

**AN EVALUATION OF THE FACTORS THAT INFLUENCE  
HEALTHCARE WORKERS' PERCEPTION OF MEDICINE  
BRANDS**

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**UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA**

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HEALTHCARE WORKERS' PERCEPTION OF MEDICINE BRANDS**

**BY**

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**A Research Project Submitted to Chandaria School of Business in the Partial  
Fulfilment of the Requirements for the Degree of Master in Business  
Administration (MBA- Global)**

**UNITED STATES INTERNATIONAL UNIVERSITY AFRICA**

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**DECLARATION**

I the undersigned, do hereby declare that this research project is my own original work and has not been presented to any other institution of higher learning, university or college other than the United States International University for Academic Credit.

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This research project has been presented for examination with my approval as the supervisor.

**Signed:..... Date:.....**

**Dr. Peter N Kiriri**

**Signed:..... Date:.....**

**Dean, Chandaria School of Business**

## **ABSTRACT**

This study sought to evaluate the factors that influenced the healthcare workers perception towards medicine brand. The specific objectives of the study were to evaluate the personal characteristics that influenced health care workers perception of medicine brands, to evaluate the product based factors that influenced health care workers perception to medicine brands and evaluate the organization factors influencing health care workers perception towards medicine brands.

The study was conducted using a descriptive research design drawing its population from physicians in Nairobi County. There were a total of 1568 doctors working in Nairobi representing 25% of 6,271 Doctors in Kenya (World Bank, 2015). Using stratified random sampling technique a total of 278 respondents were selected for inclusion in the study. Data collected for the study using questionnaires was analyzed using SPSS vs 22 for descriptive measures of means, minimums, maximums and frequency distributions. Regression analysis was used to analyze the data for relationships. Data was presented using tables and figures.

The study found that the most important product based factors that influenced the doctors perception towards medicine brands were: product efficacy, overall quality of the product, The product cost effectiveness with preference for the most cost effective medicine brands, safety of the product including the side effects profile, product availability with preferences being for more readily available products, the approval of the product by recognized authorities such as the FDA, the ease of use or administration of the product, and the availability of scientific literature regarding the product. Product factors had a positive significant effect on doctors' attitude towards a medicine brand.

Secondly, the most important organization factors that influenced doctor's perception towards specific medicine brands were; the availability of guidelines for product use, the institutional standard treatment guidelines, inclusion of the product in the institutional formulary list, parents social economic situation, availability of information on medical education activities, manufacturer credibility and recommendation by opinion leaders.

There was no significant relationship between organization factors and brand attitude of doctors towards medicine brands.

Finally, most important personal factors that influenced doctor's prescriptions of various brands of medicines were knowledge of the medicine, the personal doctor's decision, prior positive experience, core products use, other users experience and presentation of the given brand. Other mildly important factors that influenced the doctor's prescription of medicine brands were use of approved medicine brands, use of brand name, use of chemical name, type of medicine whether generic and the age or relative newness of the medicine. Personal factors had a negative significant relationship with the brand attitude towards medicine brands by doctors.

This study concluded that product based factors had a positive significant influence on the medical practitioners perception towards medicine brands. Organization factors did not have any significant effect on the medical practitioner's perception towards medicine brands. Personal characteristics had a negative significant relationship with medical practitioner's perception towards medicine brands.

This study recommended that to enhance positive perceptions by medical practitioner's manufacturers of medicines must focus on ease of use and provision of information about the products. In addition, it is key for manufacturers to focus on chemical names of medicines to promote positive perceptions amongst the brands. Chemical names was the single most differentiating attribute of the organization factors. Finally, to promote positive perceptions of medicine brands by medical representatives and sales people must focus on promoting use of products through free samples and success stories, present the brand in an attractive package and promote information and literature on the medicine amongst the doctors for knowledge building which is vital. Education awareness on medicine brands is very vital.

## **ACKNOWLEDGEMENT**

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To all my friends, relatives and family, who contributed to the completion of this research project in one way or the other, May the Lord Almighty shower you with blessings beyond measure.

## **DEDICATION**

This research project is a special dedication to my Husband Robert, My children Jeanette, Zannitah and Earle, my domestic manager Mercy and my entire extended family



## TABLE OF CONTENTS

<b>COPYRIGHT</b> .....	<b>iii</b>
<b>DECLARATION</b> .....	<b>iv</b>
<b>ABSTRACT</b> .....	<b>v</b>
<b>ACKNOWLEDGEMENT</b> .....	<b>vii</b>
<b>DEDICATION</b> .....	<b>viii</b>
<b>TABLE OF CONTENTS</b> .....	<b>ix</b>
<b>LIST OF TABLES</b> .....	<b>xi</b>
<b>LIST OF FIGURES</b> .....	<b>xii</b>
<b>LIST OF ACROYNMS</b> .....	<b>xiii</b>
<b>CHAPTER ONE</b> .....	<b>1</b>
<b>1.0 INTRODUCTION</b> .....	<b>1</b>
1.1 Background of the Study .....	1
1.2 Statement of the Problem.....	4
1.3 General Objective .....	5
1.4 Specific Objectives .....	6
1.5 Importance of the study .....	6
1.6 Scope of the Study .....	7
1.7 Definition of Terms.....	7
1.8 Chapter Summary .....	8
<b>CHAPTER TWO</b> .....	<b>10</b>
<b>2.0 LITERATURE REVIEW</b> .....	<b>10</b>
2.1 Introduction.....	10
2.2 Personal Characteristics & Perception towards Brands.....	10
2.3 Product Based Factors and Perception towards Brands.....	13
2.4 Organization Factors and Brand Perception .....	17
2.5 Chapter Summary .....	22
<b>CHAPTER THREE</b> .....	<b>23</b>
<b>3.0 RESEARCH METHODOLOGY</b> .....	<b>Error! Bookmark not defined.</b>
3.1 Introduction.....	23

3.2 Research Design.....	23
3.3 Population and Sampling Design.....	24
3.4 Data Collection Methods .....	26
3.5 Research Procedures .....	26
3.6 Data Analysis Methods .....	27
3.7 Chapter Summary .....	27
<b>CHAPTER FOUR.....</b>	<b>28</b>
<b>4.0 RESULTS AND FINDINGS .....</b>	<b>28</b>
4.1 Introduction.....	28
4.2 Respondents Details.....	28
4.3 Product Based Factors.....	32
4.4 Organization Factors .....	38
4.5 Personal Characteristics .....	42
4.6 Chapter Summary .....	47
<b>CHAPTER FIVE .....</b>	<b>48</b>
<b>5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>48</b>
5.1 Introduction.....	48
5.2 Summary .....	48
5.3 Discussion .....	49
5.4 Conclusions.....	54
5.5 Recommendations.....	55
<b>REFERENCES.....</b>	<b>57</b>
<b>APPENDIX I: QUESTIONNAIRE .....</b>	<b>65</b>

## LIST OF TABLES

Table 3.1: Population Distribution.....	24
Table 3.2: Sample Size Distribution .....	25
Table 4.1: Sector of Work of Respondents.....	28
Table 4.2: Years of Practice for Respondents.....	29
Table 4.3: Frequency of Meetings with Medical Representatives with Respondents .....	30
Table 4.4: Description of Respondents .....	31
Table 4.5: Descriptive Statistics of Product Based Factors .....	32
Table 4.6: ANOVA Product Based Factors (Sector of Respondents) .....	35
Table 4.7: ANOVA Product Based Factors (Years of Experience).....	37
Table 4.8: Descriptive Statistic for Organization Factors.....	39
Table 4.9: ANOVA Organization Factors (Sector of Work).....	40
Table 4.11: Descriptive Statistics (Personal Characteristics) of Respondents .....	43
Table 4.12: ANOVA Personal Characteristics (Sector of Work) .....	44
Table 4.13: ANOVA Personal Characteristics (Years of Experience) .....	44
Table 4.14: Regression Analysis Model Summary.....	44
Table 4.15: Model Coefficients Analysis .....	44

## LIST OF FIGURES

Figure 4.1: Current Work Station of Respondents.....	29
Figure 4.2: Gender of Respondents .....	30
Figure 4.3: Number of Daily Prescriptions Made by Respondents .....	31

## **LIST OF ACROYNMS**

FDA	Food and Drug Administration
PHRMA	Pharmaceutical Research and Manufacturers of America
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background of the Study

The competition in the pharmaceutical market is progressively increasing with companies churning out different medicine brands, and promoting existing brands to increase their market share. In this industry healthcare workers in general and physicians in particular are the key customers and therefore the targets of marketing activities (Saad et al., 2014). Although patients buy products for the curing their illness depending on diagnosis, the ultimate product and brand they use is the choice of the physician (Saad et al., 2014).

While marketers focus on physicians to improve their sales, other parties also focus on the same physicians to improve medicines use, which in many ways reduces sales. The challenge of ensuring rational prescribing of medicines has been of global concern for the past few decades with about 50% of medicines thought to be prescribed and used inappropriately (World Health Organization [WHO], 2002). The World Health Organization has advocated interventions aimed at influencing rational prescribing of medicines (WHO, 2002) among them use of guidelines, supervision of practice, audit and feedback, continuing education of prescribers, use of independent sources of drug information, public education on medicines, and elimination of incentives that lead to irrational use.

A number of international and national organizations like the General Medical Council (UK) and the United States Food and Drug Administration (FDA) have explored the factors that influence doctors prescribing with the aim of addressing them in order to influence good prescribing. The impact of marketing of pharmaceutical products to prescribers and the promotion and prescription of specific brands has been studied with regard to their impact on prescribing. Similarly, in jurisdictions like the United States of America and Canada where direct marketing of pharmaceutical products to patients is done, the impact of such marketing on prescribing habits has also been evaluated. Marketing and promotion of specific brands to prescribers has been shown to be effective in increasing the prescription of such brands, while direct marketing to customers has also been shown to influence the prescription of specific brands (Lizuka and Jin, 2003).

The General Medical Council (UK) in its study to identify factors that influence doctors' actions with regard to good practice reported that doctors' habits and patterns of behaviour and organizational culture had a strong influence on their prescribing (Scraggs et al., 2012). It has been reported in the United States of America (USA) that payments to prescribers in different forms increases prescriptions of branded drugs compared to generic medicines (Engelberg, Parsons and Tefft, 2014). It has also been found that the FDA regulated marketing in the USA plays an important role in providing information about brand medicines and thus viewed as an important function both in informing and shaping the prescribers perception of the marketed products (Lizuka and Jin, 2003).

In the USA where marketing of specific brands to end users is permitted, Lizuka and Jin (2003) have reported that this direct advertising does not influence the prescribers brand choice although it increases the consumers' visits to the doctors. On the other hand other studies in the USA and Canada have concluded that direct-to-consumer advertising of medicines has influenced both the consumer and prescriber choice and use of the advertised brands (Mintzes, 2006). It has also been demonstrated that the traditional detailing to prescribers by medical representatives has a bigger impact on brand selection than direct advertising to customers (Manchanda and Honka, 2005).

A study published by the RAND Corporation, (Scraggs et al., 2012), reported that a number of factors ranging from scientific information from journals, national and regional guidelines, personal prescriber attributes, recommendations from peers, specialists, and marketers influenced general practitioners prescribing in Europe. The manufacturers and marketer of pharmaceutical products deploy immense resources in marketing and promoting their products mostly through the promotion of specific brands. Studies have indicated that marketing of pharmaceutical products leads to increased utilization (Lizuka and Jin, 2003).

Global trends however, indicate that the use of innovator brands is on the decline (Quintiles IMS, 2007). The concern then for manufacturers of branded drugs is to what extent to deploy resources for research and development and to what extent they are likely to recover the same from sales. In the USA for example, despite extensive marketing by pharmaceutical companies and direct marketing to customers, 67% of medicines prescribed and dispensed are generic drugs (QuintilesIMS, 2007).

The factors influencing prescribers choice of medicines have also been studied in developing countries with such factors as the demographic characteristics of doctors (Kebriaeezadeh and Tahmasebi, 2015), the level of knowledge of brands including generics (Gevorgyan, 2011), perceived patients expectations (Anita et al., 2010), and psychosocial factors among prescribers (Kasliwal, 2013), found to have an influence. The doctors' level of experience, medication costs, and perceptions of quality influenced prescribers' choice of medicines in Nigeria, (Omitiran & Soremekun, 2014), while medical representatives' activities were found to influence prescribing and brand choice in Ethiopia (Workneh et al., 2014).

In Kenya, a study at the Mbagathi Hospital in Nairobi found out that prescribing was mainly by brand name although the said study did not indicate that influenced such practice (Muyu, 2015). A study on antibiotic use in one hospital in Nairobi Kenya (Genga et al., 2017), reported that patients demanded and actually got doctors to prescribe for them antibiotics. The study did not explore if the same patients influenced the actual choice of brands prescribed.

In Kenya, just like the rest of the world, there are two contemporary issues around medication use. There is great focus on the issue of rational use and influencing prescribers to prescribe positively (Wold Council of Churches, 2006). On one hand this is being driven by the concern of rational use of antibiotics and focusing on reducing antibiotics resistance (Wold Council of Churches, 2006). On the other hand, payers and policy makers are concerned about the escalating costs of healthcare delivery (Mwatu, 2017). With regard to the later, there is increasing effort to move towards generic prescribing borrowing from the FDA experience. Manufacturers and marketers of branded products are aware of this move and its potential impact on their sales. The main point of focus with regard to prescribing is the doctors and other clinicians that actually prescribe medicines. The main reason for this is that doctors usually prescribe by brand name (Muyu, 2015) and markers also focus on encouraging them to do so. Similarly, patients often have confidence in and follow the doctors' instructions and are therefore likely to use what the doctor prescribes. While it is thought that the healthcare workers may greatly influence patients choices based on their own knowledge, perceptions, and



biases, this needs to be confirmed through research. It is therefore necessary to find out the knowledge and perception of healthcare workers regarding medicine brands.

## **1.2 Statement of the Problem**

Whereas the brand versus generic products use is a current issue in Kenya, there is not enough information on the knowledge, perception, and influence of healthcare workers in medicine brand choice. It is therefore important to determine the healthcare workers perceptions of medicine brands. It is also necessary to understand the factors that influence such perceptions.

It is thus important to study this phenomenon not just because it is currently a big area of focus but also because of the potential impact it is likely to have on the Kenyan healthcare system. Interventions that will lead to perceived good prescribing habits will be welcome by regulators and payers because of potential good outcomes, reduced waste and reduced cost of care. However, practice changes that are likely to lead to reduced purchase of certain brands are likely to be a cause of concern for pharmaceutical companies. It is thus in the interest of the regulators, payers, and healthcare providers in Kenya to know what influences prescribers. Specifically, since the main issue revolves around prescribing of specific brands, it is critical to understand the factors that influence the prescribers' perception of medicine brands.

The knowledge of what influences prescribers perception of medicine brands will inform policy, practice, and development of strategies to implement desired changes and to manage potential outcomes. Such knowledge will also inform further studies especially on to what extent either the factors influencing perception or the actual perceptions further impact on the prescriber's actual practice.

Most patients seeking medical care are put on medication as part of or the mainstay of intervention to alleviate their illness. Medicines thus form a significant portion of healthcare costs. Globally there has been a drive to manage the cost of medicines. One main intervention to achieve this has been to improve prescribing habits both to ensure only required medicines are prescribed and that generic products which are often cheaper than the branded medicines are prescribed and dispensed (WHO, 2002). Kenya is at such

a time when there is big push by payers to improve medicines prescribing with the main motive being to reduce healthcare costs (Mwatu, 2017). The implication is that with focus on the cost of medicines there was likely going to be big competition on which brands to use and marketers will had their work cut out in trying to push their products for use at both institutional and prescriber levels. There was little information however on what influences physicians and healthcare workers perception and choice of medicine brands. Was it price or is it quality? Did institutions have policies that influenced brand perception and choice? Did the prescribers have unique characteristics that affect brand perception? This information was scarce and this study sought to answer the questions.

This information was necessary to inform interventions to achieve desired outcomes in medicines prescribing. It was more important for marketers to answer these questions in order to position their products appropriately. It was also necessary to carry out such research to identify similarities and differences of such influences in Kenya and other countries. The studies that had been conducted in Kenya around prescribing were limited with regard to the scope of this study in that some focused on prescribing practices (Muyu, 2015), but did not evaluate what influenced prescribing, while the others were knowledge, attitudes, and practice surveys about antibiotic resistance among physicians (Genga *et.al*, 2017). Both studies were conducted in single facilities. Specific studies on drug prescribing behaviour (Mwai, 2011) evaluated prescribing behaviour among general practitioners in Nairobi but did not address why they behaved the way they did. It did not evaluate perceptions of medicine brands. This particular study proposed further studies to include other physicians other than general practitioners as well as to evaluate factors that influenced medication use behaviour. This study expanded knowledge around prescribing behaviour by evaluation influences on perception of medicine brands.

### **1.3 General Objective**

The general objective of this study was to evaluate the factors that influence healthcare workers perception of medicine brands

## **1.4 Specific Objectives**

1.4.1 To evaluate personal characteristics that influenced healthcare workers perception of medicine brands

1.4.2 To evaluate product based factors that influenced healthcare workers perception of medicine brands

1.4.3 To evaluate organizational factors that influenced healthcare workers perception of medicine brands

## **1.5 Importance of the Study**

### **1.5.1 Policy Makers and Regulators**

The study informs decision making by policy makers and regulators with regard to defining interventions, strategies, policies, and regulations to guide practice and influence desired prescribing and associated outcomes.

### **1.5.2 Payers and Providers of Healthcare**

The study supports decision making by payers for healthcare services and healthcare services providers around prescribing, medication use, and cost management. Understanding influences of brand perception and ultimate choice will help craft the requisite interventions to reduce costs associated with brand use.

### **1.5.3 Marketers of Medicines**

The results of this study are useful for marketers of both branded and generic medicines with regard to designing marketing and other actions to drive sales, protect, or expand market share. Ultimately marketing is about influencing choice and knowledge of what influences perception and choice.

#### **1.5.4 Academicians and Researchers**

This study adds to the body of knowledge in Kenya on the subject of study. This was important for scholars not just with regard to the findings of the study but also provides a basis for further study.

#### **1.6 Scope of the Study**

This study was carried out in Nairobi County focusing on one main category of prescribers namely doctors. In order to capture a broad cross section of prescribers the professional associations that the prescribers belong to was used with the membership to the associations serving as sampling frames. Using the different professional associations the entire range of medicine specialties were covered with sampling being proportionate to the number of specialists in each specialty. The sample size was defined and calculated in the design section. The study was carried in the months of March – April 2018.

The limitation of this study was that a non-probability convenience sampling method was used due to the challenge of getting doctors to participate in a survey through probability sampling. It was thus relatively challenging to generalize across populations outside the cross sectional area of study. Secondly, there was need to ensure the people administering the questionnaires were carefully chosen because any chance perception in the respondents mind that the person collecting data was related to particular products could lead to inaccurate information being given.

This study was done in Nairobi, and therefore could not capture unique aspects of healthcare practitioners in rural areas. Lastly while the study was about healthcare practitioners, the study was focused on physicians as they were mainly the decision makers on what brand to prescribe and use.

#### **1.7 Definition of Terms**

##### **1.7.1 Physician**

The word physician as used in this study is in the meaning of the World Health Organization which includes generalist medical practitioners and specialist medical practitioners which terms are synonymous with doctor, medical doctor, general

practitioner, medical officer, resident medical doctor, specialist physician, and all recognized specialist titles like paediatrician, surgeon, gynaecologist to name but a few (WHO, 2010).

### **1.7.2 Brand Name Drug**

A brand name drug is a drug marketed under a proprietary, trademark – protected name (FDA, 2017).

### **1.7.3 Brand Loyalty**

Brand loyalty is a customer's attachment to a product or service that leads to its use repeatedly, (Hussain et al., 2016). Brand loyal consumers remain committed to the brand, are willing to pay higher price for it, and actively promote it (Prajapati et al., 2017).

### **1.7.4 Generic Drug**

A generic drug is a drug that is the same as a brand-name drug in dosage, strength, safety, way of administration, use, performance, and quality that can be used as a substitute to the brand name drug (FDA, 2017).

### **1.7.5 Product Quality**

Product Quality is defined as the collection of features and characteristics of a product that contribute to its ability to meet given requirements, (Alex and Thomas, 2015). Customers often buy those products which provide them value for money in the sense that the products meet their expectations (Hussain et al., 2016).

### **1.7.6 Brand Image**

Brand image is the current view of the consumers about a brand. It can be defined as a unique bundle of associations within the minds of target consumers (Prajapati et al., 2017).

## **1.8 Chapter Summary**

In this chapter the background of the study has been discussed. The objective of the study and research questions on which the study was based have been defined. The importance of the study to various stakeholders has also been discussed. Terms that are used in the study have been defined as well.

In chapter two, literature review on the study topic is discussed. Chapter three outlines the methodologies that were used in the study while the research findings are documented in chapter four. Chapter five covers the summary, discussion, conclusions, and the recommendations of this study.

## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW**

#### **2.1 Introduction**

In this chapter a review of literature has been done to identify published studies in different environments on: personal characteristics that influence healthcare workers perception of medicine brands; product based factors that influence healthcare workers perception of medicine brands; and organizational factors that influence healthcare workers perception of medicine brands. The literature is reviewed from existing scholarly works and articles on the objectives of the study. The chapter ends with a chapter summary.

#### **2.2 Personal Characteristics & Perception towards Brands**

##### **2.2.1 Personal Attributes**

Personal attributes refers to the personal characteristics and attributes. Personal attributes have an influence on the perception towards brands in a number of ways as enumerated and researched by various scholars across the world (Solomon, 2004). Consumer behaviour theorists propose that that personal attributes and characteristics influence purchase, use, sale and experiences of consumers. Consumers differ from small children asking for international games to corporate executives closing in on huge investment deals. The decision to purchase a product or a brand is primarily informed by the need to satisfy a basic need or want. Consumer behaviour therefore seeks to analyze the factors that influence the choice of purchase or sale for a consumer (Kotler and Armstrong, 2010). It focuses on the analysis on the purchase decision process and the factors influencing and informing this process (Solomon, 2004).

Overall, consumers may be grouped into individual and organizational consumers. Individual consumers seek to satisfy their own needs through self-purchases and purchasing items for others. Some of the factors influencing this purchase decision include cultural backgrounds, age and stages in life. (Kardes et al., 2011). According to Kotler and Armstrong (2018) consumers decisions are mainly influenced by factors such as culture, social, personal and psychological factors.

### **2.2.2 Physician Characteristics and Brand Choice**

It would be expected that the patient, who is the end user of pharmaceutical products, plays the greatest role and makes decisions as to what brands to use. However, it been noted that although patients purchase pharmaceutical products to alleviate their disease, condition, or suffering, the physicians play the greatest roles on the actual brand of the products the patients buy (Saad et al., 2014; Ahmed et al., 2013).

The physicians' personal views, attitudes, biases, and other influences leading to specific perceptions of brands will affect the ultimate choice (Dunne et al., 2014). A number of physician's personal attributes or characteristics have been shown to influence the physician's perception of medicine brands, (Kasliwal, 2013, Gevorgyan, 2011, Tahmasebia and Kebriaeezadeh, 2015).

It been reported in India that nonmedical factors influence physicians perception and ultimate use of pharmaceutical brands. The extent to which these factors influence the physicians' perception is dependent on the age of the physician, with younger physicians being more influenced compared to older practitioners (Kasliwal, 2013). A more positive perception of branded products and new products has been observed in younger doctors compared to their older counterparts, (Tahmasebia and Kebriaeezadeh, 2015). Consequently older physicians are more likely to have a positive perception and therefore likely to use generic products, while younger doctors are likely to view branded products to be of better quality compared to generic products and therefore use more of the former.

The physicians' gender has also been demonstrated to have an effect on brand perception. Male physicians are more likely to have a positive view and embrace new brands, switch between products or brands, and prescribe more products, (Johannesson and Lundin, 2002), (Tahmasebia and Kebriaeezadeh, 2015, Johannesson and Lundin, 2002).

Similarly the individual speciality in which the physician practiced was shown to affect perception, with certain specialities being more influenced than others. Paediatricians were shown to be less influenced by nonmedical factors in their perception of medicine brands compared to other specialties (Kasliwal, 2013).



On the other hand general practitioners have a more favourable view of new brands compared to specialists, (Tamblyn et al., 2003). Further, the training background of the general practitioners was shown to influence perception and decisions on medicine use (Dorđević and Janković, 2006). Physician's perception of and influence on ultimate use of specific medicines, and use of specific brands has been shown to vary with the length of experience.

A study in Serbia indicated that the more experienced physicians were influenced differently as compared to less experienced physicians. Whereas the more experienced physicians considered a variety of contextual issues around using particular products, the less experienced physicians focused on the core factors of a given product, (Dorđević and Janković, 2006). In the same study it was also found that the more experienced physicians were less likely to use additional products compared to less experienced physicians.

The physicians' individual knowledge has been demonstrated to have a big influence of medicines brand perception. Accurate and affirmative knowledge regarding brands has been shown to lead to a positive perception and ultimate use of certain brands while inaccurate knowledge and misinformation has been demonstrated to lead to the opposite view and actions, (Gevorgyan, 2011; Hassali et al., 2014; Gupta et al., 2015). Improving and or correcting knowledge gaps has been shown to enhance perception of medicines (Hassali et al., 2014) in Malaysia. In a big study in America, the physician's level of clinical knowledge, not necessarily product knowledge was reported to have a big influence on their perception of brands and decisions to use, (PHRMA, 2008).

Physicians' individual habits formed from previous interaction have been demonstrated to have an impact on their ongoing perception and continued use of particular brands, (Ahmed et al., 2013). The perception of certain brands may be not just as a result of previous use of such brands but as well an extended positive view of brands by a particular manufacturer whose other products the physician has used, (Ahmed et al., 2013).

In view of the likely complex decision making process of selecting a product to prescribe, it has been shown that some physicians are strongly influenced by habit persistence in their choice of medicines and brands, (Murshid, Mohaidin, and Nee, 2016). This is a

selection informed by their past experience and does not involve an active, conscious selection process.

Individual attitudes and biases, in spite of the level of knowledge and experience have also been shown to influence physicians' perceptions of medicine brands. For example it has been documented in Poland that some physicians doubt that generic brands are effective in spite of well documented information that the products in question are effective, (Lewek, Smigielski and Kardas, 2015). The same study indicates that while such doctors may prescribe the products in question for their patients, they are not likely to use them for their own treatment or treatment of their close relatives.

Intervention, in Malaysia, to improve physician's knowledge regarding some brands was shown to have closed the knowledge gap among physicians but not adequate enough to overcome their individual perceptions and biases and hence did not impact utilization, (Hassali et al., 2014). Similarly in India which has a big manufacturing base for generic medicines, good knowledge among physicians regarding the quality and safety of generic brands was not adequate to overcome individual concerns and negative beliefs about branded generics in a good proportion of physicians (Gupta et al., 2015).

In Ireland, while general practitioners have to some extent embraced prescribing and use of branded generics, they have individual concerns that their patients may have difficulties using them (Dunne et al., 2014), and thus continue to persistently propagate a negative judgement regarding branded generics.

While studies have shown that personal factors have a significant effect on the perception and attitudes towards brands in the pharmaceutical and medicinal sectors, there has been a scarcity of the literature in the Kenyan front. Very few studies have sought to explore the relationship between personal factors of the medical practitioners and how they affect the perceptions and attitudes towards medicine brands.

## **2.3 Product Based Factors and Perception towards Brands**

### **2.3.1 Product Based Factors**

Keller (1998) finds that branding tactics refers to concepts that are employed to enhance brand management initiatives and efforts in the company. Brand management refers to

the use of marketing techniques on products, product lines and brands to enhance the perceived value of the customer and consequently improve on the brand equity (Keller, 1998). Brand names must bring to the fore associations of the products, create awareness and bring out the brand associations.

According to Keller, for a brand to be effective it must be simple and easy to understand, spell and easy on the tongue. Other factors that are key to the brand building process include simplicity of the brand name, familiarity and meaningfulness of the brand name, distinctiveness of the brand name and ease of spelling and pronouncement. Brand names must be free of fictitiousness, ambiguity and copying (Keller, 1998; Kotler and Armstrong, 2011).

Product involvement refers to the perceived usefulness of a product in meeting the needs and wants of the various stakeholders or consumers of the products (Zaichkowsky, 1994). Based on consumer behaviour studies, there is a strong relationship between product involvement and positive brand perceptions amongst consumers. The studies have shown that product involvement influences the purchase decision making process in relation to the products and consumers are actively involved in the search of information to make informed decisions on the products and brands they purchase. Information searched by the consumers include timing of the adoption of the product, consumers attitudes and preferences on the product or brand of the consumer information on competitors and substitute goods (Bauer, Sauer and Becker, 2006; Charters and Pettigrew, 2006; Lin and Chen, 2006; Iwasaki and Havitz, 1998; LeClerc and Little, 1997; Park, 1996; Ram and Jung, 1994; Brisoux and Cheron, 1990; Celsi and Olson, 1998; Park and Young, 1986 and Traylor, 1981).

Empirical findings show that there is a positive correlation between product involvement and brand loyalty amongst brands in the market. The study done by Le Clerc and Little (1997) show that brand loyalty and product involvement have a positive correlation. This is supported by the findings of Quester and Lim (2003) who find that the involvement of the product brand have a direct correlation with brand loyalty levels and is a precondition for high levels of brand loyalty.

Medicines are tangible products and thus their product attributes have been shown to strongly influence physician's perception and prescribing behaviour, (Murshid, Mohaidin and Nee, 2016). Medicines have different attributes that would individually or collectively act as factors to differentiate them from other products. The influence of some of these attributes on physicians' perception is discussed in this section. These attributes include both basic and core products feature (Inamdar and Kolhatkar, 2012).

Product quality is the extent to which product specifications meet consumer expectations, (Alex and Thomas, 2015; Dodds, Monroe and Grewal, 1991). From a prescriber's perspective product quality includes a conclusion on the prescribers' part that use the product or medicine produced the promised and expected results (Waheed, 2011). Using this definition Alex and Thomas (2015), in their study in India, concluded that product quality had a positive impact on perceived value. Similarly, Hussain et al., (2016) found out that in Pakistan, that product quality had a positive influence on perception and loyalty to a pharmaceutical brand.

With regard to product quality, physicians are more concerned with the core attributes like side effects, appropriateness and ease of use of the product name, potency of the product, and shelf-life, product use convenience, in addition to the basic qualities like packaging (Inamdar and Kolhatkar, 2012). In Cyprus and Greece, the clinical effectiveness of the product has been shown to be the most significant characteristic influencing medicine brand perception (Theodorou, et al., 2009).

Clinical effectiveness was also the main characteristics influencing physicians in Nigeria (Soremekun and Omitiran, 2014). The impact of the medicine characteristics was found to be of less influence on physician's perception of the product compared to other factors like the brand image (Ladeira et al., 2011).

### **2.3.2 Product Brand Image on Physician Perception of Medicine Brands**

In a study by Charles (1998) the scholar analyzed the relationship product characteristics, brand name and the brand attitude towards the brand. The study found that product characteristics influence customer involvement and ultimately customer satisfaction. This relationship consequently leads to higher levels of brand loyalty, positive brand attitude

and use of the product. Therefore, Charles (1998) concluded that the product brand image has a positive effect on the brand attitude and customer satisfaction levels amongst consumers of products.

This finding is supported by the findings of Tsiotsu (2006) in the study on the relationship between brand image and brand perceptions which found a positive strong relationship between product involvement and perceived product quality. Consequently, strong positive brand perceptions lead to predictions and perceptions of improved and quality products and services. Consequently, Tsiotsu (2006) draws a nexus between brand involvement, brand attitude, perceived quality of products and services.

Of all the product attributes, brand image has been shown to have a big and perhaps greatest impact on physician's perception of the product (Ahmed et al., 2013). Lane and Kotler (2016) have described brand perception as the ability of the consumer to recognize a brand under different circumstances.

In most studies it has been demonstrated that a good brand image had a positive influence on physician's perception of the products in question with a few studies reporting that the brand does not have an impact (Parihar, 2012; Murshid, Mohaidin, and Nee, 2016). An exploratory study in Bangladesh found out that physicians attributed quality to the products brand and further attributed the product manufacturer with the brand quality. In this study brands manufactured by multi-national companies were perceived to be better than locally manufactured brands (Ahmed, et al., 2013).

A strong brand is not only attributed to the product manufacturer but also to other factors influencing a positive perception. The level of brand awareness, brand promotion and reinforcement, and the perceived effectiveness of a brand contribute to brand perception and loyalty (Ahmed et al., 2013), and affect brand perception (Ravi, Pascale and Ray, 2005).

The connection between brand image, brand affect, and brand trust has been studied with findings that the three brand attributes had a positive influence on brand perception, ultimate use, and loyalty (Prajapati et al., 2017; Anwar et al., 2011). According to Chaudhuri and Holbrook (2001), brand trust is a long-term positive view of the brand,

brand affect is the short term positive reaction to the brand, while brand image is the prevailing view of the brand. All three have been reported to positively influence brand loyalty which incorporates both repeat purchases of the brand or prioritising the brand (Prajapati et al., 2017; Anwar et al., 2011; Dilip et al., 2012).

Consumers often use price as a surrogate indicator for product quality and thus price shapes perception and behaviour in the use of medicines (Ahmed et al., 2013). Physicians are concerned with medicine prices with the cost-effectiveness of use of a particular product shaping how they perceive and use it (Inamdar and Kolhatkar, 2012; Rice, 2009). Moreover product price also has an effect on the other factors that influence physicians' perception of medicines with studies showing that price tempers the effectiveness of marketing actions on physicians' perception of medicines (Kremer et al., 2008)

The availability and actual use of product samples has been shown to influence doctors' perception about a given brand with the main influence being that the use of samples increases the chances of physicians switching brands or products (Saad et al., 2014).

There are various studies that have focused on the relationship between product factors and perceptions of brand value. Majority of the studies find that there exists a strong positive relationship between brand value and perceived quality perceptions. Consequently, strong brand names evoke perceptions of quality products and services as is the case with companies such as Apple, Coca Cola, HP, Safaricom and other local companies. Nevertheless, the relationship between brand perceptions and perceived attitudes on products in the pharmaceutical industry in Kenya has rarely been interrogated. Consequently, there exists a knowledge gap on how brand and product attributes of medicines in Kenya influence perceptions of brands.

## **2.4 Organization Factors and Brand Perception**

### **2.4.1 Organization Factors**

There has been a concerted effort around the world to explore the relationship between organization factors and brand perceptions amongst consumers of products and services. There exists theories such as the resource based theory that seek to explain this relationship.

According to the resource based theory a firm must possess abundant resources and capacities for it's to meet its goals. While most resources may be categorized as tangible in nature, others are intangible in nature (Wernerfelt, 1984). Tangible resources of a firm include physical and financial assets of the firm while intangible resources include brand good will, brand equity, firm reputation, skills and knowledge, organization procedures and culture as well as a strong brand name (Amit and Shoemaker, 1993). The firm must be able to effectively use their resource through efficient and effective means to achieve its desired goals and objectives (Prahalad and Hamel, 1990; Grant, 1996).

The resource based theory has been widely used in the marketing context to explore and understand the performance of the organizations based on a resource perspective. It has sought to interrogate the interrelationship between the functions and strengths of a firm to achieve intended resources. Scholars have sought to analyze the performance of inter organization relationships based on the resource based theory (Palmatier, Dant, and Grewal, 2007), the relationship between the marketing function and other functional capabilities of the firm and its effect on overall firm performance (Song, Droge, Hanvanich and Calantone, 2005; Song, Nason and Benedetto, 2008) and to examine the firm performance (Dutta, Narasimhan and Surendra, 1999; Liebermann and Dhawan, 2005).

In the resource analysis of the organization factors, it is important to note that there are corporate supportive resources that are necessary for effective brand building to enhance positive perceptions. According to Harrison, Hall and Nargundkar (1993), the firm must be willing and able to deploy adequate resources to build a brand. This must be in the form of tangible resources e.g. the financial and capital needed as well as the intangible resources necessary such as management good will (Wernerfelt, 1984).

Furthermore, the management must be able to infuse the resources to achieve the required targets and goals. According to various scholars "Management should realize the required resources and capabilities (e.g financial resource networking alliances and human resources) as these are critical to develop for firm's success and to increase performance and differential advantage" (Chen et al., 2011; Wicklund, 2009; Ndubisi, 2012; Sarah & Arokiasamy, 2009; Wernerfelt, 1984).

Chen et al., (2011) further notes that the provision of corporate resources must include factors such as employee recruitment, marketing strategies and implementation of the marketing strategies. There must also be an organization culture that is conducive to allow the brand building process to build positive perceptions about the brand. Market orientation as a resource of the firm must include the provision of brands and products that are responsive to customer needs, react to competitor's changes and evolutions and dynamic to promote inter functional coordination for improved customer satisfaction (Narver and Slater, 1990; Slater and Narver, 1994, 1995; Greenley, 1995; Jaworski and Kohli, 1993; Lee et al., 2008)

#### **2.4.2 Organization Factors and Brand Perception**

Direct to consumer advertising is unique from general advertising in that whereas the general advertising of medicines is targeted towards healthcare workers and physicians in particular, direct to consumer advertising involves advertising of prescription medicines directly to consumers or patients.

A study in the United States of America, which for a long time has been one of only two industrialized countries allowing this form of medicines advertising (Iizuka and Jin, 2003) has shown that whereas direct to customer advertising of medicine brands increased the frequency of patients visit to doctors, it did not influence the doctors' perception or use of the medicine brands. On the other hand, in New Zealand which also allows direct to consumer advertising of prescription medicine, studies have indicated that doctors' perception and eventual use of medicine brands is influenced by patient demands as a direct result of direct to consumer advertising (Mintzes, 2006).

Medicine detailing by medical representatives is probably the mainstay of medicines promotion throughout the world (Ibrahim and Bélanger, 2015). Moreover medical or pharmaceutical representatives have been shown to have a significant impact in shaping healthcare workers' perception of medicine brands (Ibrahim and Bélanger, 2015; Hussain et al., 2016; Goyal and Pranav, 2013; Prosser, Almond and Walley, 2003; Watkins et al., 2003). In Ethiopia for example nearly half of the physicians sampled in one study reported that medical representatives influenced their perception and eventual use of medicine brands (Alex and Thomas, 2015). In Pakistan, the role of pharmaceutical



representatives has been shown to go beyond perception creation to influencing actual use and ultimately leading to loyalty of specific brands (Hussain et al., 2016).

Drug information provision to healthcare workers within a given environment shapes their perception of medicine brands. This has been the case in the initial resistance and eventual change to use generic brands of medicines in a number of organizations thanks mainly to persistent information sharing on the medicine brands (Tsaprantzi, et al., 2016). Environments with higher penetration of medicines information like the United States of America have the highest percentage of generic brands utilization (PHRMA, 2008). The key role that medicines information provision plays includes providing scientific and non-marketing information about medicine brands as well as busting myths that may exist around using certain brands (Tsaprantzi et al., 2016).

Some organizations develop and implement practice guideline which influence perception and use of pharmaceutical products, (Prosser, Almond and Walley, 2003). Some organizations have also instituted formulary lists which condition healthcare to use certain products and in the process mould the healthcare workers perception of such brands (Schumock et al., 2004). This is the case in managed care environments where increased utilization of certain brands in the long run is likely to mould the perception by the healthcare workers in those institutions (Shoemaker et al., 2010).

The location of practice or work also has an impact on healthcare workers perception of medicine brands. Workers in urban settings with exposure to information, marketing, continuous learning, and more brand options are more likely to perceive medicine brands differently compared to healthcare workers in rural areas where such exposure is limited (Tamblyn et al., 2003)

The inherent hierarchical relationships between senior and junior healthcare workers within the same professions often creates key opinion leaders amongst the more experienced and senior professionals. Such key opinion leaders within organizations directly or indirectly influence the perceptions of other healthcare works about medicine brands, with the junior practitioners more often than not follow what the senior do (Kasliwal, 2013).

The mode of financing for healthcare does affect medicines brands utilization and eventually influences perceptions regarding the medicine brands. While innovator brands are prescribed more for patients with medical insurance (Tahmasebia and Kebriaeezadeh, 2015), in other settings prescribing may be uniform across board (Toverud, et al., 2015), while in managed care environments the insured populations may be the recipients of generic products (Shoemaker et al., 2010). Whichever way, the conditioning to use certain products based on the mode of healthcare financing does eventually influence perceptions of the brand utilized.

Other factors not attributable to either the prescribers of medicines or the product have been shown to influence the prescribers' perception of medicine brands. One such positive influence on healthcare workers perception of medicine brands is advertising, (Tahmasebia and Kebriaeezadeh, 2015). Pharmaceutical companies spend lots of efforts and big budgets on advertising campaigns which not only improve perception of doctors regarding innovator brands of medicines but also positively impact their perception of generic brands of medicines (Tsaprantzi, et al., 2016). In Saudi Arabia, media advertising as well as product marketing leaflets have been shown to impact positively on the doctor's perception and decisions on medicines use (Ibrahim and Bélanger, 2015).

The level and effectiveness of the regulatory environment in a given country does include healthcare workers perception of brands. In countries like the USA where regulation is robust and strict, healthcare workers tend to have a more positive view of many brands compared to environments where the regulatory environment is not effective (PHRMA, 2008).

This study sought to address research gaps existing on the relationship between organization factors and brand perception of products and services. While there exists ample literature to show that the organization factors are instrumental in informing positive brand perceptions amongst companies, the same has rarely been done in the pharmaceutical sector as well as in the Kenyan and regional context. This has created a research gap and knowledge gap on whether the factors identified in different contexts are applicable to the Kenyan environment. These are the research gaps that the study sought to fill.

## **2.5 Chapter Summary**

A literature review about: personal characteristics that influence healthcare workers perception of medicine brands; product based factors that influence healthcare workers perception of medicine brands; and organizational factors that influence healthcare workers perception of medicine brands, has been done. It has been found from the literature review that indeed personal characteristics, product based factors, and organizational factors do indeed affect the physicians perception of medicine brands. It was noted in the initial stages of literature review that physicians or doctors play the biggest role in selection of machines and medicine brands. For this reason the focus was narrowed to physicians. It is worth noting that very few studies have been done in Africa and none was found reported in Kenya. This study will therefore be beneficial to the extent that it will add new information to the body of knowledge on the subject by adding the Kenyan context. In chapter three, the research methodologies will be discussed.

## **CHAPTER THREE**

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This section describes the research methods allied in carrying out this study, including the research design, sampling method, data collection and data analysis. The methods were applied to determine the factors that influence healthcare workers perception of medicine brands including healthcare workers personal characteristics, product based characteristics, and organizational factors. The research methodology and design is presented using the following sub sections, research design, population, sampling frame, and sampling, sampling technique, sample calculation, research procedures, data collection and data analysis.

#### **3.2 Research Design**

In this study a descriptive research design was used. The descriptive research design describes features associated with the study population, quantifies the proportion that shares the features, and the interrelationship between the different population variables (Cooper and Schindler, 2014). The descriptive design was deemed most appropriate because the study sought to characterize or describe the study population, identify influences on their perception of medicine brands, and through statistical analysis determine the interrelationships or association between individual characteristics, product characteristics, and organizational factors, with physicians' perception of medicine brands.

In this research, a survey technique was used. A survey was deemed appropriate for the study because of its broad ability to accurately and cost-effectively gather both qualitative and quantitative information from a relatively large sample quickly and cost-effectively, (Sekaran and Bougie, 2013). The survey was also amenable to different applications including electronic, paper based, or telephone surveys. The survey could also be applied anonymously making it possible to collect more honest and accurate data. This study was cross-sectional and was applied to physicians that worked in Nairobi County.

### 3.3 Population and Sampling Design

#### 3.3.1 Population

This study was carried out in Nairobi County. The population of study was physicians working in the county. Nairobi County hosts most of the major hospitals, and the largest concentration of physicians in Kenya. According to the World Bank estimates, and summarised in Table 3.1 below, the distribution of doctors between public and private sector was 74% in favour of the private sector and 26% for the public sector with an estimated total number of 6,271 doctors in Kenya as at 2015 (World Bank, 2016). The distribution of doctors was thus:

**Table 3.1: Population Distribution**

<b>Cadre</b>	<b>Number</b>	<b>Proportion working in Nairobi County</b>	<b>Those in Nairobi County</b>
Public Sector	1,605	25%	401
Private Sector	4,666	25%	1167
Total	6,271	25%	1,568

Source: World Bank (2016)

#### 3.3.2 Sampling Design

##### 3.3.2.1 Sampling Frame

A sampling frame is a representation of all elements in the population from which to sample, (Sekaran and Bougie, 2013). The sampling frame for this study was all doctors registered with the two main professional associations that include all cadres irrespective of specialty and that also served as umbrella associations, the Kenya Medical Association and the Kenya Dentists Association in Nairobi County.

##### 3.3.2.2 Sampling Technique

There are various sampling techniques that a researcher can use. While some are probability based, others do not use probability. This study utilized stratified random sampling technique. In stratified random sampling technique the respondents are

classified in strata's of unique characteristics. The strata's used in this study were public Sector and private sector doctors.

### 3.3.2.3 Sample Size

A sample size is the portion of the total population selected to be representative of the entire population (Mugenda and Mugenda, 2003). Since the population is sometimes is too large for inclusion, a portion of the population is selected for inclusion in the study. A sample size must be adequate and representative of the entire population.

In a similar study by Gupta et al., (2015), a margin of error of 5%, confidence interval of 95%, and expected frequency value of 50% was applied to determine sample size. This study has applied the same parameters to calculate sample size as below to arrive at a sample size of 278.

$$\frac{n = \frac{Z^2 * P * (1-P)}{C^2}}{1 + \frac{Z^2 * P * (1-P)}{C^2}} = \frac{(1.96^2 * 0.5 * (1-0.5))}{.05^2}}{1 + \left[ \frac{(1.96^2 * 0.5 * (1-0.5))}{.05^2 * 1000} \right]} = 278$$

Where:

n is the sample size,

Z is the Z value at 95% confidence interval which is 1.96,

P is the percentage of population picking a choice,

C is the confidence interval, and

N is the population size

The sample size is distributed as shown in Table 3.2 below.

**Table 3.2: Sample Size Distribution**

Cadre	Doctors in Nairobi	Sample Size	Percent
Public Sector	401	72	26
Private Sector	1167	206	74
Total	1,568	278	100

### **3.4 Data Collection Methods**

This study utilized primary data collected from the respondents using a questionnaire. This study involved collection of primary data from doctors working who were members of doctor's professional bodies and attending professional body activities at the time of data collection. A questionnaire was used to collect data. A questionnaire was deemed appropriate for data collection since it was cheap and convenient to administer and could collect data very fast.

The questionnaire was divided into four parts. Part A captured the demographic aspects of the respondent while, part B collected data on product based factors that influence doctors' perception of medicine bands, part C collected data on organizational factors that influenced doctors' perception of medicine bands, and part D collected the doctors' personal perception of medicine brands. The questionnaire comprised of closed ended questions and Likert scale questions. Likert scale ranged from strongly agreed to strongly disagree.

### **3.5 Research Procedures**

The questionnaire was reviewed by a focus group that included marketers of pharmaceutical products or commonly referred to as medical sales representatives and was tested to confirm that it was understandable and easy to use by the respondents. Modifications were made where necessary. The questionnaire was then piloted by administering to 10 medical doctors randomly selected, in order to test the extent to which the variables were relevant and reliable to achieve the desired objectives, and in order to evaluate ease of administration, and response rate. The researcher then analysed if all questions were understood and responded to, and the rate of response.

In order to improve response rate, the questions was concise and unambiguous, the questionnaire layout was simple and appealing, participants were notified and invited to participate especially at the beginning of continuous professional development sessions which was a good forum to get a wide variety of doctors, the research or data collection team members were available on site to clarify any issues that the respondents had and issues that could affect response rate were identified during the pilot and resolved.

This study was carried out in five stages. At all stages the supervisor was consulted to give guidance. Stage one included development of the research data collection instrument. The researcher trained a team of medical sales representatives on how to administer the questionnaire. The training included a detailed explanation of the process, a highlight on how to engage and recruit respondents, and a review of potential questions and challenges that arose in data collection.

At beginning of each professional development session the attendees were informed of the plan to apply the questionnaire to the individual attendees and that it was optional. The designated individual to apply the questionnaire then approached individual attendees and sought their participation in filling out the questionnaire.

### **3.6 Data Analysis Methods**

Data collected was analysed quantitatively using Statistical Package for Social Sciences (SPSS). Initial analysis included descriptive checks and review of data features including identification of type and distribution of variables and number of observations to support and guide further analysis. Data cleaning was done to resolve discrepancies including outliers and missing, inconsistent, and invalid data. Logic checks were done to confirm that data values fall within the expected ranges.

Descriptive analyses were done to evaluate the factors that influence healthcare workers perception of medicine brands. Measures of central tendencies and dispersion were evaluated. Inferential statistics were also tested include ANOVA of variances to identify differences between groups in the data. Furthermore, linear regression analysis was done to establish strength and type of relationship between the dependent and independent variables in the study.

### **3.7 Chapter Summary**

In this chapter the research design, study population, sampling design, data collection, research procedures and data collection and analysis have been highlighted. A cross sectional, survey research strategy was applied. The research population was physicians working in Nairobi County. The chapter also presents the data collection methods and the data analysis methods. In chapter four the study findings are presented.



## CHAPTER FOUR

### 4.0 RESULTS AND FINDINGS

#### 4.1 Introduction

Chapter four presents the findings and results of the study. It presents findings on product based factors, organization and personal characteristics and how they influence healthcare workers perception of medicine brands.

#### 4.2 Respondents Details

This study sought to collect data from 278 respondents from various medical practices. However, only 160 questionnaires were collected. This represents a 58% response rate.

##### 4.2.1 Sector of Work of Respondents

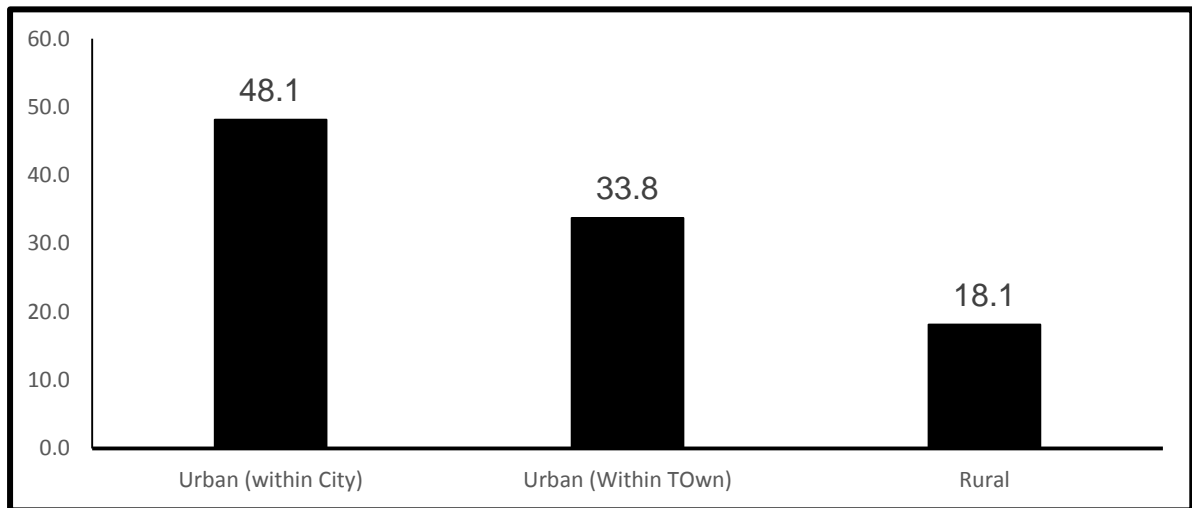
Sixty three point one percent of the respondents to this study worked in the public sector, 19.4% worked in the private sector (NGO's), 7.5% worked in the private sector (profit), 8.1% worked in faith based organizations and 1.9% worked in the private (fully self-employed) sector.

**Table 4.3: Sector of Work of Respondents**

Sector of work	Frequency	Percent
Public Sector	101	63.1
Private Sector (NGO)	31	19.4
Private Sector (Profit)	12	7.5
Faith Based Organization	13	8.1
Private (Self Employed)	3	1.9
Total	160	100.0

#### 4.2.2 Current Work Station of Respondents

Of the sampled respondents in this study, forty eight point one percent worked in an urban area (within a city), thirty three point eight percent (33.8%) worked in an urban area (within town) and eighteen point one percent (18.1%) worked in a rural setting. The findings are presented in Figure 4.1 below.



**Figure 4.1: Current Work Station of Respondents**

#### 4.2.3 Years of Practice

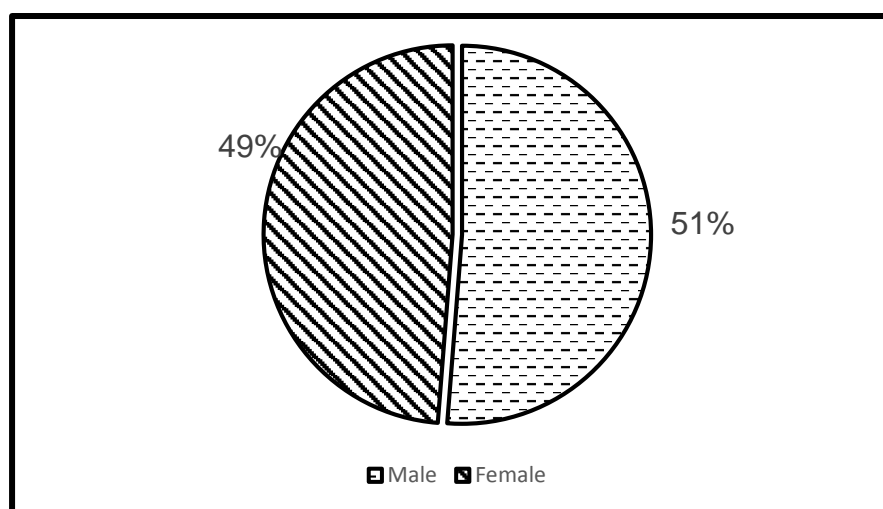
Forty one percent of the respondents to this study had practiced since for graduation as a doctor for less than 5 years, 31% had worked for between 6 – 10 years, 23% had worked for between 11 – 20 years, 3% had worked for between 21 – 30 years and 3% had worked for over 30 years.

**Table 4.4: Years of Practice for Respondents**

Years of Practice	Frequency	Percent
Less than 5 years	65	41
6 - 10 Years	50	31
11 - 20 Years	37	23
21 - 30 years	4	3
Over 30 Years	4	3
Total	160	100

#### 4.2.4 Gender

From an analysis of the distribution the gender of the respondents that gave feedback, it was observed that fifty one percent (51%) of the respondents to this study were male while forty nine percent (49%) of the respondents were female. This is presented in Figure 4.2.



**Figure 4.2: Gender of Respondents**

#### 4.2.5 Frequency of Meeting Medical Representatives

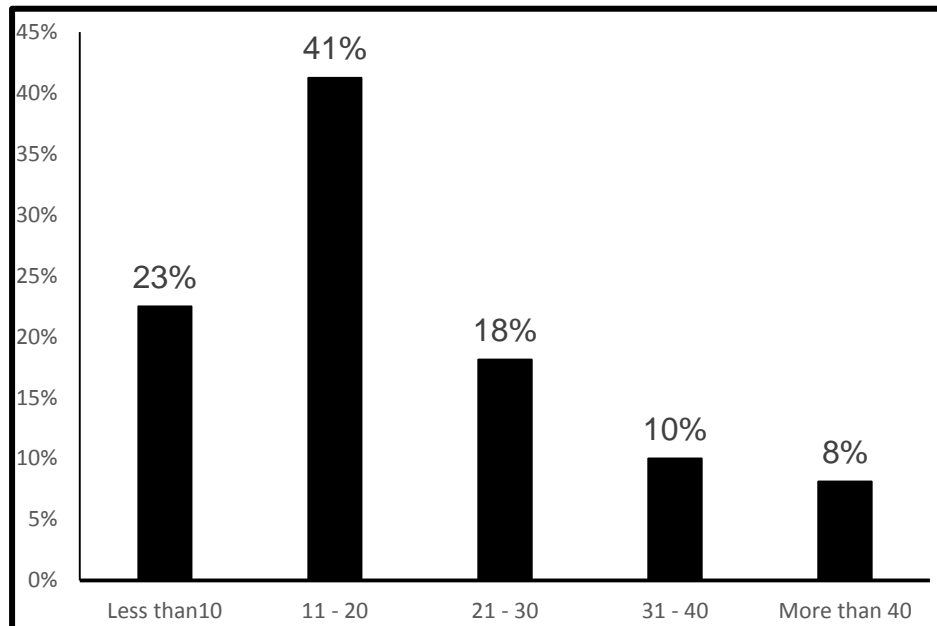
Majority of the respondents to this study interacted with medical representative twice to five times in a month. Twenty percent of the respondents interacted with medical representatives less than once in a month while 29% interacted with medical representatives more than five times in a month. This implies high levels of medical representative's interactions with medical practitioners amongst most respondents.

**Table 4.5: Frequency of Meetings with Medical Representatives with Respondents**

Frequency of Meetings	Frequency	Percent
Zero to One Times	32	20
Two to Five Times	82	51
More than five times	46	29
Total	160	100

#### 4.2.6 Number of Prescriptions per Day

Twenty three percent of the respondents to this study made less than 10 prescriptions, 41% made between 11 – 20 prescriptions, 21 – 30 prescriptions were made by 18% of the respondents, 10% of the respondents made between 31 – 40 prescriptions and 8% made more than 40 prescriptions per day.



**Figure 4.3: Number of Daily Prescriptions Made by Respondents**

#### 4.2.7 Description of Respondent

From the analysis of the professional capacity of the respondents, it was observed that sixty three percent (63%) of the respondents were medical officers otherwise referred to a general practitioners, twenty percent (20%) were medical registrars in the process of specializing, thirteen percent (13%) were consultant specialists, and four percent (4%) were consultant sub-specialists.

**Table 4.6: Description of Respondents**

Respondent's Role	Frequency	Percent
Medical Officer	101	63
Registrar	32	20
Consultant Specialist	21	13

Consultant Sub Specialist	6	4
Total	160	100

### 4.3 Product Based Factors

#### 4.3.1 Descriptive Statistics of Product Based Factors

Table 4.5 below presents the descriptive statistics of product based factors that influence the choice of doctor's perception of medicine brands. According to the Table below, the mean, minimum and maximum ratings as well as the standard deviation are used to describe the product based factors that influence doctor's perception of medicine brands.

**Table 4.7: Descriptive Statistics of Product Based Factors**

Product Based Factors	N	Minimum	Maximum	Mean
Product brand image	160	1	5	3.71
Overall Quality of Product	160	2	5	4.40
Price of the Product	160	1	5	3.07
Safety of Product	160	2	5	4.37
Product Cost Effectiveness	160	2	5	4.39
Product Efficacy	160	2	5	4.53
Memorable Names	160	1	5	3.55
Product Samples	160	1	5	3.52
Packaging	160	1	7	3.42
Ease of Use and Administration	160	1	5	4.16
Product Shelf Life	160	1	5	3.77
Product Availability	160	1	5	4.27
Recognized by Authority	160	1	5	4.24
Newly Launched Class of Medicine	160	1	5	3.13
Scientific Literature	160	1	5	4.02
Brand Loyalty	160	1	5	3.09
Valid N (listwise)	160			

Based on the table 4.5 above, the most important product based factor that influenced the doctors perception towards medicine brands was product efficacy with a mean rating of 4.53 and a standard deviation of 0.644. The minimum and maximum ratings were 2 and 5

respectively. This findings shows that the efficacy of the product was the most important factor that influenced the doctor's perception towards medicine brands.

In addition, this study found that other very important factors that influenced the doctor's perception towards medicine brands were the overall quality of the product with a mean rating of 4.40 and a standard deviation of 0.695. The product cost effectiveness with preference for the most cost effective medicine brands had a strong influence on the doctor's perception towards medicine brand with a mean rating of 4.39 and a standard deviation of 0.692. The safety of the product including the side effects profile with a mean rating of 4.37 and a standard deviation 0.697, the product availability with preferences being for more readily available products with a mean rating of 4.27 and a standard deviation 0.775, the approval of the product by recognized authorities such as the FDA with a mean rating of 4.24 and a standard deviation of 0.916, the ease of use or administration of the product with a mean rating of 4.16 and a standard deviation of 0.917 and the availability of scientific literature regarding the product with a mean rating of 4.02 and a standard deviation of 0.865 were other very important factors that influenced the perception of doctors towards medicinal brand names.

Other important factors that influenced the doctors perceptions towards medicine brands included the product shelf life with preference for products with a long shelf life with a mean rating of 3.77 and a standard deviation of 1.059, product brand image with a mean rating of 3.71 and a standard deviation of 0.973, short and easy to remember names with a mean rating of 3.55 and a standard deviation of 1.181, the availability of product samples with a mean rating of 3.52 and a standard deviation of 1.252, and packaging in an attractive and safe packaging with a mean rating of 3.42 and a standard deviation of 1.173. Newly launched class of medicine with a mean rating of 3.13 and a standard deviation of 0.991, brand loyalty levels with a mean rating of 3.09 and a standard deviation of 1.129 and the price of the product with a mean rating of 3.07 and a standard deviation of 1.243 were other significant influencers of medicine brands by doctors.

Based on the data available, the most important product based factors that influenced the doctors perception towards medicine brands were: product efficacy, overall quality of the product, The product cost effectiveness with preference for the most cost effective medicine brands, safety of the product including the side effects profile, product

availability with preferences being for more readily available products, the approval of the product by recognized authorities such as the FDA, the ease of use or administration of the product, and the availability of scientific literature regarding the product.

Least important product based factors that influenced doctor's perception towards medicine brands were the product shelf life with preference for products with a long shelf life, product brand image, short and easy to remember names, the availability of product samples, packaging in an attractive and safe packaging, newly launched class of medicine, brand loyalty levels and price of the product.

Based on these findings of these study, it can be deduced that product quality and efficiency in providing medical solutions as well as the availability of supporting experience and information about the product were the most important product based factors that influenced the doctors perception towards medicine products as opposed to brand names, perceived loyalty or the price of the product.

### **4.3.2 Inferential Statistics of Product Based Factors**

Table 4.6 below presents the ANOVA analysis of the product based factors based on four major variables: Sector of work and Years of Experience.

#### **4.3.2.1 Sector of Work**

The sector of work was used as a factor to analyse the differences in perception of doctors towards various medicinal brands. Based on the findings of the ANOVA analysis, the recognition of the product by an approved recognized authority was the only variable that had significant differences in the perception of medicine brands by Doctors. This essential meant that the in some sectors doctors were keen on the recognition and authorization while in some it was not a factor. All other factors were not significant at 0.05 significance levels. This is presented in Table 4.6.

**Table 4.8: ANOVA Product Based Factors (Sector of Respondents)**

		ANOVA				
Product Based Factors		Sum of Squares	df	Mean Square	F	Sig.
Product brand image	Between Groups	2.188	5	.438	.449	.814
	Within Groups	146.248	150	.975		
	Total	148.436	155			
Overall Quality of Product	Between Groups	.859	5	.172	.347	.884
	Within Groups	74.289	150	.495		
	Total	75.147	155			
Price of the Product	Between Groups	11.662	5	2.332	1.565	.173
	Within Groups	225.026	151	1.490		
	Total	236.688	156			
Safety of Product	Between Groups	1.141	5	.228	.457	.807
	Within Groups	75.827	152	.499		
	Total	76.968	157			
Product Cost Effectiveness	Between Groups	1.828	5	.366	.755	.584
	Within Groups	73.621	152	.484		
	Total	75.449	157			
Product Efficacy	Between Groups	.759	5	.152	.356	.878
	Within Groups	64.299	151	.426		
	Total	65.057	156			
Rememberable Names	Between Groups	4.728	5	.946	.664	.651
	Within Groups	216.366	152	1.423		
	Total	221.095	157			
Product Samples	Between Groups	14.538	5	2.908	1.903	.097
	Within Groups	230.698	151	1.528		
	Total	245.236	156			
Packaging	Between Groups	1.283	5	.257	.180	.970
	Within Groups	216.977	152	1.427		
	Total	218.259	157			
Ease of Use and Administration	Between Groups	2.803	5	.561	.654	.659
	Within Groups	130.241	152	.857		
	Total	133.044	157			
Product Shelf Life	Between Groups	7.198	5	1.440	1.313	.261
	Within Groups	166.600	152	1.096		
	Total	173.797	157			
Product Availability	Between Groups	1.530	5	.306	.501	.775
	Within Groups	92.831	152	.611		
	Total	94.361	157			
Recognized by Authority	Between Groups	8.945	5	1.789	2.204	.050
	Within Groups	123.390	152	.812		
	Total	132.335	157			
Newly Launched Class of Medicine	Between Groups	.886	5	.177	.173	.972
	Within Groups	155.322	152	1.022		
	Total	156.209	157			
Scientific Literature	Between Groups	4.042	5	.808	1.088	.369
	Within Groups	112.952	152	.743		
	Total	116.994	157			
Brand Loyalty	Between Groups	3.245	5	.649	.494	.780
	Within Groups	199.515	152	1.313		
	Total	202.759	157			



#### **4.3.2.2 Years of Experience**

The years of experience was analyzed as a factor to analyze any significant differences. The years of experience was utilized as it would bring familiarity and experience amongst the medical practitioners. Based on the findings of this study, there was a significant difference in product cost effectiveness as a product based factor influencing doctors perception with an F value of 3.342 significant at 0.05 significance levels. In addition, the perceptions of product brand image differed across the years of experience of the medical practitioners with an F value of 3.592 significant at 0.05 levels. All other factors did not have any significant differences in the means. This is presented in Table 4.7.

**Table 4.9: ANOVA Product Based Factors (Years of Experience)**

Product Based Factors		Sum of Squares	df	Mean Square	F	Sig.
Product brand image	Between Groups	12.758	4	3.189	3.592	.008
	Within Groups	135.850	153	.888		
	Total	148.608	157			
Overall Quality of Product	Between Groups	2.502	4	.625	1.304	.271
	Within Groups	73.378	153	.480		
	Total	75.880	157			
Price of the Product	Between Groups	2.434	4	.609	.388	.817
	Within Groups	241.804	154	1.570		
	Total	244.239	158			
Safety of Product	Between Groups	1.213	4	.303	.618	.650
	Within Groups	76.030	155	.491		
	Total	77.244	159			
Product Cost Effectiveness	Between Groups	6.049	4	1.512	3.342	.012
	Within Groups	70.145	155	.453		
	Total	76.194	159			
Product Efficacy	Between Groups	1.948	4	.487	1.178	.323
	Within Groups	63.675	154	.413		
	Total	65.623	158			
Rememberable Names	Between Groups	5.189	4	1.297	.929	.449
	Within Groups	216.411	155	1.396		
	Total	221.600	159			
Product Samples	Between Groups	13.323	4	3.331	2.188	.073
	Within Groups	234.387	154	1.522		
	Total	247.711	158			
Packaging	Between Groups	5.796	4	1.449	1.054	.381
	Within Groups	213.147	155	1.375		
	Total	218.944	159			
Ease of Use and Administration	Between Groups	5.118	4	1.279	1.541	.193
	Within Groups	128.657	155	.830		
	Total	133.775	159			
Product Shelf Life	Between Groups	1.541	4	.385	.337	.852
	Within Groups	176.903	155	1.141		
	Total	178.444	159			
Product Availability	Between Groups	.168	4	.042	.068	.991
	Within Groups	95.276	155	.615		
	Total	95.444	159			
Recognized by Authority	Between Groups	6.619	4	1.655	2.021	.094
	Within Groups	126.875	155	.819		
	Total	133.494	159			
Newly Launched Class of Medicine	Between Groups	5.131	4	1.283	1.316	.267
	Within Groups	151.113	155	.975		
	Total	156.244	159			
Scientific Literature	Between Groups	5.786	4	1.446	1.981	.100
	Within Groups	113.158	155	.730		
	Total	118.944	159			
Brand Loyalty	Between Groups	2.548	4	.637	.493	.741
	Within Groups	200.227	155	1.292		
	Total	202.775	159			

## **4.4 Organization Factors**

### **4.4.1 Descriptive Statistics of Organization Factors**

Table 4.9 below presents the descriptive statistics of organization factors and their influence on doctors' perception towards medicine brands. The table shows that the most important organization factors that influenced doctors' perception towards brands were: the availability of guidelines for product use with a mean rating of 4.28 and a standard deviation of 0.834. In addition, the institutional standard treatment guidelines with a mean rating of 4.24 and a standard deviation of 0.794 was an important factor. Other important factors were the inclusion of the product in the institutional formulary list with a mean rating of 4.16 and a standard deviation of 0.838; parents social economic situation with a mean rating of 4.24 and a standard deviation of 0.873, availability of information on medical education activities with a mean rating of 4.16 and a standard deviation of 0.858, manufacturer credibility with a mean rating of 4.15 and a standard deviation of 0.906 and recommendation by opinion leaders with a mean rating of 4.14 and a standard deviation of 1.019.

Other important organization factors that influenced the doctors perception on medicine brands were feedback on prescribing practices with a mean rating of 3.99, availability of patient education materials with a mean rating of 3.81, interaction with medical representatives with a mean rating of 3.73, requirements of payers with a mean rating of 3.48, credibility of local distributors and manufacturers with a mean rating of 3.46, availability of information online with a mean rating of 3.4 and support offered by manufacturers with a mean rating of 3.3. The direct advertising of the product to the consumers with a mean rating of 3.18 was also an important factor that influenced the doctor's perception towards the medicine brands available to them. The provision of a bonus scheme was not an important factor that influenced the doctor's perception towards a medicine brand with a mean rating of 2.89.

This study therefore finds that the most important organization factors that influenced doctor's perception towards specific medicine brands were; the availability of guidelines for product use, the institutional standard treatment guidelines, inclusion of the product in the institutional formulary list, parents social economic situation, availability of

information on medical education activities, manufacturer credibility and recommendation by opinion leaders.

Other important organization factors that influenced the doctors perception on medicine brands were feedback on prescribing practices, availability of patient education materials, interaction with medical representative, requirements of payers, credibility of local distributors and manufacturers, availability of information online, support offered by manufacturers and direct advertising of the product to the consumers. The data is presented in Table 4.8

**Table 4.10: Descriptive Statistic for Organization Factors**

Organizational Factors	Mean	Std. Deviation
Institutional Standard Treatment	4.24	.794
Direct Advertising of Products	3.18	1.002
Local Distributor Credibility	3.46	.990
Institutional Formulary List Inclusion	4.16	.838
Guideline Information	4.28	.834
Manufacturer Credibility	4.15	.906
Feedback on Prescribing Practices	3.99	.942
Availability of Patient Education Materials	3.81	1.004
Recommendation by Opinion Leaders	4.14	1.019
Patients Socio Economic Situation	4.18	.873
Bonus Scheme	2.89	1.308
Support by Manufacturers	3.30	1.220
Information availability	3.40	1.047
Information on Medical Education Activities	4.16	.858
Interaction with Medical Representatives	3.73	.861
Requirement of Payers	3.48	4.900
Valid N (listwise)		

#### 4.4.2 Inferential Statistics of Product Based Factors

This section presents the inferential statistics ANOVA analysis based on sector of work and years of experience.

##### 4.4.2.1 Sector of Work

The sector of work caused significant differences in the perception of doctors in relation to the institutional standard treatment with an F value of 2.772 significant at 0.05

significance levels. This was also similar in the feedback on prescribing practices with an F value of 2.382 significant at 0.05 significance levels. Recommendations by opinion leads with an F value of 2.987 had also significant differences amongst doctor's perception. This implies that the sector of work caused significant differences in the perception of doctors towards brands in relation to institutional standard treatment, feedback on prescribing practices and Recommendations by opinion leads. The analysis is presented in Table 4.9

**Table 4.11: ANOVA Organization Factors (Sector of Work)**

		Sum of Squares	df	Mean Square	F	Sig.
Institutional Standard Treatment	Between Groups	6.681	4	1.670	2.772	.029
	Within Groups	92.180	153	.602		
	Total	98.861	157			
Direct Advertising of Products	Between Groups	1.028	4	.257	.251	.909
	Within Groups	158.715	155	1.024		
	Total	159.744	159			
Local Distributor Credibility	Between Groups	8.214	4	2.054	2.157	.076
	Within Groups	147.561	155	.952		
	Total	155.775	159			
Institutional Formulary List Inclusion	Between Groups	4.634	4	1.158	1.676	.158
	Within Groups	106.436	154	.691		
	Total	111.069	158			
Guideline Information	Between Groups	4.786	4	1.196	1.754	.141
	Within Groups	105.038	154	.682		
	Total	109.824	158			
Manufacturer Credibility	Between Groups	2.545	4	.636	.771	.545
	Within Groups	127.855	155	.825		
	Total	130.400	159			
Feedback on Prescribing Practices	Between Groups	8.166	4	2.041	2.382	.050
	Within Groups	132.828	155	.857		
	Total	140.994	159			
Availability of Patient Education Materials	Between Groups	7.026	4	1.757	1.775	.137
	Within Groups	153.349	155	.989		
	Total	160.375	159			
Recommendation by Opinion Leaders	Between Groups	11.808	4	2.952	2.987	.021
	Within Groups	153.167	155	.988		
	Total	164.975	159			
Bonus Scheme	Between Groups	3.231	4	.808	.466	.761
	Within Groups	268.744	155	1.734		
	Total	271.975	159			
Support by Manufacturers	Between Groups	.924	4	.231	.152	.962
	Within Groups	234.183	154	1.521		
	Total	235.107	158			
Information availability	Between Groups	2.417	4	.604	.545	.703
	Within Groups	171.983	155	1.110		
	Total	174.400	159			
Information on Medical Education Activities	Between Groups	11.922	4	2.981	4.393	.002
	Within Groups	105.171	155	.679		
	Total	117.094	159			
Interaction with Medical Representatives	Between Groups	3.203	4	.801	1.082	.367
	Within Groups	114.697	155	.740		
	Total	117.900	159			
Requirement of Payers	Between Groups	23.547	4	5.887	.240	.915
	Within Groups	3794.397	155	24.480		

Total	3817.944	159		
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#### 4.4.2.2 Years of Experience

Direct advertising had significant differences with an F value of 2.753 significant at 0.05 significance levels. Availability of patient education materials had also significant differences with an F value of 2.560 significant at 0.05 significance levels. Availability of information with an F value of 2.442, information on medical education activities with an F value of 2.485 and interaction with medical representatives had significant differences across various years of experience. This indicates that the years of experience influenced organization factors such as direct advertising to customers, availability of patient education materials, and availability of information online and on medical education activities as well as interaction with medical representatives. These therefore implies that in the relationship between doctors perception towards brands and organization factors it is key to take into consideration factors such as direct advertising to customers, availability of patient education materials, and availability of information online and on medical education activities as well as interaction with medical representatives. This is presented in Table 4.10

**Table 4.10: ANOVA Organization Factors (Year of Experience)**

		Sum of Squares	df	Mean Square	F	Sig.
Institutional Standard Treatment	Between Groups	5.334	5	1.067	1.713	.135
	Within Groups	93.410	150	.623		
	Total	98.744	155			
Direct Advertising of Products	Between Groups	13.260	5	2.652	2.753	.021
	Within Groups	146.418	152	.963		
	Total	159.677	157			
Local Distributor Credibility	Between Groups	9.971	5	1.994	2.085	.070
	Within Groups	145.371	152	.956		
	Total	155.342	157			
Institutional Formulary List Inclusion	Between Groups	4.185	5	.837	1.191	.316
	Within Groups	106.146	151	.703		
	Total	110.331	156			
Guideline Information	Between Groups	6.647	5	1.329	1.948	.090
	Within Groups	103.022	151	.682		
	Total	109.669	156			
Manufacturer Credibility	Between Groups	.812	5	.162	.190	.966
	Within Groups	129.543	152	.852		
	Total	130.354	157			
Feedback on Prescribing Practices	Between Groups	2.521	5	.504	.554	.735
	Within Groups	138.472	152	.911		
	Total	140.994	157			
Availability of Patient Education Materials	Between Groups	12.353	5	2.471	2.560	.030
	Within Groups	146.685	152	.965		
	Total	159.038	157			
Recommendation by Opinion Leaders	Between Groups	6.895	5	1.379	1.326	.256
	Within Groups	158.041	152	1.040		
	Total	164.937	157			
Patients Socio Economic Situation	Between Groups	5.346	5	1.069	1.405	.226
	Within Groups	115.692	152	.761		
	Total	121.038	157			
Bonus Scheme	Between Groups	9.504	5	1.901	1.104	.361
	Within Groups	261.667	152	1.721		
	Total	271.171	157			
Support by Manufacturers	Between Groups	10.821	5	2.164	1.464	.205
	Within Groups	223.281	151	1.479		
	Total	234.102	156			
Information availability	Between Groups	12.807	5	2.561	2.442	.037
	Within Groups	159.453	152	1.049		
	Total	172.259	157			
Information on Medical Education Activities	Between Groups	8.740	5	1.748	2.485	.034
	Within Groups	106.912	152	.703		
	Total	115.652	157			
Interaction with Medical Representatives	Between Groups	9.190	5	1.838	2.573	.029
	Within Groups	108.557	152	.714		
	Total	117.747	157			
Requirement of Payers	Between Groups	56.409	5	11.282	.456	.808
	Within Groups	3756.864	152	24.716		
	Total	3813.272	157			

## 4.5 Personal Characteristics

### 4.5.1 Descriptive Statistics on Personal Characteristics

This section presents the descriptive statistics on personal characteristics influencing the Doctors perception towards medicine brands. According to this study the most important

personal factors that influenced perception towards medicine brands were knowledge of medicine with a mean rating of 8.85, doctors decision making with a mean rating of 8.16, prior positive experience with a mean rating of 8.06, others use experience with a mean rating of 7.76, core products use with a mean rating of 7.44 and presentation of a given brand with a mean rating of 7.31.

The personal factors that had an average importance to the brands perception by doctors were the use of approved medicine brands with a mean rating of 6.94, use of brand names with a mean rating of 6.77, use of chemical names with a mean rating of 6.54, inferiority of generic medicines with a mean rating of 5.68 and preference of new medicines as being better with a mean rating of 5.09 respectively.

These findings imply that the most important personal factors that influenced doctor's prescriptions of various brands of medicines were knowledge of the medicine, the personal doctor's decision, prior positive experience, core products use, other users experience and presentation of the given brand. Other mildly important factors that influenced the doctor's prescription of medicine brands were use of approved medicine brands, use of brand name, use of chemical name, type of medicine whether generic and the age or relative newness of the medicine.

**Table 4.12: Descriptive Statistics (Personal Characteristics) of Respondents**

	Mean	Std. Deviation
Inferiority of Generic Medicines	5.68	2.827
Use of Approved Medicine Brands	6.94	2.501
Knowledge of Medicine	8.85	1.337
Doctors Decision Making	8.16	2.064
New Medicines are Better	5.09	2.890
Core Products Use	7.44	2.490
Use of Brand Name	6.77	3.090
Use of Chemical Name	6.54	3.047
Prior Positive Experience	8.06	1.844
Others Use Experience	7.76	1.973
Presentation of a Given Brand	7.31	7.097



## 4.5.2 Inferential Statistics on Personal Characteristics

This section presents the inferential statistics on personal characteristics based on sector of work and years of experience.

### 4.5.2.1 Sector of Work

Personal characteristics grouped based on the sector of work shows that the use of the chemical name was the only significant different group with an F value of 5.499 significant at 0.05 significance levels. All other variables did not have significant differences as a consequence of sector of work of the respondents. This is presented in Table 4.12.

**Table 4.13: ANOVA Personal Characteristics (Sector of Work)**

		Sum of Squares	df	Mean Square	F	Sig.
Inferiority of Generic Medicines	Between Groups	15.354	4	3.839	.474	.755
	Within Groups	1255.746	155	8.102		
	Total	1271.100	159			
Use of Approved Medicine Brands	Between Groups	17.851	4	4.463	.708	.588
	Within Groups	970.639	154	6.303		
	Total	988.491	158			
Knowledge of Medicine	Between Groups	3.632	4	.908	.501	.735
	Within Groups	280.768	155	1.811		
	Total	284.400	159			
Doctors Decision Making	Between Groups	25.467	4	6.367	1.514	.201
	Within Groups	651.626	155	4.204		
	Total	677.094	159			
New Medicines are Better	Between Groups	11.998	4	2.999	.353	.841
	Within Groups	1307.587	154	8.491		
	Total	1319.585	158			
Core Products Use	Between Groups	23.843	4	5.961	.961	.431
	Within Groups	961.837	155	6.205		
	Total	985.679	159			
Use of Brand Name	Between Groups	49.678	4	12.419	1.311	.268
	Within Groups	1468.718	155	9.476		
	Total	1518.396	159			
Use of Chemical Name	Between Groups	183.486	4	45.871	5.499	.000
	Within Groups	1292.976	155	8.342		
	Total	1476.462	159			
Prior Positive Experience	Between Groups	16.755	4	4.189	1.239	.297
	Within Groups	517.189	153	3.380		
	Total	533.945	157			
Others Use Experience	Between Groups	14.184	4	3.546	.909	.460
	Within Groups	604.493	155	3.900		
	Total	618.677	159			
Presentation of a Given	Between Groups	29.611	4	7.403	.144	.965

Brand	Within Groups	7978.581	155	51.475		
	Total	8008.191	159			

#### 4.5.2.2 Years of Experience

The years of experience was analyzed as a differentiating factor in the analysis of personal factors influencing the perception of the doctor towards a brand. The only significant differentiating variable was the use of the chemical name with an F value of 2.329.

These findings therefore imply that the use of a chemical name caused differences in the perception of medicine brands amongst doctors for different sectors of operation or differing years of experience. Consequently, the chemical name plays an important role in informing personal inclinations towards doctor's perception on medicine brand names. This is summarized in Table 4.13

**Table 4.13: ANOVA Personal Characteristics (Years of Experience)**

		Sum of Squares	df	Mean Square	F	Sig.
Inferiority of Generic Medicines	Between Groups	35.609	5	7.122	.877	.498
	Within Groups	1234.568	152	8.122		
	Total	1270.177	157			
Use of Approved Medicine Brands	Between Groups	47.133	5	9.427	1.580	.169
	Within Groups	900.867	151	5.966		
	Total	948.000	156			
Knowledge of Medicine	Between Groups	15.147	5	3.029	1.710	.135
	Within Groups	269.207	152	1.771		
	Total	284.354	157			
Doctors Decision Making	Between Groups	7.314	5	1.463	.334	.892
	Within Groups	666.338	152	4.384		
	Total	673.652	157			
New Medicines are Better	Between Groups	44.239	5	8.848	1.052	.389
	Within Groups	1269.697	151	8.409		
	Total	1313.936	156			
Core Products Use	Between Groups	16.422	5	3.284	.516	.764
	Within Groups	966.616	152	6.359		
	Total	983.038	157			
Use of Brand Name	Between Groups	37.673	5	7.535	.774	.570
	Within Groups	1479.508	152	9.734		
	Total	1517.181	157			
Use of Chemical Name	Between Groups	103.357	5	20.671	2.329	.045
	Within Groups	1348.812	152	8.874		
	Total	1452.169	157			
Prior Positive Experience	Between Groups	20.234	5	4.047	1.190	.317
	Within Groups	509.905	150	3.399		
	Total	530.139	155			
Others Use Experience	Between Groups	1.858	5	.372	.092	.993

Presentation of a Given Brand	Within Groups	613.646	152	4.037	.459	.806
	Total	615.504	157			
	Between Groups	118.926	5	23.785		
	Within Groups	7882.124	152	51.856		
	Total	8001.050	157			

#### 4.5.2.3 Regression Analysis

The regression model summary table above shows the model strength in prediction. Based on the R square, 0.439 it is imperative to conclude that the prescription decision made by the Doctors could be attributed 32% to the personal characteristics, organization and product based factors. The Adjusted R Square on the other hand, a refined measure of the R square shows that the independent variables caused a 32% change in the dependent variable. Consequently, personal factors, organization and product factors contributed 32% to the prescription decision of the doctor.

**Table 4.14: Regression Analysis Model Summary**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.597 <sup>a</sup>	.439	.320	.685	.439	2.065	3	154	.107

a. Predictors: (Constant), Personal Characteristics, Product Factors, Organization Factors

**Table 4.15: Model Coefficients**

**Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.323	.593		2.233	.027
	Product Factors	.412	.182	.211	2.266	.025
	Organization Factors	-.080	.110	-.068	-.727	.468
	Personal Characteristics	-.063	.046	-.113	-1.355	.077

a. Dependent Variable: Prescription

The model coefficients table above shows the direction and relationship between the dependent and independent variables. The table shows whether the independent variables of personal factors, product factors and organization factors have a significant effect on the prescription of the doctor. The study found that product factors had a positive relationship of 0.412 with the prescription of drugs to patients by doctors which was significant at 0.05 significance levels. Similarly personal characteristics had a negative relationship -0.063 with the prescription decision of the doctors significant at 0.05 significance levels.

Organization factors had a negative relationship to the prescription decision of the doctor although this relationship was not significant at 0.05 significance levels. Consequently, product factors had the largest positive effect on the doctor's perception towards a brand and thus prescribe the same to a patient.

#### **4.6 Chapter Summary**

In this chapter, the study findings were presented in line with the study questions, based on data collected and analysed using SPSS vs 22. The findings are presented using tables and figures for ease of interpretation and presented in relation to the research objectives set out. The survey response rate was 58.8%. The majority of the respondents worked in urban areas, 48.1% within cities and 33.8% within towns, while 18.1% worked in rural areas. The most important product based factor that influenced the healthcare workers perception of medicine brands was efficacy with mean rating of 4.53% and a standard deviation of 0.644. The most important organizational factors that influenced the healthcare workers perception of medicine brands were: the availability of guidelines for the product use with a mean rating of 4.28; the institutional standard treatment guidelines with a mean rating of 4.24; and the patients' socioeconomic situation with a mean rating of 4.18.

From the correlation analysis, it was noted that product factors had a positive and significant correlation with the healthcare workers perception of medicine brand while Personal characteristics were found to have a negative and significant correlation while organizational factors were found to have a negative but insignificant correlation with the healthcare workers perception of medicine brand. From the regression analysis it was

found that personal factors, organizational factors, and product factors combined accounted for 32% of the healthcare workers perception of medicine brands.

Chapter five below provides discussion, conclusion and recommendations of the study.

## **CHAPTER FIVE**

### **5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

Chapter five presents the summary of findings of the study, key discussion of the findings, conclusions of the study and recommendations of the study. The recommendations of the study include recommendations for improvement and further studies.

#### **5.2 Summary**

This study sought to evaluate the factors that influenced the healthcare workers perception towards medicine brand. The specific objectives of the study were to evaluate the personal characteristics that influenced health care workers perception of medicine brands, to evaluate the product based factors that influenced health care workers perception to medicine brands and evaluate the organization factors influencing health care workers perception towards medicine brands.

The study was conducted using a descriptive research design drawing its population from physicians in Nairobi County. There were a total of 1568 doctors working in Nairobi representing 25% of 6,271 Doctors in Kenya (World Bank, 2015). Using stratified random sampling technique a total of 278 respondents were selected for inclusion in the study. Data collected for the study using questionnaires was analyzed using SPSS vs 22 for descriptive measures of means, minimums, maximums and frequency distributions. ANOVA was used to analyze the data for relationships. Data was presented using tables, and figures.

The study found that the most important product based factors that influenced the doctors perception towards medicine brands were: product efficacy, overall quality of the

product, The product cost effectiveness with preference for the most cost effective medicine brands, safety of the product including the side effects profile, product availability with preferences being for more readily available products, the approval of the product by recognized authorities such as the FDA, the ease of use or administration of the product, and the availability of scientific literature regarding the product. Product factors had a positive significant effect on doctors' attitude towards a medicine brand.

Secondly, the most important organization factors that influenced doctor's perception towards specific medicine brands were; the availability of guidelines for product use, the institutional standard treatment guidelines, inclusion of the product in the institutional formulary list, parents social economic situation, availability of information on medical education activities, manufacturer credibility and recommendation by opinion leaders. There was no significant relationship between organization factors and brand attitude of doctors towards medicine brands.

Finally, most important personal factors that influenced doctor's prescriptions of various brands of medicines were knowledge of the medicine, the personal doctor's decision, prior positive experience, core products use, other users experience and presentation of the given brand. Other mildly important factors that influenced the doctor's prescription of medicine brands were use of approved medicine brands, use of brand name, use of chemical name, type of medicine whether generic and the age or relative newness of the medicine. Personal factors had a negative significant relationship with the brand attitude towards medicine brands by doctors.

## **5.3 Discussion**

### **5.3.1 Product Based Factors**

Medicines have different attributes that would individually or collectively act as factors to differentiate them from other products. The influence of some of these attributes on physicians' perception are discussed in this section.

Based on the findings of this study, the most important product based factors that influenced the doctors perception towards medicine brands were: product efficacy, overall quality of the product, The product cost effectiveness with preference for the most

cost effective medicine brands, safety of the product including the side effects profile, product availability with preferences being for more readily available products, the approval of the product by recognized authorities such as the FDA, the ease of use or administration of the product, and the availability of scientific literature regarding the product.

Least important product based factors that influenced doctor's perception towards medicine brands were the product shelf life with preference for products with a long shelf life, product brand image, short and easy to remember names, the availability of product samples, packaging in an attractive and safe packaging, newly launched class of medicine, brand loyalty levels and price of the product.

Based on these findings of these study, it can be deduced that product quality and efficiency in providing medical solutions as well as the availability of supporting experience and information about the product were the most important product based factors that influenced the doctors perception towards medicine products as opposed to brand names, perceived loyalty or the price of the product.

Similar to the findings of this study, Alex and Thomas (2015), in their study in India, concluded that product quality had a positive impact on perceived value. Similarly, Hussain et al., (2016) found out that in Pakistan, that product quality had a positive influence on perception and loyalty to a pharmaceutical brand. physicians are more concerned with the core attributes like side effects, appropriateness and ease of use of the product name, potency of the product, and shelf-life, product use convenience, in addition to the basic qualities like packaging, (Inamdar and Kolhatkar, 2012).

Some findings of this study are contrary to the findings of Ahmed et al., (2013) who found that of all the product attributes, brand image has been shown to have a big and perhaps greatest impact on physician's perception of the product. In most studies it has been demonstrated that a good brand image had a positive influence on physician's perception of the products in question with a few studies reporting that the brand does not have an impact (Parihar 2012, Murshid, Mohaidin and Nee, 2016). An exploratory study in Bangladesh found out that physicians attributed quality to the products brand and further attributed the product manufacturer with the brand quality. In the study brands

manufactured by multi-national companies were perceived to be better than locally manufactured brands, (Ahmed et al., 2013). The connection between brand image, brand affect, and brand trust has been studied with findings that the three brand attributes had a positive influence on brand perception, ultimate use, and loyalty, (Prajapati et al., 2017, Anwar et al., 2011).

These differences in the findings of this study and those of the scholars cited above could be attributed to the differences in the market and pharmaceutical sectors in the differing countries. While the pharmaceutical sector in Kenya is mainly dependent on imports and very minimal local production, countries such as India, USA and European countries are local manufactured oriented and thus brand image matters.

Physicians are concerned with medicine prices with the cost-effectiveness of use of a particular product shaping how they perceive and use it (Inamdar & Kolhatkar, 2012). In this study, price was the least important factor that physicians and medical practitioners considered when making a prescription.

### **5.3.2 Organizational Factors**

Drug information provision to healthcare workers within a given environment shapes their perception of medicine brands. This has been the case in the initial resistance and eventual change to use generic brands of medicines in a number of organizations thanks mainly to persistent information sharing on the medicine brands, (Tsaprantzi et al., 2016). Environments with higher penetration of medicines information like the United States of America have the highest percentage of generic brands utilization (PHRMA, 2008).

This study found that the most important organization factors that influenced doctor's perception towards specific medicine brands were; the availability of guidelines for product use, the institutional standard treatment guidelines, inclusion of the product in the institutional formulary list, patients' social economic situation, availability of information on medical education activities, manufacturer credibility and recommendation by opinion leaders.

Environments with higher penetration of medicines information like the United States of America have the highest percentage of generic brands utilization (PHRMA, 2008). They



key role that medicines information provision plays includes providing scientific and non-marketing information about medicine brands as well as busting myths that may exist around using certain brands, (Tsaprantzi et al., 2016)

Some organizations develop and implement practice guideline which influence perception and use of pharmaceutical products, (Prosser, Almond and Walley, 2003). Some organizations have also instituted formulary lists which condition healthcare to use certain products and in the process mold the healthcare workers perception of such brands (Schumock et al., 2004).

Similar to the findings of this study, Kasliwal (2013) found that the inherent hierarchical relationships between senior and junior healthcare workers within the same professions often creates key opinion leaders amongst the more experienced and senior professionals. Such key opinion leaders within organizations directly or indirectly influence the perceptions of other healthcare works about medicine brands, with the junior practitioners more often than not follow what the senior do.

Other important organization factors that influenced the doctors perception on medicine brands were feedback on prescribing practices, availability of patient education materials, interaction with medical representative, requirements of payers, credibility of local distributors and manufacturers, availability of information online, support offered by manufacturers and direct advertising of the product to the consumers.

Similar to the findings of this study, Medicine detailing by medical representatives is probably the mainstay of medicines promotion throughout the world (Ibrahim and Bélanger, 2015). Moreover medical or pharmaceutical representatives have been shown to have a significant impact in shaping healthcare workers' perception of medicine brands, (Ibrahim and Bélanger, 2015; Hussain et al., 2016; Goyal and Pranav, 2013; Prosser, Almond and Walley, 2003; Watkins et al., 2003). In Ethiopia for example nearly half of the physicians sampled in one study reported that medical representatives influenced their perception and eventual use of medicine brands. (Alex and Thomas, 2015). In Pakistan, the role of pharmaceutical representatives has been shown to go beyond perception creation to influencing actual use and ultimately leading to loyalty of specific brands (Hussain et al., 2016)

### 5.3.3 Personal Characteristics

The physicians' personal views, attitudes, biases, and other influences leading to specific perceptions of brands will affect the ultimate choice (Dunne et al., 2014). A number of physician's personal attributes or characteristics have been shown to influence the physician's perception of medicine brands, (Kasliwal, 2013, Gevorgyan, 2011, Tahmasebia and Kebriaeezadeh, 2015).

These findings are validated by the findings of this study which found a negative significant relationship between the personal characteristics and the brand attitude of doctors and the decision to prescribe the medicine brand.

This study found that the most important personal factors that influenced doctor's prescriptions of various brands of medicines were knowledge of the medicine, the personal doctor's decision, prior positive experience, core products use, other users experience and presentation of the given brand. Other mildly important factors that influenced the doctor's prescription of medicine brands were use of approved medicine brands, use of brand name, use of chemical name, type of medicine whether generic and the age or relative newness of the medicine.

These findings are validated by the findings of PHRMA (2008), Gevorgyan (2011), Hassali et al., (2014) and Gupta et al., (2015) who found that The physicians' individual knowledge has been demonstrated to have a big influence of medicines brand perception. Accurate and affirmative knowledge regarding brands has been shown to lead to a positive perception and ultimate use of certain brands while inaccurate knowledge and misinformation has been demonstrated to lead to the opposite view and actions. Improving and or correcting knowledge gaps has been shown to enhance perception of medicines (Hassali et al., 2014) in Malaysia. In a big study in America, the physician's level of clinical knowledge, not necessarily product knowledge was reported to have a big influence on their perception of brands and decisions to use, (PHRMA, 2008).

Furthermore, in support of the findings of this study Ahmed et al., (2013) found that Physicians' individual habits formed from previous interaction have been demonstrated to have an impact on their ongoing perception and continued use of particular brands,

(Ahmed et al., 2013). The perception of certain brands may be not just as a result of previous use of such brands but as well an extended positive view of brands by a particular manufacturer whose other products the physician has used, (Ahmed et al., 2013). In view of the likely complex decision making process of selecting a product to prescribe, it has been shown that some physicians are strongly influenced by habit persistence in their choice of medicines and brands, (Murshid, Mohaidin and Nee, 2016).

Furthermore, the study found that the use of a chemical name caused differences in the perception of medicine brands amongst doctors for different sectors of operation or differing years of experience. Consequently, the chemical name plays an important role in informing personal inclinations towards doctor's perception on medicine brand names. This differs with the findings that Physician's perception of and influence on ultimate use of specific medicines, and use of specific brands has been shown to vary with the length of experience (Murshid, Mohaidin and Nee, 2016)

A study in Serbia indicated that the more experienced physicians were influenced differently as compared to less experienced physicians. Whereas the more experienced physicians considered a variety of contextual issues around using particular products, the less experienced physicians focused on the core factors of a given product, (Dorđević and Janković, 2006). In the same study it was also found that the more experienced physicians were less likely to use additional products compared to less experienced physicians. In this study the length of experience was found not to have any significant differences. These differences in the findings could be attributed to the scarcity of doctors in Kenya as compared to countries in India. In Kenya one doctor could serve in more than 5 hospitals which could not be the case in India.

## **5.4 Conclusions**

### **5.4.1 Product Based Factors**

This study concluded that product based factors had a positive significant influence on the medical practitioners perception towards medicine brands. In addition, this study concluded that the most important product based factors influencing that influenced the doctors perception towards medicine brands were: product efficacy, overall quality of the product, The product cost effectiveness with preference for the most cost effective

medicine brands, safety of the product including the side effects profile, product availability with preferences being for more readily available products, the approval of the product by recognized authorities such as the FDA, the ease of use or administration of the product, and the availability of scientific literature regarding the product.

#### **5.4.2 Organizational Factors**

Organization factors did not have any significant effect on the medical practitioner's perception towards medicine brands. However, this study concludes that, the most important organization factors that influenced doctor's perception towards specific medicine brands were; the availability of guidelines for product use, the institutional standard treatment guidelines, inclusion of the product in the institutional formulary list, parents social economic situation, availability of information on medical education activities, manufacturer credibility and recommendation by opinion leaders.

#### **5.4.3 Personal Characteristics**

Personal characteristics had a negative significant relationship with medical practitioner's perception towards medicine brands. The most important personal factors that influenced doctor's prescriptions of various brands of medicines were knowledge of the medicine, the personal doctor's decision, prior positive experience, core products use, other users experience and presentation of the given brand. Other mildly important factors that influenced the doctor's prescription of medicine brands were use of approved medicine brands, use of brand name, use of chemical name, type of medicine whether generic and the age or relative newness of the medicine.

### **5.5 Recommendations**

#### **5.5.1 Recommendations for Improvement**

##### **5.5.1.1 Product Based Factors**

Based on the findings of this study, this study recommends that medicine brand producers and manufacturers should focus on the efficacy of the products, overall quality of products and the cost effectiveness of the products in providing medical solutions to enhance positive perceptions by medical practitioners. Furthermore, to enhance positive

perceptions by medical practitioner's manufacturers of medicines must focus on ease of use and provision of information about the products.

#### **5.5.1.2 Organizational Factors**

Organization factors are not significantly useful in enhancing positive perceptions by medical practitioners. Nevertheless, it is key for manufacturers to focus on chemical names of medicines to promote positive perceptions amongst the brands. Chemical names was the single most differentiating attribute of the organization factors.

#### **5.5.1.3 Personal Characteristics**

Personal characteristics are innate to the individual medical practitioner. Nevertheless, to promote positive perceptions of medicine brands by medical representatives and sales agents must focus on promoting use of products through free samples and success stories, present the brand in an attractive package and promote information and literature on the medicine amongst the doctors for knowledge building which is vital. Education awareness on medicine brands is very vital.

#### **5.5.2 Recommendations for Further Studies**

This study recommends further studies to explore the factors promoting using of medicine brands amongst consumers. While this study finds that price and place as marketing mix alternatives are not key for Doctors, could the same be the case for consumers? These are the questions that the study could address.

Secondly, this study makes recommendations for further studies to explore the nexus between knowledge of medical products by medical representatives, knowledge sharing with doctors and the effect it has on the use of the medicine brands. This is based on the findings of the study that information and knowledge on medicines is a key driver of perception amongst doctors.

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## APPENDIX I: QUESTIONNAIRE

### FACTORS THAT INFLUENCE HEALTHCARE WORKERS PERCEPTION OF MEDICINE BRANDS

#### PART A RESPONDENT DETAILS

**Tick the option that most appropriately applies to you. Select only one option.**

1. Which of the below describes the sector in which you currently work?

- 1) Public sector
- 2) Private sector (not-for-profit organization)
- 3) Private sector ( for profit organization)
- 4) Faith based organization
- 5) Private (fully self-employed)

2. Which of the following best describes your current work station?

- 1) Urban (within a city)
- 2) Urban ( within a town)
- 3) Rural

3. For how long have you practiced since you graduated as a doctor?

- 1) Less than 5 years
- 2) 6 to 10 years
- 3) 11 to 20 years
- 4) 21 to 30 years
- 5) Over 30 years

4. Select your gender below?

- 1) Male
- 2) Female

5. How many times do you interact with medical representatives in a month?

- 1) Zero to one times
- 2) Two to five times
- 3) More than five time

6. How many prescriptions do you write per day?

- 1) Less than 10
- 2) 11 to 20
- 3) 21 to 30
- 4) 31 to 40
- 5) More than 40

7. Which of the following best describes you?

- 1) Medical Officer
- 2) Registrar
- 3) Consultant specialist
- 4) Consultant sub-specialist

## PART B PRODUCT BASED FACTORS

**Directions:** In this section are product factors that are likely to influence doctors' perception of medicine brands. Please tick any number between 1 and 5 to indicate how each factor has influenced your perception of medicine brands. Ticking 5 means you strongly agree the specific factor has influenced your perception while ticking 1 means that you strongly disagree. Please tick only one number.

Scale 5 = Strongly Agree; 1 = Strongly Disagree

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
P1. The strength of the product brand image	5	4	3	2	1
P2. The overall quality of the product	5	4	3	2	1
P3. The price of the product with preference being for the more expensive	5	4	3	2	1
P4. The safety of the product including the side effects profile	5	4	3	2	1
P5. The cost-effectiveness of the product with preference for the most cost-effective	5	4	3	2	1
P6. The efficacy of the product	5	4	3	2	1
P7. Short and easy to remember names	5	4	3	2	1
P8. Availability of product samples	5	4	3	2	1
P9. Attractive and safe packaging	5	4	3	2	1
P10. Ease of use or administration of the product	5	4	3	2	1
P11. Product shelf life with preference for products with long shelf life ( long expiry)	5	4	3	2	1
P12. Product availability with preference being for more readily available products	5	4	3	2	1
P13. If the product is approved by a recognized authority like the FDA	5	4	3	2	1
P14. Newly launched class of medicine	5	4	3	2	1
P15. Availability of scientific literature regarding the product	5	4	3	2	1
P16. Loyalty to a given brand	5	4	3	2	1



## PART C ORGANIZATIONAL FACTORS

**Directions:** In this section are organizational factors that are likely to influence doctors' perception of medicine brands. Please tick any number between 1 and 5 to indicate how each factor has influenced your perception of medicine brands. Ticking 5 means you strongly agree the specific factor has influenced your perception while ticking 1 means that you strongly disagree. Please tick only one number.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
E1. Institutional standard treatment guidelines	5	4	3	2	1
E2. Direct advertising of the product to customers (the public)	5	4	3	2	1
E3. The credibility of the local distributor of the product	5	4	3	2	1
E4. Inclusion of the product in institutional formulary lists	5	4	3	2	1
E5. Availability of information use guidelines for product use	5	4	3	2	1
E6. The credibility of the product manufacturer	5	4	3	2	1
E7. Feedback about prescribing practices	5	4	3	2	1
E8. Availability of patient education materials for the product	5	4	3	2	1
E9. Recommendation by key opinion leaders including peers, senior colleagues, and specialists in the specific specialty	5	4	3	2	1
E10. The socio-economic situation of the patients intending to use the product(s)	5	4	3	2	1
E11. Availability of bonus schemes for the products	5	4	3	2	1
E12. Support by the products manufacturers/distributors for attending scientific conferences, research, and publishing	5	4	3	2	1
E13. Information from the internet on the product	5	4	3	2	1
E14. Information from continuous medical education activities	5	4	3	2	1
E15. Interaction with medical representatives of the product(s)	5	4	3	2	1
P17. Requirements of payers, especially insurance companies, on what medicines to prescribe	5	4	3	2	1

## PART D PERSONAL CHARACTERISTICS

**Directions:** In this section are statements about medicine brand and or prescribing of the same. Please tick any number between 1 and 10 to indicate to what extent you agree with the statement. Ticking 10 means you strongly agree while ticking 1 means you strongly disagree. Please tick only one number.

	10	9	8	7	6	5	4	3	2	1
IN1. Generic medicines are inferior to innovator medicines										
IN2. I use any brand of medicine for myself as long as it is approved by the regulatory authorities										
IN3. I must know the medication I prescribe in detail before use										
IN4. Most of my patients do not know much about medicines hence rely on me for decision making on what brands to use										
IN5. New medicine products are better than mature/old products										
IN6. As long as the core product features of efficiency, and safety are good, the brand does not matter										
IN7. I know most medicines by brand and prefer to prescribe by brand name										
IN8. I don't know most products by brand name and prefer to prescribe by the chemical name										
IN9. I prefer to stick to a brand with which I have had prior positive experience										
IN10. I am open to using new brands if I consider them good even though I may not have used them before										
IN11. The presentation of a given brand including packaging, name, and presentation are important when selecting a brand to prescribe or use										