand image, brand commitment and brand experience) and dependent variables (prescription of anti-hypertensive behaviour) of the study.

**Table 4.15 Model Summary**

Model	R	R - Square	Adjusted R - Square	Std. Error of the Estimate
1	.4341 <sup>a</sup>	.1884	.1044	.7033

a. Predictors: (Constant), Brand image, Brand commitment, Brand experience

**Source: Research Data (2019)**

The coefficient of determination ( $R^2$ ) of the model was estimated at .1884 indicating that 18.84% of prescription of anti-hypertensive behaviour among physicians was influenced by brand image, brand commitment and brand experience. This therefore implied that the remaining percentage are explained by other variables which were excluded from the model. R of .4341 shows that there is a positive correlation between the study variables.

**Table 4.16 ANOVA Results**

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	3.4019	3	1.1340	2.24	.0014 <sup>b</sup>
	Residual	14.6587	29	.5055		
	Total	18.0606	32	.56393		

a. Predictors: (Constant), Brand image, Brand commitment, Brand experience

b. Dependent Variable: Prescription of Anti-hypertensive Behaviour

**Source: Research Data (2019)**

The findings of the ANOVA for regression coefficient reveals that there was a significant relationship between brand image, brand commitment, brand experience and prescription of anti-hypertensive behaviour among medical officers with F value of 2.24 as shown in the table below.

The study also sought to determine the relationship between brand image, brand commitment and brand experience and prescription behaviour among physicians. The findings established an intercept of 2.0864 on the constant variable which indicates that if all the three predictors (brand image, brand commitment and brand experience) were held constant, then prescription behaviour would be 2.0864.

**Table 4.17 Regression Coefficients**

Model	Unstandardized Coefficient		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
1					
	(Constant)	2.0864	.7033		2.97 .006
	Brand Image	.2533	.2362	.1952	1.07 .292
	Brand Commitment	-.02270	.1714	-.0262	-.13 .899
	Brand Experience	.3232	.1905	.3391	1.70 .100

a. Dependent Variable: Prescription behaviour of anti-hypertensive drugs

**Source: Research Data (2019)**

The regression model equation therefore was;

$$y = 2.0864 + 0.2533X_1 - 0.0227X_2 + 0.3232X_3 + \varepsilon$$

The brand image ( $X_1$ ) and brand experience ( $X_3$ ) had a beta coefficient value of .2533 and .3232 respectively indicating that a unit increase in both of them would result to a unit increase in prescription behaviour among doctors and clinicians by 25.33% and 32.32% respectively. The positive relationship therefore implied that both brand image and brand experience have positive influence on prescription behaviour among doctors and clinicians in the hospitals. However, a unit increase in brand commitment ( $X_2$ ) will result to a decrease of 2.27% of prescription behaviour of anti-hypertensive drugs. The results on the relationship between brand commitment and prescription behaviour therefore implied that there was a negative relationship between the two variables of the study.

However, the p-values of the three independent variables of the study (brand image, .292; brand commitment, .899 and brand experience, .100) were all above 0.05 level of significance suggesting that their influence on prescription behaviour among medical doctors and clinicians were all insignificant.



## CHAPTER FIVE

### SUMMARY, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

The chapter presents discussion, conclusion and recommendations of the study. It also discusses research summary based on the research objectives, methodologies used and descriptive findings. The chapter therefore encompasses summary, discussion, conclusion, and recommendation, areas of further study and limitation of the study.

#### 5.2 Summary

The objective of the research was to find out the influence of brand loyalty on prescription behaviour of anti-hypertensive drugs among physicians in Kiambu level 5 and Ruiru Sub-County Hospitals. The specific objectives were; to determine the influence of brand image, brand commitment and brand experience on prescription behaviour of anti-hypertensive drugs among physicians.

This study adopted descriptive research design using quantitative approach. The study populace was drawn from two hospitals; Kiambu level 5 and Ruiru sub-county hospitals. A census survey was taken on 55 medical and clinical officers in the two hospitals. Findings established that majority of the respondents took part in the study. Moreover, majority of the respondents were in the age bracket of 26 – 30 years and also in the diploma level of education.

A normality test performed on data for the study revealed that data was normally distributed and significant for making study inferences. The study findings further revealed that there was a weak positive correlation between study variables (brand image, brand commitment and brand experience) with prescription behaviour of physicians on anti-hypertensive drugs. Only brand image and brand experience had a positive relationship with prescription behaviour of anti-hypertensive drugs with brand commitment having negative relationship.

#### 5.3 Discussion

This chapter presents the discussion of the study results based on the research objectives. It compares the findings and scholarly reviews on the literature review of the study.

##### 5.3.1 Influence of Brand Image

Majority of the respondents indicated that brand image has influence on prescription behaviour of anti-hypertensive drugs among physicians in the hospitals. A regression analysis established that brand image had an insignificant positive relationship with physicians' prescription

behaviour of anti-hypertensive drugs in the hospital. This finding correlated with the findings of Barbui and Conti (2014) whose study established that generic image of medicines was associated with improved adherence and lower cost of it. As such, brand image creates a long-lasting picture in the minds of the physicians, hence influencing how they prescribe these medicines in the hospital.

Further, the study also indicated a weak positive correlation between brand image and prescription behaviour of anti-hypertensive drugs. This finding was supported by Corrao *et al.*, (2014) who pointed out that there exist weak support on the notion that brand name anti-hypertensive medicines are superior to generics hence does not critically explain the concept of physicians' prescription behaviour. This could as a result of brand name not having effective positive results into the minds of the patients rather than in the minds of the physicians. The study also found out that ability of the patients to remember or recall anti-hypertensive medicines in the hospital affects physician's prescribing behaviour.

Moerman (2006) addressed brand image and prescription behaviour of physicians on utilization of various drugs in the hospitals by the patients. The study's findings is in line with this research that brand image has influence on prescription behaviour of anti-hypertensive drugs. A drug with a brand name that is easy to recall and is affordable by many in the market can lead to high utilization capacity. When this occur, the influence of brand names increases in the market hence influencing how prescribe them to the patients. Further, the study established that medical and clinical officers provide patients with information regarding medicine's brand name and its origin when seeking for treatment. Giving enough information regarding the drug to the patients enables them to have a positive attitudes towards drugs through prescription behaviour of the physicians in the hospital and these influence how they will prescribe these medicines in the future.

### **5.3.2 Influence of Brand Commitment**

The results of the study further revealed that there was a negative relationship between brand commitment and prescription behaviour of anti-hypertensive drugs among medical and clinical officers in both hospitals. The findings illustrate that brand commitment such as emotional relationships and intimacy that physicians put on drugs in most cases do not influence their prescription behaviour, especially in regards to prescription of anti-hypertensive drugs. The study findings disagreed with the previous study by Turi, Smith and Kemp (2013) who found out that emotional relationships cultivated by the intimacy and self-connection that physicians

has towards the medicine brand and the company determines how they prescribe drugs in the hospital. As a result, commitment level varies may not have positive influence on prescription behaviour of physicians in regards to anti-hypertensive drugs.

The study also found that that brand commitment had a weak positive correlation with prescription behaviour of anti-hypertensive drugs by medical and clinical officers. In line to this, the study also indicated that physicians prescribe anti-hypertensive drugs based on their brand acceptability in the market as their awareness and the information that patients has on them. This was supported by the previous study brand commitment and brand loyalty by Javed, Aslam, Khan and Bibi (2014) who found out that brand commitment is effective in enhancing brand loyalty which may influence the prescription behaviour level of physicians towards anti-hypertensive drugs in the hospitals. However, with a p-value higher the recommended level of significance, the influence of brand commitment therefore cannot be significant in influencing the prescription behaviour of anti-hypertensive drugs by physicians in both hospitals.

Even though the study found a negative relationship between brand commitment and prescription behaviour of anti-hypertensive drugs among physicians, Ramirez, Vloutsou and Morgan-Thomas (2017) disagreed with this study findings. Their results established that presence of brand commitment is necessary for a successful process of building loyalty which in most cases determines how physicians prescribes their drugs in the hospitals. The mixed results could be attributed to different purpose of the study. This study focused on prescription behaviour of anti-hypertensive drugs by physicians while the latter study was on general prescription behaviour by doctors without taking into consideration which drug.

### 5.3.3 Influence of Brand Experience

The study found a positive relationship between brand experience and prescription behaviour of anti-hypertensive drugs among physicians in the hospitals. This was very significant on explaining why interaction of physicians with the medicine is key at explaining their prescription behaviour in the hospital. Further, the study revealed that the feedback that the physicians get from their patients enhance their level of experience which in some cases, determines their next prescription behaviour. This finding concurred with the study findings of Fransisco-Maffellozzi *et al.*, (2014) who also found out that there is a direct relationship between brand experience and relationship quality which describes the prescription behaviour of physicians in the hospital. When physicians have experience, they can be able to detect original and counterfeit drugs in the market, hence determining their prescription behaviour of anti-hypertensive drugs in the hospital.

The study also revealed that there was a positive correlation between brand experience and prescription behaviour of anti-hypertensive drugs among medical and clinical officers in the hospitals. This was as a result that in most cases, patient's insistence on certain prescription of anti-hypertensives drugs by physicians enhance prescribers' experience which makes them know each patient in the hospital and their preferred medicines at some stage. The findings explained the earlier findings of Chi, Yeh and Yang (2009) that there is significant positive correlation between brand awareness, perceived quality and prescription intentions of the physicians in the hospital.

A study by Biedenbach and Marell (2010) also agreed with this study results that there is need for creating a positive customer experience through a direct interaction of physicians and their patients as well as between physicians and pharmaceutical companies. Pharmaceutical firms rely mostly on the experience that physicians have towards prescribing anti-hypertensive drugs since that having enough knowledge is an added advantage that physicians should have to aid in detecting genuine drugs in the market. The study further revealed that patient's insistence on certain anti-hypertensive drugs coupled with a continuous attitude enhances their behaviour of prescribing anti-hypertensive drugs in the hospital.

## **5.4 Conclusion**

The study utilized brand image, brand commitment and brand experience as the study independent variables. Of these three variables, the study concluded that both brand image and brand experience had insignificant positive relationship with prescription behaviour of anti-hypertensive drugs among physicians. However, they positively influences prescription behaviour of the physicians. The study also concluded that there was no relationship between brand commitment and prescription behaviour of anti-hypertensive drugs by physicians in the hospitals. As a result, the study further concluded that physician's prescription behaviour of anti-hypertensive drugs is essential due to a growing hypertensive intake rate in the country especially in Kiambu County.

Moreover, the study also concluded that interactions that physicians have in the hospital through frequent description of anti-hypertensive drugs can enhance their experience level, by detecting original and genuine drugs from the counterfeit ones. This creates high level of precaution in prescription of various medicines and as result enhancing their level of brand experience. The study further concluded that brand and image experience as a type of brand loyalty influences prescription behaviour not only on anti-hypertensive drugs but also other drugs in the hospital leading to efficient utilization of health services across various health facilities.

## **5.5 Recommendations**

The study recommends that hospitals, especially where the rate of hypertension intake is high need to examine how components of brand loyalty such as brand image, brand commitment and brand experience may influence prescription behaviour of these drugs by their physicians. To the pharmaceutical companies, image should not only be aimed to influence physicians to prescribe drugs but should portray a clear goals and objectives of the company in the eyes of the physicians and their patients.

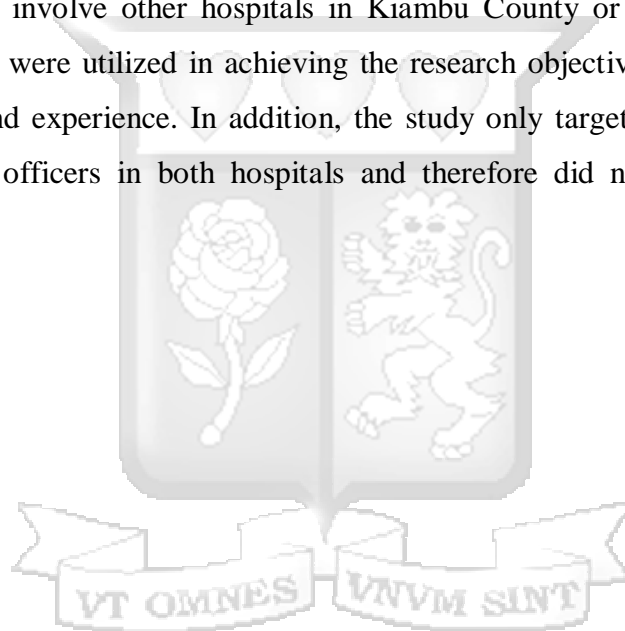
Patients consume drugs more when they feel motivated with the results they get after utilization drugs such as anti-hypertensive ones. Medical and clinical officers therefore should not just prescribe medicines to clear stock rather on the experience that that the prescribed drugs may solve illness challenges of the patients. The study therefore recommends that physicians need to control their behaviour by upholding the medical integrity to avoid been influenced by temporary factors such as the image rather than what the medicine can treat in the long-run.

### **5.6 Areas of Further Study**

There should be a further study on extent of influence of brand loyalty on prescription behaviour of anti-hypertensive drugs among physicians in other hospitals since the rate of hypertension intake is slightly spreading to other areas in Kenya, not only in Kiambu. Also, there is need to establish whether these variables used in the study (brand image, brand commitment and brand experience) are the only brand loyalty variables influencing prescription behaviour of anti-hypertensive drugs among medical and clinical officers in various hospitals.

### **5.7 Limitations of the Study**

The study was limited to only two hospitals which are Kiambu level 5 and Ruiru sub-county hospitals and did not involve other hospitals in Kiambu County or in Kenya. Only three independent variables were utilized in achieving the research objective; brand image, brand commitment and brand experience. In addition, the study only targeted physicians' mainly medical and clinical officers in both hospitals and therefore did not involve other non-physicians.



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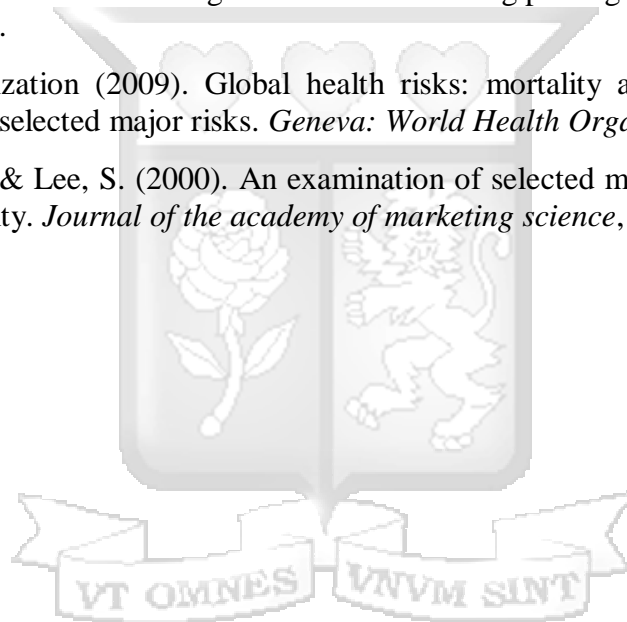
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## APPENDICES

### Appendix 1: Introduction Letter



Strathmore Business School

28<sup>th</sup> March 2019

To Whom It May Concern

Dear Sir/ Madam

**RE: FACILITATION OF RESEARCH – JAMES MUHUNI**

This is to introduce James Muhuni who is a Master of Business Administration in Healthcare Management student at Strathmore Business School, admission number MBA-HCM/94472/16. As part of our MBA-HCM Program, James is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MBA course. To this effect, she would like to request for appropriate data from your organization.

James is undertaking a research paper on **“Brand Loyalty and its Impact on Prescription of Antihypertensive Drugs by Medical Officers and Clinical Officers in Ruiru Sub County Hospital.”** The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

Veronica Muniu.  
Manager – Masters’ Programs



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## Appendix 2: Questionnaire

You are kindly requested to take part in this study by filling in the questionnaire. Also, information given should be appropriate and accurate enough to ease in making study conclusions. All information given will be treated with utmost confidentiality and is for academic purposes only. Please do not include your name. Tick where appropriate (✓)

### SECTION A: BACKGROUND INFORMATION

#### 1. Age

20–25 years            [     ]            26 – 30 years            [     ]

31 – 35 years            [     ]            above 35 years            [     ]

#### 2. Education level

Diploma            [     ]            Undergraduate            [     ]

Graduate            [     ]            Post Graduate            [     ]

#### 3. Years of service

Less than 1 year            [     ]            1 – 3 years            [     ]

4 – 6 years            [     ]            above 6 years            [     ]

### SECTION B: BRAND IMAGE

4. The following statements are descriptive of brand image in relation to anti-hypertensive drug. Please indicate with a tick(✓)your level of agreement with each statement in a scale of 1-5 where 1=strongly disagree (SD), 2=agree (A), 3=not sure (N), 4=agree (A) and 5=strongly agree (SA).

	Statement	SD	D	N	A	SA
1	I prescribe these drugs based on the personality behind it					
2	I provide patients with information regarding brand name and origin when seeking for treatments					
3	Patient's ability to remember/recall (memory) these medicines in the hospital affects my prescribing decision					
4	I prescribe these medicines based on the positive experience you had with it and not the patient					

5	Brand differences is very essential during my prescribing decision					
6	Patients order me to prescribe these drugs for them based on the colour and texture					

6. Does brand image have impact on prescribing behaviour of anti-hypertensive drugs?

Yes [ ] No [ ]

### SECTION C: BRAND COMMITMENT

7. The following statements are descriptive of brand commitment in relation to anti-hypertensive drugs. Please indicate with a tick (√) your level of agreement with each statement in a scale of 1-5 where 1=strongly disagree (SD), 2=agree (A), 3=not sure (N), 4=agree (A) and 5=strongly agree (SA).

	Statement	SD	D	N	A	SA
1	My attitudes and loyalty determines how I prescribe these medicines over time					
2	At times I prescribe these medicine based on my preferential motive					
3	My character as a clinician makes me prescribe these medicines the way I want					
4	I prescribe these medicines based on their brand acceptability in the market					
5	Emotional connection of patients towards these medicines determines my prescribing behaviour					
6	my relationship with drug suppliers determines my prescribing behaviour in the hospital					

8. To what extent does brand commitment influence my prescribing behaviour?

Great extent [ ] Moderate extent [ ]

Little extent [ ] No extent [ ]

### SECTION D: BRAND EXPERIENCE

9. The following statements are descriptive of brand experience in relation to anti-hypertensive drugs. Please indicate with a tick (√) your level of agreement with each statement in a scale of 1-5 where 1=strongly disagree (SD), 2=agree (A), 3=not sure (N), 4=agree (A) and 5=strongly agree (SA).

	Statement	SD	D	N	A	SA
1	I prescribe anti-hypertensive drug based on the drug awareness in the market					
2	My level of association with the pharmaceutical firms determines my prescribing behaviour					
3	Patients insist on getting anti-hypertensive drugs with good reputation irrespective of the available alternative medicines serving the same purpose					
4	The feedback I get from your patients in some cases determines how my next prescription decision will be.					
5	Also, consumer attitudes is a major factor since some of them insist only on the specific drugs that they want					

10. Does the patient's insistence on a particular anti-hypertensive drug affect my prescribing behaviour?

Yes [ ] No [ ]

**SECTION E: PRESCRIPTION BEHAVIOUR OF MEDICAL AND CLINICAL OFFICERS IN REGARDS TO ANTI-HYPERTENSIVE DRUGS.**

11. The following statements are descriptive of prescription behaviour of medical and clinical officers in regards to anti-hypertensive drugs. Please indicate with a tick (✓) your level of agreement with each statement in a scale of 1-5 where 1=strongly disagree (SD), 2=agree (A), 3=not sure (N), 4=agree (A) and 5=strongly agree (SA).

	Statement	SD	D	N	A	SA
1	I consider cost of these drugs at the time of prescribing decision					
2	I take into account drug issues such as side effects and their characteristics during prescribing decision.					
3	I also identify individual issues such as patient's drug preference during prescribing decision making					
4	Various forms of marketing promotion by pharmaceutical firms may persuade how I prescribe drugs for patients					

12. Does facility (public or private) determines how I prescribe drugs for my patients?

Yes [ ] No [ ]

### Appendix 3: Consent form

**Study Title: Brand Loyalty and Its influence on Prescription behaviour by Medical Officers and Clinical Officers in Kiambu level 5 and Ruiru Sub-County Hospitals**

**Foreword: to you study Participant**

**Investigator:** MUHUNI JAMES NJOROGE (*Master of Business Administration in Healthcare Management*) STRATHMORE BUSINESS SCHOOL, STRATHMORE UNIVERSITY.

**Contact** Telephone Number(s): 0711859864 Email: nmuhuni@gmail.com

**Purpose of study:** The study aim to investigate Brand Loyalty and Its influence on Prescription behaviour by Medical Officers and Clinical Officers in Kiambu level 5 and Ruiru Sub-County Hospitals

**How to Participate:** You will be asked to give responses and your opinion to some questions which will be asked regarding the medication administration process ~taking approx 10-15mins.

**Right to refusal or withdrawal:** Taking part in this study is your choice; you may choose not to be in it. Your participation is voluntary and you are free to agree or disagree to participate in this study. You may withdraw from the study at any time even after signing this form and there will be no victimization.

**Confidentiality and privacy:** Your involvement in this research study will be kept confidential by identifying you in the study records by a code/unique number. The study results/report that will be used in final the publication (thesis) will not use your name.

**Risks and benefits:** There are no risks or discomforts associated with this study and neither are there any direct benefits to you for taking part in.

**For further clarifications or questions on this study, please contact me**

**Investigator:** James Muhuni (Mobile: 0711859864) Email [nmuhuni@gmail.com](mailto:nmuhuni@gmail.com) OR

**My Supervisor:** Dr. Nancy Njiraini (Mobile: 0727071100: Email: [nnjiraini@strathmore.edu](mailto:nnjiraini@strathmore.edu) OR

**Enquiries to:** The Secretary- Strathmore University Institutional Ethics Review Board,

P.O BOX 59857-00200, NAIROBI; Email: [ethicsreview@strathmore.edu](mailto:ethicsreview@strathmore.edu); Tel No: + 254 703 034 375

**Your signature indicates that this research study has been explained to you, that you've been given the opportunity to ask questions, and that you agree to take part in this study.**

**Signature:** ..... **Date:** .....

**For Official Use:**

**Name:**..... **Signature:**..... **Date:** .....

**(Of Research Personel)**

## Appendix 4: Ethics Review Committee Letter



**Strathmore**  
UNIVERSITY

24<sup>th</sup> April 2019

Dr. MUHUNI, JAMES NJOROGE  
James.Muhuni@strathmore.edu

Dear Dr. James,

REF **Protocol ID:** SU-IERC0402/19 **Student Number:** 094472

**BRAND LOYALTY AND ITS INFLUENCE ON ANTIHYPERTENSIVE DRUGS PRESCRIPTION BEHAVIOUR BY MEDICAL OFFICERS AND CLINICAL OFFICERS IN KIAMBU LEVEL 4 AND RUIRU SUB COUNTY HOSPITALS**

We acknowledge receipt of your application documents to the Strathmore University Institutional Ethics Review Committee (SU-IERC) which includes:

1. Study Protocol submitted 3<sup>rd</sup> April 2019
2. Cover letter listing all submitted documents 3<sup>rd</sup> April 2019
3. Proposal declaration page signed by supervisors 3<sup>rd</sup> April 2019

The committee has reviewed your application, and your study "*Brand loyalty and its influence on Antihypertensive drugs prescription behavior by Medical Officers and Clinical Officers in Kiambu Level 4 and Ruiru Sub County Hospitals*" has been granted approval.

This approval is valid for one year beginning **24<sup>th</sup> April 2019** until **24<sup>th</sup> April 2020**

In case the study extends beyond one year, you are required to seek an extension of the Ethics approval prior to its expiry. You are required to submit any proposed changes to this proposal to SU-IERC for review and approval prior to implementation of any change.

SU-IERC should be notified when your study is complete.

Thank you

Sincerely,

Prof Florence Oloo  
Secretary

**Strathmore University Institutional Ethics Review Committee**



## Appendix 5: NACOSTI Research Authorization Letter



### NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,  
2241349, 3310571, 2219420  
Fax: +254-20-318245, 318249  
Email: dg@nacosti.go.ke  
Website: www.nacosti.go.ke  
When replying please quote

NACOSTI, Upper Kabete  
Off Waiyaki Way  
P.O. Box 30623-00100  
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/68439/31056**

Date: **4<sup>th</sup> June, 2019.**

Dr. James Njoroge Muhuni  
Strathmore Business School  
P.O. Box 59857 - 00200  
**NAIROBI.**

#### **RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on *“Brand loyalty and its influence on anti-hypertensive drugs prescription behavior by medical officers and clinical officers in Kiambu Level 5 and Ruiru Sub-County Hospitals.”* I am pleased to inform you that you have been authorized to undertake research in **Kiambu County** for the period ending **4<sup>th</sup> June, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Kiambu County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

**GODFREY P. KALERWA MSc., MBA, MKIM  
FOR: DIRECTOR-GENERAL/CEO**

Copy to:  
The County Commissioner  
Kiambu County.


The County Director of Education  
Kiambu County.

*National Commission for Science, Technology and Innovation is ISO9001:2008 Certified*

## Appendix 6: NACOSTI Research Permit

**THIS IS TO CERTIFY THAT:**  
**DR. JAMES NJOROGE MUHUNI**  
**of STRATHMORE BUSINESS SCHOOL,**  
**59857-200 Nairobi, has been permitted**  
**to conduct research in Kiambu County**  
**on the topic: BRAND LOYALTY AND ITS**  
**INFLUENCE ON ANTI-HYPERTENSIVE**  
**DRUGS PRESCRIPTION BEHAVIOR BY**  
**MEDICAL OFFICERS AND CLINICAL**  
**OFFICERS IN KIAMBU LEVEL 5 AND**  
**RUIRU SUB-COUNTY HOSPITALS.**  
**for the period ending:**  
**4th June,2020.**

**Permit No : NACOSTI/P/19/68439/31056**  
**Date Of Issue : 4th June,2019**  
**Fee Recieved :Ksh 1000**



*[Signature]*  
**Director General**  
**National Commission for Science,**  
**Technology & Innovation**

**Applicant's**  
**Signature**



## Appendix 7: Kiambu County Government Research Clearance Letter

### COUNTY GOVERNMENT OF KIAMBU DEPARTMENT OF HEALTH SERVICES

All correspondence should be addressed to  
HEAD HRDU - HEALTH DEPARTMENT  
Email address: [mndiritu@gmail.com](mailto:mndiritu@gmail.com)  
[mkwasa@live.com](mailto:mkwasa@live.com)  
Mobile: 0721641516  
0721974633



**HEALTH RESEARCH AND DEVELOPMENT  
UNIT**  
P. O. BOX 2344 - 00900  
KIAMBU

Ref. No: KIAMBU/HRDU/AUTHO/2019/04/24/Muhuni J

Date: 24 Apr 2019

TO WHOM IT MAY CONCERN,

RE: CLEARANCE TO CONDUCT RESEARCH IN KIAMBU COUNTY

Kindly note that we have received a request by Dr. James Muhuni of Strathmore Business School to carry out research in Kiambu County, the research topic being on *"Brand Loyalty And Its Influence On Anti-Hypertensive Drugs Prescription Behavior By Medical Officers And Clinical Officers In Kiambu Level 5 And Ruiru Sub-County"*.

We have duly inspected his documents and found that he has been cleared by Strathmore University Institutional Ethics Review Committee until . He thus does not need any further clearance with another regulatory body in order to conduct research within the county of Kiambu.

However, it is incumbent upon the facility in which the research is being carried out to ensure that they are conversant with the remit of the study and operate in line with their institutional norms on conducting research. This note also accords him the duty to provide feedback on his research to the county at the conclusion of his research.

A handwritten signature in black ink, appearing to read 'M. Ndiritu Ndirangu'.

DR. M. NDIRITU NDIRANGU  
COUNTY HEALTH RESEARCH DEVELOPMENT UNIT  
KIAMBU COUNTY

## Appendix 8: Budget

This is the proposed budget plan for the project study

<b>Items</b>	<b>Cost in KES</b>
Stationery	23,000
Typing and internet services	6,000
Printing and binding	1,800
Proof-reading and editing	2,200
Miscellaneous cost	3,000
Data analysis	55,000
<b>Total</b>	<b>96,000</b>

